CVM UNIVERSITY

चारुतर विद्यामंडल - वल्लभ विद्यानगर

कर्मण्येवाधिकारस्ते

ISTAR

INSPIRE 2025-26

MARCH - 2026

Institute of Science & Technology for Advanced Studies & Research (ISTAR)

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Editorial Board

"It gives me an immense pleasure to learn that ISTAR is publishing the latest issue of its Annual College Magazine, 'INSPIRE', for the academic year 2025-26. I believe that INSPIRE serves as a vibrant platform and a delightful chronicle for both students and the faculty fraternity, keeping everyone updated on the enlightened events and diverse milestones achieved across all fronts. This issue beautifully embodies our commitment to excellence in curricular, co-curricular, and extra-curricular activities, showcasing the momentous achievements and praiseworthy dedication that define our institution. I am confident that the creative contributions within these pages will continue to nurture the hidden talents and innovative spirit of the ISTAR family, and I convey my warmest Wishes to the students and staff for a year of academic brilliance. My heartfelt appreciation goes to the Principal and the entire Editorial Team for their tireless efforts in rejuvenating this magazine for the noble cause of our student community and society at large."

Er. Shri Bhikhubhai B. Patel
Chairman, Charutar Vidya Mandal (CVM)
President, The CVM University (CVMU)

"It brings me immense joy to know that ISTAR is set to release the March Edition of its Annual Magazine, INSPIRE 2025-26. I offer my heartiest congratulations to the Editorial Team for their dedication in carrying forward this remarkable initiative, fostering awareness among the faculty and nurturing the ambitions of our students. This magazine stands as a vibrant testament to the creativity, perseverance, and collaborative spirit of ISTAR's thriving community, beautifully encapsulating the collective journey of our campus—our triumphs, challenges, and the stories that shape the lives of our students. At ISTAR, we take pride in cultivating an atmosphere that encourages learning, innovation, and holistic growth. INSPIRE 2025-26 is a reflection of this spirit of excellence, highlighting not only our academic and research accomplishments but also the diverse talents, perspectives, and passions that define our unique community. Each page of this magazine resonates with the hard work and enthusiasm of our students and faculty, bringing life to their unwavering commitment to excellence. I extend my heartfelt congratulations to all contributors for their creativity and effort, and I am confident that the inspiring narratives within these pages will motivate us all to aim higher as we continue to work hand in hand to build a future that is both academically enriching and socially responsible. Wishing you all the grand success ahead."

Prof. (Dr.) Indrajit Patel
Vice Chancellor (Provost),
The CVM University (CVMU)

"It brings me immense joy to know that ISTAR is set to release the March Edition of its Annual Magazine, INSPIRE 2025-26. I offer my heartiest congratulations to the Editorial Team for their dedication in carrying forward this remarkable initiative, fostering awareness among the faculty and nurturing the ambitions of our students. This magazine stands as a vibrant testament to the creativity, perseverance, and collaborative spirit of ISTAR's thriving community, beautifully encapsulating the collective journey of our campus—our triumphs, challenges, and the stories that shape the lives of our students. At ISTAR, we take pride in cultivating an atmosphere that encourages learning, innovation, and holistic growth. INSPIRE 2025-26 is a reflection of this spirit of excellence, highlighting not only our academic and research accomplishments but also the diverse talents, perspectives, and passions that define our unique community. Each page of this magazine resonates with the hard work and enthusiasm of our students and faculty, bringing life to their unwavering commitment to excellence. I extend my heartfelt congratulations to all contributors for their creativity and effort, and I am confident that the inspiring narratives within these pages will motivate us all to aim higher as we continue to work hand in hand to build a future that is both academically enriching and socially responsible. Wishing you all the success ahead."

Prof. (Dr.) Sandeep K. Walia
Registrar & Dean Academics (CVMU)

"Dear Parents, Students, and well-wishers of the ISTAR Family, I offer my prayerful greetings to all of you. First and foremost, I express my deep sentiments of gratitude for your constant support, love, and concern towards the college, which encourages us to strive hard in carrying forward our mission of spreading value-based knowledge to all. We remain focused on discovering and developing the hidden talents and the magic dormant inside our students; from academics to co-curricular activities, we instill a never-say-die spirit that transforms them into both brilliant students and compassionate human beings. Keeping these core values in mind, we are proud to launch the latest edition of our institutional e-Periodical, 'INSPIRE 2025-26', as a platform to showcase the unique knowledge, skills, and creative potential of our student community. We persistently deploy our best efforts to shape their innovative ideas through their writings, providing a global stage to help guide their careers towards brighter avenues. I am confident that through INSPIRE, our students will cultivate the sharp skills and powerful mindset necessary for future success. Let us continue to give our best and make this institution a modern temple of learning through our shared diligence, devotion, and dedication. I wish the very best to our students, faculties, and the dedicated Editorial Team for this remarkable publication!"

Dr. Mahendrasinh M. Raj
Dean FoS, The CVM University (CVMU),
Principal, ISTAR

VISION

To add significantly to our enduring civilizational tradition of pioneering excellence in learning, knowledge, enlightenment and self-realization, in a universally relevant context.

MISSION

We dedicate ourselves to the perpetuation of our Founders' Vision of providing the infrastructure, facilities, operating conditions and overall environment conducive to the Education of young scholars, along with the desired physical, mental and character building inputs; we firmly renew our commitment to providing value added, globally relevant Education with an emphasis on the Techno Management domain, to ensure that our scholars fruitfully exercise their knowledge, skills and values in the global economy.

OBJECTIVES

To create and nourish a stimulating learning environment that ensures a globally relevant Education based on Eternal human valuers;

To forge and reward excellence in the curricular as well as the noncurricular sectors so as to ensure the scholars' global competitiveness;

To tap, nurture and unleash the innovative entrepreneurial abilities of scholars and thereby ensure lifelong socioeconomic, value addition;

To evoke and embellish the finest traits of human excellence that go on to dovetail into a sustainable career growth curve;

To affiliate, associate, liaise or otherwise synergize with any institution, body, entity, ethno cultural diaspora and the overall global fraternity in any form whatsoever, in support of the above;

To initiate, consolidate and extrapolate any objectives, functions and activities in support of the above.

ISTAR @ PROFILE

ISTAR pioneered unique interdisciplinary courses like Master of Industrial Hygiene and Safety and Master of Valuation. Facility for Ph.D. study in Industrial Chemistry, Chemistry, Environmental Science, Zoology, Instrumentation & Control, Electronics, Computer Science, Geoinformatics, Biotechnology, Botany, Electronics, Instrumentation & Control, Microbiology, Zoology is available at ISTAR. ISTAR is an approved professional institute by All India Council for Technical Education (AICTE) as well as University Grants Commission (UGC). Institute recognizes importance and essentiality of extra-curricular and co-curricular activities. Students are encouraged to organize and participate in technical activities, cultural activities and sports activities for demonstrating their leadership skills and mark of worthy citizens. Institute is committed in shaping career of the students as per the aspirations of the world of tomorrow and has taken many initiatives in this regard.

One of the major initiatives taken is Memorandum of Understanding signed by different departments of ISTAR with Institutes and Universities of global repute for providing opportunity for collaborative research, seminars and exchange of students and faculties. We understand the importance of sponsored research programs and consultancy work and accomplishments of the institute have generated recognition and faith among industries, recruiting agencies and aspirant students. Institute regularly invites expert faculty from academia, industries and R & D institute for achieving academic excellence and this has benefitted in placement of our students. Institute is conscious about raising and maintaining the quality standards of higher education and that will certainly widen the horizon in the era of knowledge economy with enlightened management of CVM under patronage of Er. Shri Bhikhubhai Patel and by the efforts of qualified and committed faculty members of ISTAR.

Charutar Vidya Mandal has established The CVM University with a mission of an equal opportunity to pursue excellence in Education and Research in a conducive environment which is culturally rich with a legacy of eminence in building character and strength of mind while standing for sustainability. At present, CVM operates 52 educational institutions providing pre-primary to post-graduation in all fields of learning. As a result of efforts of Team ISTAR, ISTAR secured 1st rank with 5 star rating in GSIRF ranking for three consecutive years. ISTAR also got recognized at the National level NIRF ranking among top 300 institutes out of 8000+ institutes for four consecutive years.

SALIENT FEATURES OF ISTAR

- Premier Higher Education Institute (HEI): Offers 14 postgraduate programs with industry-focused courses.
- Accreditation & Recognition: Awarded NAAC 'A' Grade (2014-2019) for academic excellence.
- Unique & Specialized Programs: M.Sc. Geoinformatics (GIS): First in Gujarat, introduced in 2016-17, M.Sc. SCT, EST, Exclusive programs in Gujarat.
- Research & Training Excellence: Collaboration with SICART (CVM & DST) for hands-on training in sophisticated instrumentation.
- Industry & Consultancy Services: Recognized for testing and consultancy in Chemical Sciences.
- Offers specialized training for industry-sponsored candidates.
- Skill Development & Outreach: Add-on courses, certificate programs, and short-term training for enhanced employability. Virtual Classroom for IIRS-ISRO outreach & faculty development.
- State-of-the-Art Facilities: Modern labs, ICT-enabled smart classrooms, and enriched library, Wi-Fi enabled campus, indoor & outdoor sports facilities, support for differently-abled students & strong alumni network, well-furnished hostels with modern amenities.

Courses @ ISTAR

Biotechnology	Organic Chemistry
Cyber Security	Real Estate Valuation
Environmental Science & Technology	Plant & Machinery Valuation
Industrial Chemistry	Surface Coating Technology
Geoinformatics	Polymer Chemistry
Information Technology	Microbiology
Industrial Hygiene & Safety	Master of Computer Application

Accreditation Details

- Top Ranked College listed in 201-250 Colleges of India in NIRF (National Institutional Ranking Framework) by MHRD (Ministry of Education, Government of India, New Delhi in 2024.
- Top Ranked (Five Star) College among All Colleges of Gujarat in Gujarat State Ratings Framework (GSIRF) since 2020 by KCG (Knowledge Consortium of Gujarat), Department of Education, Government of Gujarat.

Institutional Activities

1. Dr. Krunal Suthar organized a Hands-on Training Session for the M.Sc. Geoinformatics Department on ArcGIS Software by an industry expert from ESRI. The session aimed to enhance students' practical skills in geospatial technology and strengthen industry–academia collaboration (10 March 2026)
2. ISTAR Celebrate National Science Day by Organized Expert talk on Imaging Sensors at a Glancebu Dr. Himanshu Kapse and followed by Quiz Competition (27 February 2026)
3. Floral Felicitation of Dr. Krunal B. Suthar, Dr. Rohit Vekariya, and Dr. Nisha Daxini by Dr. M.M. Raj (Principal, ISTAR) for being credited with Gaurav Puraskar Award during 81st Vallabh Vidyanagar Foundation Day (3 March 2026)
4. Group Photo Session of ISTAR Staff Members and Students for 27thAnnual Day @ ISTAR (25 February 2026)
5. ISTAR Organized GSBTM & GUJCOST Sponsored Two days National Conference on Emerging Trends in Biological, Chemicals, Computer and interdisciplinary Science (BCCIS 2026) on 19th & 20th February 2026
6. MCA & M.Sc. IT Department organized Expert talk on Role of Artificial Intelligence in Automating Business Processes using Prompt Engineering (10 February 2026)
7. Dr. M.M. Raj Felicitation Mr. Baiju Verghese and Industrial Hygiene and Safety (MIHS) Students of ISTAR for partially sponsored for Two Days National Conference (BCCIS - 2026) by RECOH EHS Services LLP
8. ISTAR Organized Campus Interview for MSc Organic Chemistry & MSc Biotechnology Students by Sterling Biotech Ltd. (SBL), Vadodara @ ISTAR
9. ISTAR organized Outdoor Interclass Sports Tournament (Ramatotsav:2025-26)
10. ISTAR Host Orientation & Awareness Program (Poster Making Competition) by Internal Complaint Committee & Grievance Redressal Cell for Students of ISTAR (2 February 2026)
11. M.Sc. MIHS, M.Sc. EST &M.Sc. GIS Departments of ISTAR organized One Day Industrial Visit to Ravikiran Ceramic Pvt. Ltd., Kanjari (2 February 2026)
12. Mr. Dhruvitkumar Chhaganbhai Parmar, MCA student of ISTAR secured First Position in Charusat Ignite Competition (23 January 2026)
13. Mr. Miteshkumar Gordhanbhai Pate, M.Sc. Cyber Security students of ISTAR College, CVMU secured first position in the Ideal Ignite competition organized by CHARUSAT, Changa (23 January 2026)
14. M.Sc. Industrial Hygiene & Safety (MIHS) Department of ISTAR introduce Global Alumni Meet (25 January 2026)
15. ISTAR MCA & M.Sc.-IT Department organized alumni Talk by Mr. Yash Panchal, Designation of Software Engineer in Infilon Technologies, Ahmedabad

16. ISTAR MCA & M.Sc.-IT introduce alumni Talk by Mr. Adarsh Sharma, Designation of Founder & CEO @TechTrio Automation
17. Dr. Suchita Patel and Dr. Niky Jain carried out Admission Counselling at D.M. Patel & S. S. Patel College, Ode Education Society (23 January2026)
18. A Reunion of Alumni of M.Sc. Valuation Department of ISTAR (South Gujarat Forum) was organised at Surat Fort, Surat, along with Er. Rupesh T. Shah and 41 Alumni of MVAL Department (ISTAR) (17January 2026)
19. Er. Rupesh T. Shah visited Sarvajanik College of Engineering & Technology (SCET), Surat for Admission Counselling of M.Sc. (REV) and M.Sc. (PMV) Programs of ISTAR (17 January 2026)
20. Orientation Session on Empretec HiEERA Program: "A Philosophical Approach to Sustainable Entrepreneurship" by Institution Innovation Council (IIC-CVMU) & ISTAR (12 December 2025)
21. Admission Counselling of ISTAR Faculty Team member Dr. Hiren Soni, Dr. Rohit Venkariya, Mr. Kaushal Bavaliya and Ms. Mahima Ahire Visited Borsad, Bhadaran, Petlad (12/1/2026)
22. Admission Counselling of ISTAR Faculty Team Dr. Amit Thummer, Dr. Krunal Suthar, Dr. Parag Karia and Dr. Ashish Joshi Visited Central Gujarat Collages (5 January 2026)
23. ISTAR provide Placement Drive for M.Sc. Industrial Chemistry Department's Final Year Students (12.12.2025 to 20.12.2025)
24. Admission Counselling of ISTAR Faculty Team Dr. Mandar Karve, Mr. Ravish Patel Mr. Snehal Ingle, and Ms. Bansri Manvar for North Gujarat (23/12/2025)
25. Tree Plantation Celebrating host on 75th Birth Anniversary of Shri Er. Bhikhubhai B. Patel Sir (17 December 2025)
26. Inauguration of the Advanced Technology Lab for M.Sc. Cyber Security Department by Er. Shree Bhikhubhai Patel Sir, President THE CVM University & Chairman CVM (10 December 2025)
27. ISTAR, CVM University is organizing HackLock'26 for M.Sc. Cyber Security students, featuring technical competitions, fun games, and exciting activities (28 January 2026)
28. Er. Shree Bhikhubhai Patel Sir, President THE CVM University & Chairman CVM and Dr. Indrajit Patel worthy Provost Sir Visit and interact with at ISTAR faculties (24 November 2025)
29. ISTAR's MCA and M.Sc.(IT) students bridged academics with industry through insightful visits to Rishabh Software and TOPS Technologies, Vadodara
30. Meeting of Institution's Innovation Council (IIC) Representatives of The Charutar Vidya Mandal (CVM) University, Vallabh Vidyanagar at ISTAR (12 November 2025)
31. Winners in Yugantar 4.0 - ISTAR Shines at Yugantar 4.0 Closing Ceremony – Celebrating Our Proud Winners!
32. ISTAR Student participation in Yugantar 4.0 (06/10/2025 - 12/10/2025), Fashion Show
33. ISTAR Student participation in Yugantar 4.0 (06/10/2025 - 12/10/2025), Folk Dance
34. ISTAR Student participation in Yugantar 4.0 (06/10/2025 - 12/10/2025), Mime
35. ISTAR Student participation in Yugantar 4.0 (06/10/2025 - 12/10/2025), One Act Play

36. ISTAR was delighted to host Mr. Jignesh Vadher, Regional EHS Specialist at Michelin, Bangkok, Thailand, who shared his valuable field experience with our budding EHS students (3 November 2025)
37. PhD Student Mr. Hiren Chaudhari defence Viva-Voce of him in the Subject of Environmental Science, Faculty of Science, under the Guidance of Dr. Hiren B. Soni (29 October 2025)
38. Students of Polymer Chemistry Department, ISTAR College, visited Macro Polymer Pvt. Ltd., Unit-2, Ahmedabad, for an enriching industrial visit (26 October 2025)
39. Expert Talk by Dr. Kaushik Kundaliya on Chemistry Essentials for Competitive Exams was organized by the Department of Organic Chemistry (26 October 2025)
40. M.Sc. Biotechnology students of ISTAR visited NDDB and NDDB CALF for practical exposure (23October 2025)
41. NSS Day celebrated with a Blood Donation and Thalassemia Testing camp organized by NSS (24 October 2025)
42. Meeting with Chairman and Vice President, Charutar Vidya Mandal with Laksh FinechemPvt. Ltd. Members (24 October 2025)
43. ISTAR's Valuation Department hosted an expert lecture by Er. Nilesh Patel on Valuation of Real Estate and Plant & Machinery for Insurance Purpose, highlighting claim settlement and insurance fundamentals (23 October 2025)
44. Expert Talk on "Abroad Job Opportunities in Paints and Coatings" by Mr. Rakesh Patel (Topaz Multi-Industries, Africa), @ Surface Coating Technology Program (19 October 2025)
45. Proud Moment for ISTAR as Dr. Rohit Vekariya is featured among The World's Top 2% Scientists by Stanford University & Elsevier Database (21 October 2025)
46. Dr. Shilpa Gupte attended 1 week Workshop on "Outcome Based Assessment at Gujarat Extension Centre, NITTTRB Ahmedabad (10 to 14 November 2025)
47. Inter-Collegiate Chess Tournament of The CVM University hosted by ISTAR College (17 October 2025)
48. ISTAR College celebrated World Ozone Day & International Microorganism Day with Rangoli & Poster competitions showcasing student creativity (16 October 2025)
49. On Engineer's Day 2025, ISTAR students and faculty visited Elecon Engineering, Asia's largest industrial gearbox manufacturer with a global footprint (14 October 2025)
50. Biotechnology students of ISTAR (Sem 1st& 3rd) visited Apicore Pharmaceutical Pvt. Ltd., Vadodara, gaining valuable insights into ARD, QC, QA, R&D, analytical techniques, and documentation in the pharmaceutical industry (12 October 2025)
51. ISTAR – WDC Activity: Empowered Girls, Safer Tomorrow: Gender Sensitization, Safety & Equality Effective (10 October 2025)
52. Department of Industrial chemistry organise an Industrial Visit to Meghmani Dyes and Intermediates LLP (5 October 2025)
53. Incinerator Usage and Girls' Room Facility Awareness organized for ISTAR students (8 August 2025)
54. ISTAR Celebrate Spiritual function Shri Ganpati Mahotsav (27 to 29 August, 2025)
55. Expert Talk delivered in ISTAR on 'Positive Attitude: Students Perspectives on Success in Life' by Mr. Jigar Solanki (Proprietor), for M.Sc. Industrial Chemistry Program
56. Industrial Visit to Amul Chocolate Plant (Mogar) & Aalidhra Pharmachem Pvt. Ltd. (Nandesari) by Students (14 August 2025)

57. Industrial Visit to Marigold Paints Pvt. Ltd., Vitthal Udyognagar GIDC by Students of M.Sc. Surface Coating Technology Program of ISTAR (14 August 2025)
58. M.Sc. Geoinformatics Department of ISTAR organized on the occasion ofIndia Space Week 2025 Celebrations: Group Discussions, Interactive Sessions and Expert Talks on “Indian Space Mission: An Eye of Remote Sensing” & “NAVIC: Indian Regional Navigation Satellite System” (18 August 2025)
59. Sports Wing of Students Council organized Table Tennis Tournament at ISTAR (18 August 2025)
60. Sports Wing of Students Council organized Chess Tournament at ISTAR (18 August, 2025)
61. Biotechnology Department organized Hands-on Workshop for Class 12thStudents of Anandalaya School (NDDB Campus, Anand) @ ISTAR (21 August 2025)
62. 79th Independence Day of India Celebrations with Initiative of Tree Plantation Program at ISTAR (15 August 2025)
63. Industrial Visit to NDDB (CALF), Anand by Students of M.Sc. Microbiology Program of ISTAR (13 August 2025)
64. Industrial Visit to HLE Glasscoat Ltd., Vitthal Udyognagar GIDC by 3rdSemester Students of M.Sc. Surface Coating Technology Program of ISTAR
65. Expert Talk on ‘Paint Industry Dynamics’ by Mr. Umesh Singh, Chairman & Managing Director, Marigold Paints Pvt. Ltd., Vithal Udyognagar GIDC of M. Sc. Surface Coating Technology Program (7 August 2025)
66. Free Distribution of Books on “Polymer Science” to Students of Polymer Chemistry by Dr. M.M. Raj Sir (Principal, ISTAR) & Dr. Amit Thummar (Program Coordinator, Polymer Chemistry) @ ISTAR
67. Dr. M.M. Raj Sir congratulated In-House Publication Team of ILSASS (Institute of Language Studies & Applied Social Sciences), The CVM University, Vallabh Vidyanagar, for successfully releasing Monthly Edition of Newspaper Teller
68. Dr. M.M. Raj Sir (Dean, Faculty of Science & Principal, ISTAR) congratulated Ms. Nirali Goswami, Ms. Jagruti Patel and Ms. Riya Shah for successfully defending Ph.D. Viva in Environmental Science
69. Anti Ragging Cell of ISTAR organized Invited Talk by Ms. Nisha Nair, I/C Principal, R.N. Patel Ipcowala School of Law and Justice, on “Curbing Menace of Ragging” to spread Preparedness and Awareness among Students at ISTAR (9 August 2025)
70. Shri Satyanarayan Mahapuja organized by MSc Cyber Security Department and M. Sc. Geoinformatics Department of ISTAR on the occasion of beginning of Academic Year
71. Alumni Talk on ‘Valuation Practices in Industrial Estates of Australia’ by Mr. Kashyap Kirit Budhbhatti of M.Sc. Valuation (PMV & REV) Department @ ISTAR
72. Mr. Daxesh Patel, Deputy Manager, FS Green Energies Pvt. Ltd., Karajan,Vadodara, delivered an Alumni Expert Talk on GPCB XGN 2.0 Manual to MSc EST (Environmental Science & Technology) Students at ISTAR (4 August 2025)
73. Five MLD STP Visit (Anand) by M.Sc. EST &M.Sc. MIHS (Sem-III) Students of ISTAR (31 July 2025)
74. Celebrating Five Glorious Years of NEP with Creativity and Innovation! ISTAR proudly hosted Poster Presentation Competition for showcasing Students’ Talents, Ideas and Vision for Brighter Educational Future.
75. Dhruv Mehta (Sem III, MSc EST, ISTAR) won 1stPrize in ‘Poster Making Competition’ in Ideation's Sphere at State Level Event “Biocalyx-2025” at St. Xavier's College, Ahmedabad (26 July 2025)

76. Maa Saraswati Pooja Organized at M.Sc. Computer Science Department of ISTAR (25 July 2025)
77. ISTAR host Expert Talk by Mr. Shailendra Soni- Tops Technologies Pvt. Ltd. (23July 2025)
78. SSIP Lecture taken by Mr. Snehal Ingle (Coordinator) – SSIP (ISTAR) (21 July 2025)
79. Alumni of Polymer Chemistry Department, Mr. Kuldeepsinh Rathod (Deputy Manager) of Environ Speciality Chemicals Pvt. Ltd., Mumbai, visited ISTAR and shared Scopes and Applications of Additives @ ISTAR
80. Mr. Satish Patel (Dalfon Chemicals, Panoli) delivered Entrepreneurial Talk on Career Opportunities in Paints, Coatings and Inks M.Sc. SCT Department of ISTAR
81. Alumni of Polymer Chemistry Department, Dr. Hemang Patel (GM, R&D) & Dr. Kalpesh Jadav (GM, Innovation & Development) of 20 Microns Ltd. Waghodia, visited ISTAR and interacted with Dr. M.M. Raj Sir (21 July 2025)
82. Industrial Expert Talk on Liposome and Nanoparticle-based Advancements in Targeted Drug Delivery by Mr. Avik Parekh, Manager-1 (ADD-Non Oral), Sun Pharma, Vadodara at M.Sc. BT Department, ISTAR (19July 2025)
83. Shri Satyanarayan Katha and Puja host by M.Sc. Organic Chemistry Department of ISTAR (18 July 2025)
84. New Enrolled students Orientation Program for MCA and M.Sc. IT department of ISTAR (17 July 2025)
85. An Expert Lecture on Industrial Hygiene Monitoring and Control Practices in Petrochemical Industry by Mr. Sohail Vahora, Aramco, Saudi Arabia 15th July 2025
86. Spiritual Guru Purnima Celebration at ISTAR (10 July 2025)
87. Expert Lecture on “Building Employability: Key Professional Skills” by Dr. Raju Rathod for First Semester Students of IC Department at ISTAR (10 July 2025)
88. Alumni Talk by Mr. Shanmukha Subrahmanyam, Ms. Anchal Singh & Mr. Saurav Jha of M.Sc. Biotechnology Department at ISTAR (4 July 2025)
89. Orientation Program for First Semester Students of M.Sc. Microbiology & M.Sc. Biotechnology at ISTAR (3 July 2025)
90. Bridge Course (Industry Expert Talk by Dr. Tejas Shah & Alumni Talk by Ms. Bhavika Sharma) by SCT Department @ ISTAR (3.7.2025)
91. Freshmen Induction Program of M.Sc. (REV & PMV), M.Sc. IHS, M.Sc. MICRO and M.Sc. BT at ISTAR (3July 2025)
92. Inaugural Event of M.Sc. Cyber Security Programat ISTAR (3 July 2025)
93. Maa Saraswati Pooja @ IC Department (30.6.2025)
94. Farewell Ceremony of Mr. Rajusinh Rathod (Non-Teaching Staff Member), Industrial Chemistry (IC) Department of ISTAR (27 June 2025)
95. PhD Defence Viva-Voce of Khodidas Bhanderi in the Subject of Industrial Chemistry, Faculty of Science, under the Guidance of Dr. Jigar V. Patel (21 June 2025)
96. Alumni Mr. Sohil Vahora (Saudi Aramco, Saudi Arabia), Mr. Shahzad Vahora (IHSS Gujarat) and Mr. Akib Vahora (Qatar Energy, Qatar) of MIHS Department visited ISTAR and interacted with Dr. M.M. Raj Sir (24 June 2025)
97. Celebrations of International Yoga Day at ISTAR (21 June 2025)
98. World Environment Day Celebrations at ISTAR (5 June 2025)

Research, Consultancy & Extension

Ongoing Research Projects

1. "CRISPR-Cas9 knock-in Bacillus subtilis for enhanced allulose production using rice straw" under Research Support Scheme funded by GSBTM, Government of Gujarat (Rs. 55,15,928/-). Project ID (202425_29), Principal Investigator: Dr. Nisha Daxini

Research Projects Submitted

1. Research proposal "Bioactive Secondary Metabolites from Bacillus spp.: A Synergistic Approach to Antimicrobial Resistance Mitigation and Gut Health" of Rs. 37,96,856/-submitted in GSBTM, Gandhinagar (28 January 2026)

Articles / Research Papers Published in Referred Journal

1. Arvindsinh Sisodiya, Kushal Pankajkumar Shah and Dr. Rohit H. Dave "Stability study of Metformin Hydrochloride tablet in crush condition stored in glass and plastic container by using the Reverse Phase High Performance Liquid Chromatography" in journal of applied bioanalysis. Volume 11 (Decemeber-2025), 93-104, http://doi.org/10.53555/jab.v11si3.777 (National) (SCOPUS, Peer Reviewed)
2. Bavaliya, K. J., Raj, M., Raj, L., & Vala, N. S. (2025). Effect of Compatibilizer Concentration on the Mechanical, Thermal, Chemical, and Morphological Properties of PLA/PBAT Blends. Journal of Macromolecular Science, Part B, 1–33. https://doi.org/10.1080/00222348.2025.2602677
3. Bavaliya, K. J., Raj, M., Raj, L., & Vala, N. S. (2025). Preparation and characterization of biodegradable blends with diverse compositions of polylactic acid, polycaprolactone, and compatibilizer. International Journal of Polymer Analysis and Characterization, 1–25. https://doi.org/10.1080/1023666X.2025.2585883
4. Dangar, N.B., A.S. Dixit and H.B. Soni (2025) Forest Carbon Inventory: A Comprehensive Dataset on Tree Biomass and Carbon Sequestration Matrices using Dendrometric Analysis across Various Districts of Gujarat State, India. Mendeley Data. (Elsevier) DOI:10.17632/gcsy374skw.1
5. Dangar, N.B., A.S. Dixit and H.B. Soni (2026) Multi-Species Inventory of Biomass and Carbon Sequestration Potential of Tree Species across Gujarat's Regional Ecosystems, India. Mendeley Data. (Elsevier) DOI:10.17632/ccvmzwxwjv.1
6. Deven A Gol, Jaykumar M Vala, Kavindra R Jain, Niky K Jain, KunalSahitya "A Sustainable and Secure Hybrid Blockchain Consensus with Optimization for Digital Rights Management" 10th International Conference on Smart Trends In Computing and Communications, 19-21 January 2026, Proceedings of SmartCom 2026, Volume 11.
7. Dhavalkumar Upendrabhai Patel, Dr. Suchita Patel "Intelligent Supervised Machine Learning Classifiers for Assessment of Performance of Heart Disease Disorder Diagnosis" in the proceedings of the Fourth International Conference on Computing and Communication Networks, The paper is included in the Lecture Notes in Networks and Systems (LNNS), Volume 1294 series by Springer Nature.

8. Divyang Ka. Patel and H. N. Kapse(April 2025). Potentiometric Determination of Cu2+ in Soil Samples through Screen Printed Sensors, Indian Journal of Natural Sciences, (IJONS), Vol-16, Issue-89, 92864-92872.
9. Dr. Shital R. Patel, Ms. Isha Patel, Dr. Nilkanth Faldu, Mr. Tejaskumar Chimanbhai Sharma, Dr. Mehul Dave, published a PATENT titled "Magnaclean Hydrogel: A Dual-Charge Magnetic Dye Removal System For Advanced Dye Wastewater Treatment", Application No. 202521123339 A, Publication Date: 23/01/2026, India.
10. Isha R. Patel, Shital R. Patel, Bhavinkumar V. Patel, Niraj H. Patel, published a research paper on "Removal of anionic/cationic dyes by chitosan poly(acrylamide-co-crotonic acid)/Fe_3O_4 composite hydrogel: kinetics, isotherm and removal mechanism" Composite Interfaces (28 Aug 2025), (International) (SCOPUS, UGC CARE, Peer Reviewed) https://doi.org/10.1080/09276440.2025.2551989
11. Jaykumar J. Gami, Mehul Khimani, Sugam Kumar, Vinod K. Aswal, Mayursing Girase, Ketan Kuperkar, Niraj H. Patel and Rohit L. Vekariya, "Understanding aggregation behavior of Tetronics®–ionic liquid interactions via cloud point, DLS, SANS, and computational approach", Journal of Colloid and Interface Science, Vol. 708 (2026) Article 139771 (International) (SCOPUS, Web of Science, UGC CARE, Peer Reviewed) https://doi.org/10.1016/j.jcis.2025.139771.
12. Joshi, K. and H.B. Soni (2025) Antibiotic Susceptibility Profiles of Post-Chlorination Bacterial Isolates from Urban Wastewater Treatment Plants in Gujarat, India. Mendeley Data. (Elsevier) DOI:10.17632/zhm2j4n8n8.1
13. Joshi, K. and H.B. Soni (2025) From Survivors to Superbugs: Evaluating AMR Trajectories in Wastewater Bacteria Under Sequential Chlorination Stress. Mendeley Data. (Elsevier) DOI:10.17632/smrw7kwcym.1
14. Joshi, K.J. and H.B. Soni (2025) Genomic Insights into Chlorination Effects on the Development of Bacterial Antibiotic Resistance during Wastewater Treatment – A Review. International Journal ofLife Sciences Leaflets. 185: 19-47. (ISSN: 2277-4297)
15. Joshi, K.K. and H.B. Soni (30 April 2025) Baseline Dataset on Bacterial Counts, Morphotypes and Gram Staining from Urban Wastewater Treatment Plants of Gujarat, Western India. *Mendeley Data*. (Elsevier) DOI:10.17632/hkctg6st34.1
16. Kothia, B.A. and H.B. Soni (2026) Bioflocculant-Producing Bacteria from Complex Waste Streams: A Sustainable Approach to Microbial Flocculation, EPS Characterization, and Sludge Minimization for Industrial Effluent Remediation. Mendeley Data. (Elsevier) DOI: 10.17632/zcypvzb6gh.1
17. Kothia, B.A. and H.B. Soni (2026) Experimental Data on Flocculating Activity and Optimization of Four Bacillus-derived Bioflocculants for Wastewater Treatment. Mendeley Data. (Elsevier) DOI:10.17632/jyfbr9mz6s.1
18. Kothia, B.A. and H.B. Soni (2026) Integrative 16S rRNA Gene Sequencing Characterization of Four Bacterial Isolates: Phylogenetic Placement, Comparative ATGC Content Analysis and BLAST–EzBioCloud–VSEARCH Bioinformatics Pipeline. Mendeley Data. (Elsevier) DOI: 10.17632/cbgb2rk4cp.1
19. Kothia, B.A. and H.B. Soni (2026) Molecular and Morpho-Structural Characterization of Bioflocculant-Producing Bacterial Isolates for Sustainable Wastewater Remediation. Mendeley Data. (Elsevier) DOI: 10.17632/n8t79w8328.1

20. Kothia, B.A. and H.B. Soni (2026) Optimized Eco-Friendly Bioflocculants: Nutrient and Cultivation Parameters for Wastewater Treatment. Mendeley Data. (Elsevier) DOI: 10.17632/hyzsbsgxcc.2
21. Kushal Pankajkumar Shah, Arvindsinh Sisodiya and Dr. Rohit H. Dave "A Thorough Comparison of Diclofenac Sodium Injection Drug Products from Branded and Generic Companies under Various Stability Conditions Using High Performance Liquid Chromatography" in African Journal of Biomedical Research. Volume 11, (December-2025), 84-92, http://doi.org/10.53555/jab.v11si3.776 (National) (SCOPUS, Peer Reviewed)
22. Kushal Pankajkumar Shah, Arvindsinh Sisodiya and Dr. Rohit H. Dave "A Thorough Comparison of Diclofenac Sodium Injection Drug Products from Branded and Generic Companies under Various Stability Conditions Using High Performance Liquid Chromatography" in African Journal of Biomedical Research. Volume 11, (December-2025), 84-92, http://doi.org/10.53555/jab.v11si3.776 (National) (SCOPUS, Peer Reviewed)
23. M. Shukla, M. Patadiya, and S. Gupte, Isolation, Characterization, Partial Purification and Plasmid Curing Analysis of Bacteriocin of Pediococcus acidilactici KX688798 Isolated from Fermented Vigna radiate, Applied Biochemistry and Microbiology, (2025), 1-14, DOI: 10.1134/S0003683824606061, ISSN 0003-6838
24. Maheshwari Patadiya, Akshaya Gupte, Khushal Patel, and Shilpa Gupte, Genomic and Phenotypic Insights into the Probiotic Potential and Exopolysaccharide Production of Weissellacibaria MSCH1, Microbiol. Biotechnol. Lett. (2026), 54: e2512012 http://dx.doi.org/10.48022/mbl.2512.12012, pISSN 1598-642X eISSN 2234-7305
25. Maheshwari R. Patadiya, Yatin Suthar, and Shilpa Gupte, Production, Characterization and Evaluation of the Antioxidant Potential of Exopolysaccharide Produced by Weissellacibaria MHCH1, June 3, 2025, Microbiol. Biotechnol. Lett. (2025), 53(3), 1–20 http://dx.doi.org/10.48022/mbl.2503.03008 pISSN 1598-642X eISSN 2234-7305
26. Mahyavanshi, S.A. and H.B. Soni (2025) A Review on Traditionally used Medicinal Plants of Ethnogynecological Importance in Various States of India. International Journal of Life Sciences Leaflets. 185: 1-18. (ISSN: 2277-4297)
27. Mahyavanshi, S.A. and H.B. Soni (2025) Investigating Traditional Therapeutics: A Documentation and Analysis of Ethno-gynaecological (Medicinal) Flora among Tribal Communities of Dharampur Forest, South Gujarat, India. Mendeley Data. (Elsevier) DOI:10.17632/kbmr74pm6b.1
28. Patel B., Patel M., Gondkar P., Soni H. and Patel K. (2025) A Computational approach to drug design against West Nile Virus' envelope epitopes, Indian Journal of Natural Sciences, Vol.16 / Issue 91 / August / 2025, Pg no.: 99824-99834; ISSN: 0976 – 0997
29. Patel B., Patel M., Gondkar P., Soni H. and Patel K. (2025) A Computational approach to drug design against West Nile Virus' envelope epitopes, Indian Journal of Natural Sciences, Vol.16 / Issue 91 / August / 2025, Pg no.: 99824-99834; ISSN: 0976 – 0997
30. Patel, P.D., D.S. Patel and H.B. Soni (2025) Preliminary Qualitative Analysis of Plant-based Industrial Food Processing Waste in Anand City, Gujarat, India. Mendeley Data. (Elsevier) DOI:10.17632/3z7c48bdjd.1
31. Patel, P.D., D.S. Patel and H.B. Soni (2025) Valorization of Industrial Agro-Waste: A Quantitative Phytochemical and Nutritional Analysis of Tomato and Sweet Corn

Residues: A Case Study of Anand City, Gujarat, India. Mendeley Data. (Elsevier) DOI:10.17632/33bnkfwsjd.1
32. Patel, P.D., D.S. Patel and H.B. Soni (2026) Performance Evaluation of Local Eco-friendly Adsorbents for Food Industry Effluent Treatment: A Case Study from Gujarat, India. Mendeley Data. (Elsevier) DOI: 10.17632/bcd9m5bw7w.1
33. Prince H. Patel and Dr. Mandar Karve "Transforming Acid oil waste into wealth: A review on refining techniques and industrial applications." in Frontline Chemistry Nexus (November-2025)., , 1(1), 116-142., (International) (Peer-reviewed journol) https://fcnjournal.com/index.php/fcn/article/view/6
34. Prince H. Patel, Dr. Jigar V. Patel and Dr. Mandar Karve "Synthesis, Characterization and Performance Evaluation of Bio-Based Plasticizers Derived from Epoxidized Acid Oil Alkyl Esters via Ring-Opening Reaction in Poly (vinyl chloride) Films,", In Journal Of Material Science, (Springer Nature), (Accepted)
35. Prince H. Patel, Dr. Jigar V. Patel and Dr. Mandar Karve "Synthesis of Bio-based Plasticizers Using Soybean Fatty Acid Oil with Different Alcohols and Their Performance Studies in PVC Film.", in Chemistry Africa 8, 2285–2304 (June-2025)., (International) (SCOPUS) https://doi.org/10.1007/s42250-025-01362-5
36. Saiyad, S. M., Bajpai, B., Patel, C., Shah, S. D., & Daxini, N. (2026). Anti-biofilm activity of Bacillus safensis subsp. osmophilus SD2 against multidrug resistant hospital isolates of ESKAPE group. Biologia, 81(1), 3. https://doi.org/10.1007/s11756-025-02079-z
37. Saiyad, S. M., Bajpai, B., Patel, C., Shah, S. D., & Daxini, N. (2026). Anti-biofilm activity of Bacillus safensis subsp. osmophilus SD2 against multidrug resistant hospital isolates of ESKAPE group. Biologia, 81(1), 3. https://doi.org/10.1007/s11756-025-02079-z
38. Saiyad, S. M., Shah, S., Bajpai, B., Daxini, N. (2026). Isolation and Identification of Marine Bacteria with Anti-Quorum Sensing activity from Coastline of Gujarat against Chromobacterium violaceum MTCC 2656. Research Journal of Biotechnology, 21(4), 130–136. https://doi.org/https://doi.org/10.25303/214rjbt1300136
39. Saiyad, S. M., Shah, S., Bajpai, B., Daxini, N. (2026). Isolation and Identification of Marine Bacteria with Anti-Quorum Sensing activity from Coastline of Gujarat against Chromobacterium violaceum MTCC 2656. Research Journal of Biotechnology, 21(4), 130–136. https://doi.org/https://doi.org/10.25303/214rjbt1300136
40. Sheikh, S.A. and H.B. Soni (2026) Eco-Morphological Exploration of Avian Communities and Floral Diversity: Bird-Tree Interactions at Waghai (Dang) Forest, South Gujarat, India. Mendeley Data. (Elsevier) DOI: 10.17632/8xykwpw7g8.2
41. Soni, H.B. (2025) The Algorithm of Life: How AI is revolutionizing Biodiversity and Conservation. Biodiversity International Journal. 8 (1): 19-31. (eISSN: 2575-906X) (USA)
42. Soni, H.B. (2025) The Guiding Hand: Exploring the Multifaceted Role of a Teacher. Inspire. (ISTAR E-Magazine). 4 (87): 67-68.
43. Soni, H.B. (2026) Citizen Science Observations of House Sparrow (Passer domesticus): A Multi-State Biostatistical Analysis of Population Trends, Behavioral Ecology, Anthropogenic Impacts and Environmental Threats in India during COVID-2020. Mendeley Data. (Elsevier) DOI: 10.17632/p8tfjg4cmg.1
44. Suthar K.B. (2025) Multilayer security system using fingerprint and face recognition for vehicle access using raspberry-pi open-source integrated

development board: International Research Journal Of Modernizationin Engineering Technology and Science, 126-134. https://doi.org/10.56726/IRJMETS88346
45. Thakkar, B., & Daxini, N. (2025). Sustainable Production of Glycolipid Biosurfactants by Halophilic Bacteria Utilizing Waste Vegetable Oil: Insights into Antimicrobial and Antiadhesive Properties. Biosciences Biotechnology Research Asia, 22(4), 1564-1579. http://dx.doi.org/10.13005/bbra/3460.
46. Thakkar, B., &Daxini, N. (2025). Sustainable Production of Glycolipid Biosurfactants by Halophilic Bacteria Utilizing Waste Vegetable Oil: Insights into Antimicrobial and Antiadhesive Properties. Biosciences Biotechnology Research Asia, 22(4), 1564-1579. http://dx.doi.org/10.13005/bbra/3460.
47. Trivedi, R., Patel, R., Raj, M., & Raj, L. (2026). A comparative analysis of jute, glass, and carbon fiber composites cured with amine-based hardeners: mechanical, thermal, morphological, and chemical characterization. Composite Interfaces, 33(2), 161–181. https://doi.org/10.1080/09276440.2025.2516896
48. Trivedi, R., Raj, M., Raj, L., & Patel, R. (2025). High-performance fiber-reinforced composites using cardanol-based resin and epoxy resin blend: mechanical, thermal, morphological, and chemical resistance properties with various hardeners. Composite Interfaces, 1–25. https://doi.org/10.1080/09276440.2025.2580702
49. Trivedi, R., Raj, M., Raj, L., & Patel, R. (2025). High-performance fiber-reinforced composites using cardanol-based resin and epoxy resin blend: mechanical, thermal, morphological, and chemical resistance properties with various hardeners. Composite Interfaces, 1–25. https://doi.org/10.1080/09276440.2025.2580702
50. Vala, N. S., Bavaliya, K. J., Raj, M., & Raj, L. (2025). Compatibilization Strategies for PLA/PCL Blends: Tuning Thermal, Mechanical, and Biodegradation Properties via Functionalized PCL Derivatives. Polymer-Plastics Technology and Materials, 64(17), 2713–2734. https://doi.org/10.1080/25740881.2025.2560913

Books / Chapters Published

1. Ashish Joshi “Privacy-Preserving Machine Learning in SIoT” in the book Social Internet of Things (SIoT) and Machine Learning—Enhancing Interconnectivity and Intelligence, published by Springer in January 2026. Link: https://link.springer.com/chapter/10.1007/978-3-032-10122-8_17
2. Jaykumar J. Gami, Isha R. Patel, Priyamvada U. Singh, Ravish G. Patel, Niraj H. Patel, Kinnari A. Bhatt, Rohit L. Vekariya, “Case studies on ozone sensing technologies” in Ozone Gas Sensing Technologies, (Elsevier) 2026, Pages 385-423 https://doi.org/10.1016/B978-0-443-33839-7.00016-1
3. Kothia, B.A. and H.B. Soni (2025) Bioflocculating Bacteria: Mechanisms, Applications and Future Perspectives (Amazon Paperback Edition). Kindle Direct Publishing (KDP), USA. 150 pp. (ISBN-13: 9798263539436)
4. Megha, R.N. and H.B. Soni (2026) Medicinal Plants and Male Reproductive Health: From Folk Knowledge to Scientific Evaluation (Amazon Paperback Edition). Kindle Direct Publishing (KDP), USA. 406 pp. (ISBN-13: 9798246348611)
5. Soni, K.H. and H.B. Soni (2025) Cannabis Applied Science: From Plant to Patient (Amazon Paperback Edition). Kindle Direct Publishing (KDP), USA. 201 pp. (ISBN-13: 9798266754720)

PhD Degree Awarded

1. Hirenkumar Jivanbhai Chaudhari is awarded a PhD Degree in Environmental Science on 4th October, 2025 under the guidance of Dr. Hiren B. Soni on 29th October, 2025.
2. Meet Ghanshyambhai Patel completed his Ph.D. in the subject of Chemical Science under the guidance of Dr. Mahendrasinh M. Raj entitled "Synthesis and Characterization of Phenolic Resin and Its Application in Composites" on 9th March, 2026.
3. Sandip Maganlal Vadariya completed his Ph.D. in the subject of Industrial Chemistry on "Study on Analytical Techniques for Identification and quantification of nitrosamine impurities in selected APIs", under the guidance of Dr. Jigar V. Patel, on 20 January, 2026.

PhD Thesis Submitted

1. Boski Pramodkumar Thakar completed her Ph.D. in the subject of Biotechnology on "Production, Characterization and Applications of Surface active molecules from Halophilic Bacteria", under the guidance of Dr. Nisha Daxini, on 13 February 2026.
2. Kaushal J. Bavaliya submitted Ph.D. Thesis entitled "Development of Novel Polymeric Blend Based on Poly Lactic Acid" in the subject of Chemical Science under the guidance of Dr. Mahendrasinh M. Raj.
3. Nilesh S. Vala submitted Ph.D. Thesis entitled "Studies On Polytic Acid Based Polymeric Blends" in the subject of Chemical Science under the guidance of Dr. Mahendrasinh M. Raj.
4. Rushik N. Patel submitted Ph.D. Thesis entitled "Studies on Polymeric Blends Based on Some Natural and Synthetic Thermoplastic Polymers" in the subject of Chemical Science under the guidance of Dr. Mahendrasinh M. Raj.

PhD Synopsis Submitted

1. Ankita J. Mahaliya submitted Ph.D. Synopsis entitled "IoT based Methane Gas Sensor System using V2O5 Thick Films for Pollution Monitoring" in the subject of Instrumentation and Control under the guidance of Dr. Himanshu Kapse.
2. Avik Mayur Parekh submitted Ph.D. Synopsis entitled “Design, Characterization and Evaluation of Taxane loaded nanoparticles for targeted therapy of Breast Cancer” in the subject of Biotechnology under the guidance of Dr. Nisha Daxini.
3. Bhumi A. Kothia submitted Ph.D. Synopsis entitled "Improving Wastewater Characteristic Using Bacterial Bioflocculant" in the subject of Environmental Science under the guidance of Dr. Hiren B. Soni.
4. Dhavalkumar Upendrabhai Patel submitted his Ph.D. Synopsis entitled “Diagnosis of Early Phase Cardiovascular Disease Utilizing Intelligent Automation & Supervised ML Adaptive Classifier Models in Medical Science” under the guidance of Dr. Suchita Patel.
5. Divyang A. Ka Patel submitted Ph.D. Synopsis entitled "Development of Sensor and System for Soil Nutrient Monitoring through IoT" in the subject of Instrumentation and Control under the guidance of Dr. Himanshu Kapse.

6. Maheshwari Patadiya, Ph.D scholar submitted synopsis “Studies on Exopolysaccharide production by Lactic acid bacteria and its potential Applications” on 11 April 2025.
7. Mitali Yadav submitted Ph.D. Synopsis entitled "Studies on Composites Based on Modified Multi-functional Resin System" in the subject of Chemical Science under the guidance of Dr. Mahendrasinh M. Raj.
8. Rudresh M. Trivedi submitted Ph.D. Synopsis entitled "Studies on Modification of Cardanol and its Applications in Natural and Synthetic Reinforcing Material Based Composites" in the subject of Chemical Science under the guidance of Dr. Mahendrasinh M. Raj.
9. Saklain Mustak Saiyad submitted Ph.D. Synopsis entitled “A Study on the Quorum Sensing Inhibition of Drug-Resistant Gram-negative Bacteria” in the subject of Biotechnology under the guidance of Dr. Nisha Daxini.
10. Samta A. Mahyavanshi submitted Ph.D. Synopsis entitled “Ethno-Gynecological Study and Phytochemical Screening of Selected Medicinal Plants Used in Tribal Communities of Dharampur Taluka of Valsad District, India" in the subject of Botany under the guidance of Dr. Hiren B. Soni.
11. Snehal Ingale, department faculty submitted Ph.D synopsis “Novel approach to explore potential of lignocellulosic waste for bioethanol production” on 18 February 2026.

PhD Students (Newly Registered)

Department	Name of PhD Guide	Name of Student
Biotechnology	Dr. Nisha Daxini	Kumud K. Macwana Ravi Gavdha
Computer Science	Dr. Suchita Patel	Dhruv Patel Mahima Ahir Marina Christian Mayuri Salady
Computer Science	Dr. Niky Jain	Bansari Balochiya Hetal K. Kapadia Nimish N. Patel Rupali Shinde
Computer Science	Dr. Ashish Joshi	Abhishek Dave Alpesh Agja Premal Soni Sameer Patel
Geoinformatics	Dr. Krunal Suthar	Chancy Shah Maitry Bhatt
Microbiology	Dr. Shilpa Gupte	Devyani Parmar
Organic Chemistry	Dr. Kinnari A. Bhatt	Shiv K. Patel
Organic Chemistry	Dr. Niraj Patel	Pramod Sukhnandi
Organic Chemistry	Dr. Rohit L. Vekariya	Vivek Rathod
Surface Coating Technology	Dr. Parag S Karia	Akashkumar Kanojiya Tahirhusen Malek

Ph.D. Students' Scholarships from SHODH (Government of Gujarat)

Department	Name of Student	Amount (Rs.)
Biotechnology	Priya Nileshkumar Patel	15000/- p.m.
Environmental Science & Technology	Rut N. Megha	15000/- p.m.
Organic Chemistry	Isha Patel Jay Gami Priyamvada Singh Shiv K. Patel	15000/- p.m. (Each)

P.G. Students Scholarships from Industries

Department	Agency/Donor	Name of Student	Amount (Rs.)
Surface Coating Technology	Asian Paints Charitable Trust, Mumbai	Harsh Ashvinbhai Vora	2,47,000/-
		Mohhammad Aman Vasimbhai Vahora	2,47,000/-
		Seemaben Kiranbhai Dabhi	2,47,000/-
		Shyam Bharatbhai Bhimani	2,47,000/-
		Udaykumar Ishvarbhai Patel	2,47,000/-
Industrial Chemistry	MISA	Jaydip Vanra Kuldipsinh Chavda	20,000/- Each
Polymer Chemistry	RA Chemicals, Ahmedbad	Jaymit Parmar Mohammad Diwan	20,000/- Each

Faculty Awards

1. Dr. H.N. Kapse received Certificate of Academic Excellence in recognition of valuable Research contributions and dedication to Academic Excellence by The Charutar Vidya Mandal (CVM) University, September 25, 2025
2. Dr. Hiren B. Soni received Certificate of Academic Excellence in recognition of valuable Research contributions and dedication to Academic Excellence by The Charutar Vidya Mandal (CVM) University, September 25, 2025
3. Dr. Krunal Suthar was felicitated at NASA's Goddard Space Flight Centre, Washington, USA on June 4, 2025 for his remarkable contributions to the NASA Space Apps Challenge (2020–2024)
4. Dr. Krunal Suthar was felicitated during 81st Foundation Day of Vallabh Vidyanagar on March 3, 2026 for his remarkable contributions to the NASA Space Apps Challenge (2020–2024)
5. Dr. Nisha Daxini received Certificate of Academic Excellence in recognition of valuable Research contributions and dedication to Academic Excellence by The Charutar Vidya Mandal (CVM) University, September 25, 2025.

6. Dr. Nisha Daxini was felicitated during 81st Foundation Day of Vallabh Vidyanagar on March 3, 2026 for receiving State Level Research Project Grant of GSBTM, GUJCOST & DST, Gujarat
7. Dr. Rohit Vekariya received Certificate of Academic Excellence in recognition of valuable Research contributions and dedication to Academic Excellence by The Charutar Vidya Mandal (CVM) University, September 25, 2025.
8. Dr. Rohit Vekariya was felicitated during 81st Foundation Day of Vallabh Vidyanagar on March 3, 2026 for his remarkable contributions to Outstanding Research (Listed in World's Top 2% Scientist Category)

Students' Awards, Achievements and Recognitions (Co-Curricular & Extra-Curricular)

1. Afsha Shaikh and Fizabanu R. Chavda, Sem 2 student secured 1 position in Poster Making and Cartooning Competition.
2. Aniket Tharesha, Sem 4 student secured 1 position in Rangoli Competition.
3. Ankita Mahaliya Ph.D. Scholar secured first prize in poster presentation in Interdisciplinary, Research Scholar category in National Conference on Emerging Trends in Biological, Chemical, Computer and Interdisciplinary Sciences BCCIS-2026 organized by ISTAR, 19-20 Feb 2026.
4. Aparna Machhi and Miksu Maheswari secured 2nd rank for Poster Presentation in Current Advancement Sciences organized by ISTAR.
5. Aryan Patel and Krishnaben Barot of Department of Organic Chemistry participated and presented poster presentation, also secured 1st rank in Two Days National conference on "Emerging Trends in Biological, Chemical, Computer and Interdisciplinary Sciences" (BCCIS-2026), on 19 & 20 February, 2026, organised by ISTAR College, The CVM University.
6. Brijesh Kadam (M.Sc. REV) received Gold Medal from The Gujarat Institute of Civil Engineers and Architects (GICEA), Ahmedabad for securing highest CGPA amongst the students of M. Sc. (REV).
7. Brijesh Kadam (M.Sc. REV) received Shri Ram Builders Gold Medal from The Charutar Vidya Mandal (CVM) University, Vallabh Vidyanagar for securing highest CGPA amongst the students of M. Sc. (REV).
8. Deepali Jain and Toushy Bajaj (M. Sc. REV, Sem II) – First Prize poster presentation in Interdisciplinary (Valuation) category.
9. Devyani Parmar, Ph.D Scholar secured second prize in oral presentation in Two Days National Conference on Emerging Trends in Biological, Chemical, Computer and Interdisciplinary Sciences BCCIS-2026 organized by ISTAR, 19-20 Feb 2026.
10. Dhruv Mehta (Sem III, MSc EST, ISTAR) won 1st Prize in 'Poster Making Competition' in Ideation's Sphere at State Level Event "Biocalyx-2025" at St. Xavier's College, Ahmedabad on 26 July, 2025.
11. Dhruv Mehta (Sem IV, MSc EST, ISTAR) won 2nd Prize in 'Poster Presentation Competition' on "Plastics and Reproductive Health: A Crisis of Fertility and Development" in Biological Science (PG) Category at National Conference: Emerging Trends in Biological, Chemical, Computer and Interdisciplinary Sciences (BCCIS-2026) @ ISTAR on 20 February, 2026.
12. Dhruvitkumar Chhaganbhai Parmar secured 1st rank for Idea Ignite Competition in Ignite 2026 organized by Charusat – Changa.

13. Divyang Ka. Patel, Ph.D. Scholar, secured first prize in poster presentation in Computer Science, Research Scholar category in National Conference on Emerging Trends in Biological, Chemical, Computer and Interdisciplinary Sciences BCCIS-2026 organized by ISTAR, 19-20 Feb 2026.
14. Himalsinh Harikrishna Gohil secured 1st rank for Tech Toon competition in Hacklock-2026 organized by ISTAR.
15. Isha Patel of Department of Organic Chemistry participated and presented oral presentation, also secured third position at the 6th International Conference on Recent Advances in Fundamental and Applied Science (RAFAS-2025), held on 18 & 19 April 2025, organized by the School of Chemical Engineering and Physical Sciences, Lovely Professional University, Punjab, India.
16. Jay Patel secured 2nd position in Inter Class Badminton - Singles (Boys) and Jay Patel and Om Patel secured 1st position in Inter Class Badminton – Doubles (Boys) organized by ISTAR college.
17. Jaykumar Gami of Department of Organic Chemistry participated and presented oral presentation, also secured 2nd rank in Two Days National conference on "Emerging Trends in Biological, Chemical, Computer and Interdisciplinary Sciences" (BCCIS-2026), on 19 & 20 Feb, 2026, organized by ISTAR College, The CVM University.
18. M.Sc. (IT) students actively participated in the traditional folk dance Tera Taal of Rajasthan was performed at The CVM University during the cultural event Yuganter. The performance beautifully depicted devotion and rhythmic coordination, featuring thirteen manjiras tied to the body. The team secured the 3rd prize, marking a proud and memorable achievement on dated 6–9 November, 2026.
19. Maharshi Trivedi and Stutiben Joshi of Department of Organic Chemistry participated and presented poster presentation, also secured 2nd rank in Two Days National conference on "Emerging Trends in Biological, Chemical, Computer and Interdisciplinary Sciences" (BCCIS-2026), on 19 & 20 February, 2026, organized by ISTAR College, The CVM University.
20. Maharshi Trivedi and Stutiben Joshi of Department of Organic Chemistry participated in Scientific Quiz Competition, also secured 2nd rank in One Day National State Level Seminar on "SciNovate: Shaping Tomorrow With Science", on 27th Feb, 2026, organized by Shri Alpesh N. Patel Post Graduate Institute of Science & Research, Sardar Patel University.
21. Manas Jotva (C), Jitendra Rathod, Jaydip Vanra, Nirav Ravaliya and Himanshu Vaja (Polymer Chemistry Sem-2) represented Charutar Vidya Mandal (CVM) University team in Inter University West Zone Handball Tournament at University of Engineering and Management (UEM) Jaipur, Rajasthan on 7-11 January 2026.
22. Mohammad Arsh Vohra (M.Sc. REV, Sem IV) – Second Prize poster presentation in Interdisciplinary (Valuation) category.
23. Patel Hujaifa Mohmed Sharif and Mohammad Kaif Mohammad Anwar secured 1st rank for Web Warrior Competition in Ignite 2026 organized by Charusat – Changa.
24. Prakshil Goswami, Siddharth Vaghela, Shanaben Vahora and Sajiyabanu Malek secured 1st position in Poster Presentation Competition organized by ISTAR college on 4 August 2025 for celebration of NEP.
25. Priya Nileshkumar Patel (Ph.D. Scholar of Department of Biotechnology) secured 2nd Rank in Poster presentation award in National Conference BCCIS-2026,

organized by ISTAR, The CVM University and sponsored by GSBTM and GUJCOST held on 19 and 20 February 2026.

26. Saklain Mustak Saiyad (Ph.D. Scholar of Department of Biotechnology) secured 1st Rank in Quiz competition organized by Nehru Science Centre, Ministry of Culture, Govt. of India, Mumbai during National Science Day 2025.
27. Saklain Mustak Saiyad (Ph.D. Scholar of Department of Biotechnology) secured 1st Rank in Oral presentation award in National Conference BCCIS-2026, organized by ISTAR, The CVM University and sponsored by GSBTM and GUJCOST held on 19 and 20 February 2026.
28. Vaidehi Kalpeshbhai Patel secured 1st rank for Social Media Competition in Current Advancement Sciences organized by ISTAR.
29. Vaidehi Kalpeshbhai Patel secured 1st rank for Still Photography Competition in Hacklock-2026 organized by ISTAR.
30. Vishva A. Patel and Priya Lad, participated and secured 1st Position on Category-4 Computer Science in Poster Presentation competition on "Current Advancement in Sciences" as a celebration of 5th Anniversary of NEP at ISTAR on dated 2 August, 2025.

Expert / Invited Talk (Delivered by the Faculty of ISTAR)

1. Dr. Ashish Joshi was invited as an expert resource person for a One Day State Level Student Seminar under the Government initiative CAWACH on "Cyber Security" held at Government Arts College, Jhagadia on 16 February, 2026.
2. Dr. Ashish Joshi was invited as an expert resource person for a workshop on "From Concept to Development: Web Application with PHP" conducted at SEMCOM, Vallabh Vidyanagar, on 18 December, 2025.
3. Dr. Ashish Joshi was invited as an expert resource person for NET examination preparation of postgraduate students on the topic "Fundamentals of Computer" at Shri D.N. Institute of P.G. Studies in Commerce on 30 August, 2025.
4. Dr. Himanshu Kapse delivered a popular talk on "Imaging Sensors at a Glance for Sustainability" on the occasion of Science Day Celebration at ISTAR on 27 Feb 2026.
5. Dr. Jigar V. Patel, Dr. Rohit H. Dave, & Dr. Mandar Karve of Department of Industrial Chemistry delivered a Carrier Counselling Lecture, at V.P. & R.P.T.P Science College, at Anand.
6. Dr. Mandar Karve department of industrial chemistry serve as a judge in intercollegiate science exhibition "Jigyasa Junction 2.0- Fueling Curiosity, Creating Innovation" at V.P. & R.P.T.P Science College, on 8 January 2026.
7. Dr. Niky Jain Invited as a Jury Member for SSIP Project Evaluation held on 10 February 2026 for Bhartiya Vidya Bhavan's Shri Ishvarlal L. P. Arts, Science & J. Shah Commerce College, Dakor.
8. Dr. Niky Jain Invited as an Expert Speaker for the session on "Google Tools for Students in Education", held on 10th February 2026 for Bhartiya Vidya Bhavan's Shri Ishvarlal L. P. Arts, Science & J. Shah Commerce College, Dakor.
9. Dr. Niky Jain Invited as an Expert Speaker for the session on "Google Tools for Students in Education", held on 23 January 2026 for D. M. Patel Arts & S. S. Patel Commerce College, Ode.

10. Dr. Niky Jain Invited as an Expert Speaker for the session on “How to Make Your Internship Count: From Day One to Job Offer”, held on 6 February 2026 for Arth Consultancy Service, Vadodara.
11. Dr. Nisha Daxini, Head Department of Biotechnology, Faculty of Biotechnology delivered talk in the Workshop and lecture on “Carbon Footprint Reduction” at ASH Department, MBIT College, The CVM University, New Vallabh Vidyanagar on 27th February 2026.
12. Dr. Rohit H. Dave of Department of Industrial Chemistry delivered an expert lecture on “How To Get On” Organized by Department of Management & Commerce, Gyanmanjari Innovative University, at Bhavnagar on 24 January 2026
13. Dr. ShilpaGupte delivered a guest lecture on “Vaccines” at V.P. & R.P.T.P. Science College, V.V. Nagar on 30-31 January 2026.
14. Dr. Suchita Patel invited as a Scrutiny Committee member at Bhavan's Shri I.L. Pandya Arts, Science, and Smt. J. M. Shah Commerce College, for contributing to the evaluation and assessment of students’ startup proposals on dated 10 February 2025.
15. Dr. Suchita Patel invited as a Scrutiny Committee member at Bhavan's Shri I.L. Pandya Arts, Science, and Smt. J. M. Shah Commerce College, for contributing to the evaluation and assessment of students’ startup proposals on dated 10 February 2025.
16. Dr. Suchita Patel served as an Expert Speaker at Bhavan's Shri I. L. Pandya Arts, Science, and Smt. J. M. Shah Commerce College, on 10 February 2026, on title an insightful session on the applications of Artificial Intelligence (AI), Machine Learning (ML), and Deep Learning (DL), emphasizing their practical significance and future prospects.
17. Dr. Suchita Patel served as an Expert Speaker at D. M. Patel & S. S. Patel College, Ode Education Society, on 23 January 2026, on title an insightful session on the applications of Artificial Intelligence (AI), Machine Learning (ML), and Deep Learning (DL), emphasizing their practical significance and future prospects.
18. Er. Rupesh T. Shah delivered an invited talk on “Career in Valuation” at Sarvajanik College of Engineering and Technology (SCET), Surat on 17 January 2026.
19. Snehal Ingale delivered a guest lecture on “Downstream Processing” at V.P. & R.P.T.P. Science College, V.V. Nagar on 6 & 12 February 2026.

Seminars /Conferences (Attended by Faculty)

1. Dr. H.N. Kapse attended Regional Meet of Institution Innovation Council, Gandhinagar, November 25, 2025.
2. Dr. H.N. Kapse attended Webinar on “Education with AI Tools” organized by Knowledge Consortium of Gujarat, Education Department, Govt. of Gujarat dated 22-05-2025.
3. Dr. H.N. Kapse attended Webinar on “Embracing Continuous Learning: The Key to Personal Growth” organized by Knowledge Consortium of Gujarat, Education Department, Govt. of Gujarat dated 10-06-2025.
4. Dr. H.N. Kapse attended Webinar on “Practical Techniques for Enhancing Psychological Well-Being” organized by Knowledge Consortium of Gujarat, Education Department, Govt. of Gujarat dated 26-06-2025.

5. Dr. H.N. Kapse attended Webinar on “Practising Theories of Psychology in Classroom” organized by Knowledge Consortium of Gujarat, Education Department, Govt. of Gujarat dated 25-04-2025.
6. Dr. H.N. Kapse attended Webinar on “Soft Skills & Holistic Development” organized by Knowledge Consortium of Gujarat, Education Department, Govt. of Gujarat dated 17-10-2025.
7. Dr. H.N. Kapse attended Webinar on “Teaching Tools for Next Generation students” organized by Knowledge Consortium of Gujarat, Education Department, Govt. of Gujarat dated 04-12-2025.
8. Dr. H.N. Kapse attended Webinar on “Today’s Exams: The Role of Students, Teachers, Parents and Society” organized by Knowledge Consortium of Gujarat, Education Department, Govt. of Gujarat dated 21-03-2025.
9. Dr. Nisha Daxini, Head Department of Biotechnology, Faculty of Biotechnology has successfully participated and completed the Five-Day Faculty Development Program on “Data-Driven Therapeutics: NGS Analysis, Machine Learning and Structure-Based Drug Design” organized by Department of Bioinformatics, Faculty of Engineering and Technology, Marwadi University, Rajkot, Gujarat held on 29 December 2025 to 2 January 2026.
10. Er. Rupesh T. Shah attended a three days National Valuers Congress organized by Institution of Valuers, India at Raipur (Chhattisgarh) during 18, 19, 20 December 2025.
11. Er. Rupesh T. Shah attended an online session on the theme “Shared Vision for a better World: spotlight on SDG 17 – partnerships for the goals” organized by Institution of Valuers (India) on World Standards Day on 14 October 2025.

Oral / Poster Presentation at State / National / International Seminar/Conference

1. Akash Ramolia of Department of Organic Chemistry participated and presented Oral presentation in Two Days National conference on “Emerging Trends in Biological, Chemical, Computer and Interdisciplinary Sciences” (BCCIS-2026), on 19th& 20th Feb, 2026, organised by ISTAR College, The CVM University.
2. Alpesh Gangdas Bhadarka and Dr. Rohit H. of Department of Industrial Chemistry presented Paper an titled on “Cyclodextrin Inclusion Complex to Enhance Solubility of Poorly Water - Soluble Miconazole Nitrate Drug” at Two Days National Conference on “Emerging Trends in Biological, Chemical, Computer and Interdisciplinary Sciences” (BCCIS - 2026), being organized jointly by Institute of Science & Technology for Advanced Studies & Research (ISTAR), The Charutar Vidya Mandal (CVM) University, The Gujarat State Biotechnology Mission (GSBTM) and The Gujarat Council on Science and Technology (GUJCOST) scheduled to be held on 19th and 20th February, 2026 at ISTAR.
3. Ankita Mahaliya and H.N. Kapse, Department of Instrumentation & Control, presented poster on “Development of IoT-based Methane Sensing for Smart Agriculture, at National Conference on Emerging Trends in Biological, Chemical, Computer and Interdisciplinary Sciences BCCIS-2026, organized by ISTAR, 19-20th Feb 2026, sponsored by GSBTM & GUJCOST.
4. Arvindsinh Bhikhusinh Sisodiya and Dr. Rohit H. of Department of Industrial Chemistry presented Paper an titled on “Stability study of Metformin Hydrochloride tablet in crush condition stored in glass and plastic container by

using the Reverse Phase High Performance Liquid Chromatography" at Two Days National Conference on "Emerging Trends in Biological, Chemical, Computer and Interdisciplinary Sciences" (BCCIS - 2026), being organized jointly by Institute of Science & Technology for Advanced Studies & Research (ISTAR), The Charutar Vidya Mandal (CVM) University, The Gujarat State Biotechnology Mission (GSBTM) and The Gujarat Council on Science and Technology (GUJCOST) scheduled to be held on 19th and 20th February, 2026 at ISTAR.

5. Bansari Manvar, Assistant Professor in the Department of Computer Science, participated in an oral presentation at the BCCIS-2026 National Conference organized by ISTAR College, presenting her research titled "Bridging the Linguistic Divide: Advancements, Ethics, and Future Directions in Low-Resource NLP and Indigenous Language Technologies."
6. Chandan M., Kirti Tarachandani and Vatsal Vaghasiya of M. Sc. (REV) Sem. III and Toushy Bajaj of M. Sc. (REV) Sem I presented posters on the occasion of Five Years celebration of NEP organized by ISTAR on 2nd August 2025.
7. Devyani Parmar, Ph.D Scholar secured second prize in oral presentation "Synthesis of bacterial exopolysaccharide coated silver nanoparticles and their applications" in Two Days National Conference on Emerging Trends in Biological, Chemical, Computer and Interdisciplinary Sciences BCCIS-2026 organized by ISTAR, 19-20th Feb 2026, sponsored by GSBTM & GUJCOST.
8. Dhavalkumar Upendrabhai Patel, Dr. Suchita Patel has published a conference paper titled "Intelligent Supervised Machine Learning Classifiers for Assessment of Performance of Heart Disease Disorder Diagnosis" in the proceedings of the Fourth International Conference on Computing and Communication Networks, The paper is included in the Lecture Notes in Networks and Systems (LNNS), Volume 1294 series by Springer Nature.
9. Dhruv Mehta (Sem IV, MSc EST, ISTAR) presented and participated in "Poster Presentation Competition" on "Disrupting the Trojan Horse Effect Using Solar Magnetic Biochar" in 17th Open House at SPRERI Anand on 25th February, 2026.
10. Dhruv Mehta of M.Sc. (EST) (Sem-IV) presented a Scientific Poster on 'Plastic to Fuel Conversion: A Comparative Review of Indian and Advanced International Methods' in Science Manthan-2025 @ CHARUSAT.
11. Divyang Ka. Patel and H.N. Kapse, Department of Instrumentation & Control, presented poster on "IoT Enabled Soil Cu2+ Screen Printed Sensor at National Conference on Emerging Trends in Biological, Chemical, Computer and Interdisciplinary Sciences BCCIS-2026, organized by ISTAR, 19-20th Feb 2026.
12. Dr. Jeimin R. Joshi of Department of Industrial Chemistry presented Paper an titled on "Chemical modification of waste cooking oil for the bio lubricant production through epoxidation process" at Two Days National Conference on "Emerging Trends in Biological, Chemical, Computer and Interdisciplinary Sciences" (BCCIS - 2026), being organized jointly by Institute of Science & Technology for Advanced Studies & Research (ISTAR), The Charutar Vidya Mandal (CVM) University, The Gujarat State Biotechnology Mission (GSBTM) and The Gujarat Council on Science and Technology (GUJCOST) scheduled to be held on 19th and 20th February, 2026 at ISTAR.
13. Dr. Khodidas K. Bhanderi of Department of Industrial Chemistry presented Paper an titled on "Chemical Recycling Of Plastic Waste –An Alternative to Derived Value Added Products" at Two Days National Conference on "Emerging Trends in Biological, Chemical, Computer and Interdisciplinary Sciences" (BCCIS - 2026),

being organized jointly by Institute of Science & Technology for Advanced Studies & Research (ISTAR), The Charutar Vidya Mandal (CVM) University, The Gujarat State Biotechnology Mission (GSBTM) and The Gujarat Council on Science and Technology (GUJCOST) scheduled to be held on 19th and 20th February, 2026 at ISTAR.

14. Dr. Mandar Karve (Department of Industrial Chemistry) presented a titled on "Preparactiuon & Characterisation of Biodiesel (Fatty acid methyal ester) From Waste Ground nut Oil" in the One-Day National Conference titled "Recent Progresses in Interdisciplinary Studies," (NCRIIS-2026) organized at Government Science College, Vadnagar, Mahesana, Gujarat, on 23rd January 2026.
15. Dr. Suchita Patel presented Oral paper titled "A Comprehensive study on Linguistic Transformation System through AI- Tools at the International Conference (hybrid) on Interdisciplinary Approaches to English: Language, Culture, Technology and Siciety (IAE-LCTS) Oraganized by CHARUSAT University on 7th February, 2026.
16. Dr. Vidhi H. Patel of Department of Industrial Chemistry presented Paper an titled on "Development of Synthesized Nanostructured Dendrimers as Novel Carriers for Improving the Solubility of Domperidone" at Two Days National Conference on "Emerging Trends in Biological, Chemical, Computer and Interdisciplinary Sciences" (BCCIS - 2026), being organized jointly by Institute of Science & Technology for Advanced Studies & Research (ISTAR), The Charutar Vidya Mandal (CVM) University, The Gujarat State Biotechnology Mission (GSBTM) and The Gujarat Council on Science and Technology (GUJCOST) scheduled to be held on 19th and 20th February, 2026 at ISTAR.
17. Isha Patel of Department of Organic Chemistry delivered an oral presentation as a Distinguished Speaker at the 4th International Conference on Chemistry and Chemical Engineering, held on 21st& 22nd July 2025, Paris, France, organized by the United Research Forum.
18. Isha Patel of Department of Organic Chemistry participated and presented Poster presentation in Two Days National conference on "Emerging Trends in Biological, Chemical, Computer and Interdisciplinary Sciences" (BCCIS-2026), on 19th & 20th Feb, 2026, organised by ISTAR College, The CVM University.
19. Isha Patel of Department of Organic Chemistry participated and presented Oral Presentation in Two Days International Conference on "International Conference on Materials for Emerging Technologies" (ICMET-2025), from 22nd to 23rd August, 2025 organised by Lovely Professional University, Punjab.
20. Isha Patel of Department of Organic Chemistry presented and participated in poster presentation competition on the occasion of 5th anniversary of NEP on "Current Advancement in Sciences" on 2nd August 2025 at ISTAR College, The CVM University.
21. Jaykumar Gami of Department of Organic Chemistry presented and participated in poster presentation competition on the occasion of 5th anniversary of NEP on "Current Advancement in Sciences" on 2nd August 2025 at ISTAR College, The CVM University.
22. Kushak Pankajkumar Shah and Dr. Rohit H. of Department of Industrial Chemistry presented Paper an titled on "An Extensive Comparison of Analytical Data Using Various Stability Condition of Non-Steroidal Anti-Inflammatory Drug (NSAID) for Meloxicam Injection of Various Manufacturers of Branded (Innovator) Drug Product and Generic Drug Product" at Two Days National Conference on "Emerging Trends in Biological, Chemical, Computer and Interdisciplinary

Sciences" (BCCIS - 2026), being organized jointly by Institute of Science & Technology for Advanced Studies & Research (ISTAR), The Charutar Vidya Mandal (CVM) University, The Gujarat State Biotechnology Mission (GSBTM) and The Gujarat Council on Science and Technology (GUJCOST) scheduled to be held on 19th and 20th February, 2026 at ISTAR.

23. Meet Vekariya of Department of Organic Chemistry participated and presented Poster presentation in Two Days National conference on "Emerging Trends in Biological, Chemical, Computer and Interdisciplinary Sciences" (BCCIS-2026), on 19th& 20th Feb, 2026, organised by ISTAR College, The CVM University.
24. Mudraben Bhimani and Maitri Patel of Department of Organic Chemistry participated and presented Poster presentation in Two Days National conference on "Emerging Trends in Biological, Chemical, Computer and Interdisciplinary Sciences" (BCCIS-2026), on 19th& 20th Feb, 2026, organised by ISTAR College, The CVM University.
25. Prachi Patel, Ph.D. Scholar @EST Department Participated & Presented Poster titled "Briquettes Production from Industrial Food Waste in Context with Circular Economy Concept" in Poster Competition on the theme "Renewable Energy Technologies for Energy Security, Sustainability and Climate Resilience" as part of the 17th Open House Event, on 25th February 2025 at the SPRERI campus.
26. Prince H. Patel and Dr. Mandar Karve from the Department of Industrial Chemistry secured First Position in the poster presentation competition (Chemical Sciences category) for their work titled "Synthesis of Bio-based plasticizer from Rice bran Acid oil and Its plasticizing properties in Poly (vinyl chloride) Films" during the event organized by ISTAR, The CVM University, on the occasion of the 5th Anniversary of NEP, themed "Current Advancements in Sciences," held on 2nd August 2025.
27. Prince H. Patel and Dr. Mandar Karve of Department of Industrial Chemistry presented Paper an titled on "Sustainable Bio-Based Plastisol: Formulation and Application Performance in PVC Systems" at Two Days National Conference on "Emerging Trends in Biological, Chemical, Computer and Interdisciplinary Sciences" (BCCIS - 2026), being organized jointly by Institute of Science & Technology for Advanced Studies & Research (ISTAR), The Charutar Vidya Mandal (CVM) University, The Gujarat State Biotechnology Mission (GSBTM) and The Gujarat Council on Science and Technology (GUJCOST) scheduled to be held on 19th and 20th February, 2026 at ISTAR.
28. Prince H. Patel and Dr. Mandar Karve of Department of Industrial Chemistry Secure 1st position in paper presentation titled "Sustainable Bio-Based Plastisol: Formulation and Application Performance in PVC Systems" at Two-Day National Seminar on Next-Gen Chemical Sciences: Trends and Transformation for a Sustainable Future Organized by V.P. & R.P.T.P. Science college (Affiliated to Sardar Patel University), VallabhVidyanagar held on 29-30th January 2026.
29. Prince H. Patel and Dr. Mandar Karve of Department of Industrial Chemistry presented a research paper titled "Synthesis and performance Study of Bio-based plasticizers obtained from Rice bran Acid oil" at 16th International Conference on "Advancements in Polymeric Materials" (APM-2025), which was take place in Lucknow from 8–10th March 2025.
30. Pritiben Sindha and Nilaxiben Sindha of Department of Organic Chemistry participated and presented Poster presentation in Two Days National conference on "Emerging Trends in Biological, Chemical, Computer and Interdisciplinary

Sciences" (BCCIS-2026), on 19th& 20th Feb, 2026, organised by ISTAR College, The CVM University.

31. Priyamvada Singh of Department of Organic Chemistry participated and presented Oral presentation in Two Days National conference on "Emerging Trends in Biological, Chemical, Computer and Interdisciplinary Sciences" (BCCIS-2026), on 19th & 20th Feb, 2026, organised by ISTAR College, The CVM University.
32. Priyamvada Singh of Department of Organic Chemistry participated and presented Oral Presentation in Two Days International Conference on "International Conference on Materials for Emerging Technologies" (ICMET-2025), from 22nd to 23rd August, 2025 organised by Lovely Professional University, Punjab.
33. Priyamvada Singh of Department of Organic Chemistry presented and participated in poster presentation competition on the occasion of 5th anniversary of NEP on "Current Advancement in Sciences" on 2nd August 2025 at ISTAR College, The CVM University.
34. Shiv Patel of Department of Organic Chemistry participated and presented Poster presentation in Two Days National conference on "Emerging Trends in Biological, Chemical, Computer and Interdisciplinary Sciences" (BCCIS-2026), on 19th & 20th Feb, 2026, organised by ISTAR College, The CVM University.
35. Shiv Patel of Department of Organic Chemistry presented and participated in poster presentation competition on the occasion of 5th anniversary of NEP on "Current Advancement in Sciences" on 2nd August 2025 at ISTAR College, The CVM University.
36. Snehal Ingale, Microbiology department faculty presented on "Bioethanol Production from Lignocellulosic weed (Parthenium hysterophorus) via an Optimized Saccharification Process using UV-Mutant Saccharomyces cerevisiae" in Two Days National Conference on Emerging Trends in Biological, Chemical, Computer and Interdisciplinary Sciences BCCIS-2026 organized by ISTAR, 19-20th Feb 2026.
37. Students of M.Sc. (REV) presented posters in a Two Days National Conference (BCCIS – 2026) organized by ISTAR during 19th and 20th February 2026.

Expert Talks

1. Expert Alumni Expert Talk on "Prompt Engineering in Practice: Real-World Use Cases and Industry Insights" was delivered by Mr. Yash Panchal, Software Engineer at Infilon Technologies, Ahmedabad, on 31st January, 2026.
2. Expert session on "AI Research Trends" was conducted by Prof. (Dr.) Sailesh Iyer on 20th February, 2026, as part of the National Conference BCCIS-2026 under the Computer Science Cluster. The talk highlighted emerging advancements in Artificial Intelligence, current research directions, and innovative applications shaping the future of intelligent systems and data-driven technologies.
3. Expert session on "Cloud 3.0: The Intelligent Nervous System of Modern Business" was conducted by Mr. Ketan B. Rathod on 19th February, 2026, as part of the National Conference BCCIS-2026 under the Computer Science Cluster. The talk highlighted the evolution of cloud technologies and their role in building intelligent, scalable, and data-driven business ecosystems, enabling digital transformation and enhanced organizational agility.
4. Expert session on "Remote Sensing of Satellite Imagery Using Machine Learning Algorithms" was conducted by Dr. Ninad More on 20th February, 2026, as part of

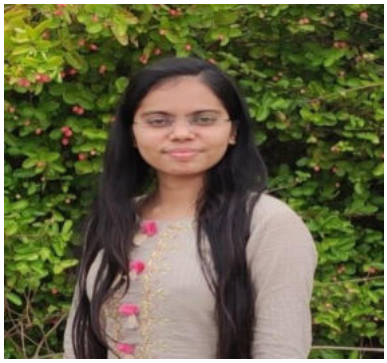
the National Conference BCCIS-2026 under the Computer Science Cluster. The talk emphasized the application of machine learning techniques in analyzing satellite imagery for land-use classification, environmental monitoring, and geospatial intelligence, enabling accurate and data-driven decision-making.

5. Expert Session on "Role of Artificial Intelligence in Automating Business Processes using Prompt Engineering" was conducted on 10th February, 2026. The talk highlighted how AI-driven solutions and effective prompt engineering techniques can streamline workflows, enhance decision-making, and improve organizational efficiency.
6. Expert talk on "AWS – Cloud Computing" was delivered by Mr. Shailendra Soni from Tops Technologies Pvt. Ltd. on 23rd July, 2025. The session provided valuable insights into cloud fundamentals, AWS services, deployment models, and emerging career opportunities in cloud computing.
7. Informative SSIP lecture was delivered by Dr. Snehal Ingle, Coordinator of SSIP–ISTAR, on 21st July, 2025. The session highlighted innovation, startup support, funding opportunities, and guidance available to students under the SSIP initiative.
8. Orientation Program for MCA and M.Sc. IT students was successfully conducted on 17th July, 2025, to welcome the new batch and familiarize them with the academic structure, institutional policies, and future opportunities. The session aimed to guide students toward a smooth transition into their postgraduate journey.
9. Orientation Session on Empretec Hieera Program – A Philosophical Approach for Sustainable Entrepreneurship, organized by IIC-CVMU & ISTAR, December 12, 2025.


CVM
UNIVERSITY

DEPARTMENT OF INDUSTRIAL CHEMISTRY

Name	Alumni Speak
Batch	2017 - 2019
Description	Dr. Princyben Rakeshbhai Patel Executive, ADL, Ami Life Science Pvt. Ltd.



Dr. Princyben Rakeshbhai Patel
Executive, ADL, Ami Life Science Pvt. Ltd.

My name is Dr. Princyben Rakeshbhai Patel, and I graduated from the Industrial Chemistry Department in 2019. I am overwhelmed with the opportunity & I got to share my thoughts and feelings for this wonderful ISTAR College & Department of Industrial Chemistry which is Pioneer in Gujarat state to provide guaranteed Job Placement.

My time in the program was instrumental in shaping my career and providing me with the foundational knowledge and skills I use every day.

The curriculum was rigorous and challenging, but it provided a comprehensive understanding of the principles of chemistry and their applications in various industries. I particularly appreciated the hands-on laboratory experience, which allowed me to develop practical skills and apply what I learned in the classroom.

I am really blessed to have such teacher's and mentor's in my life from which I learned a lot and implemented to make my future brighter. The faculty members were knowledgeable and supportive, always willing to go the extra mile to help students succeed. They provided valuable guidance and mentorship, which was essential for my academic and professional growth.

Since graduating, I have pursued career in Ami Life Science Pvt. Ltd., further I completed my Ph.D. in the year 2025. I am currently working as an Executive, ADL, Ami Life Science Pvt. Ltd. Vadodara. The skills and knowledge I gained during my time in the Industrial Chemistry Department have been invaluable in my career. I am confident that my education has prepared me for the challenges and opportunities that lie ahead.

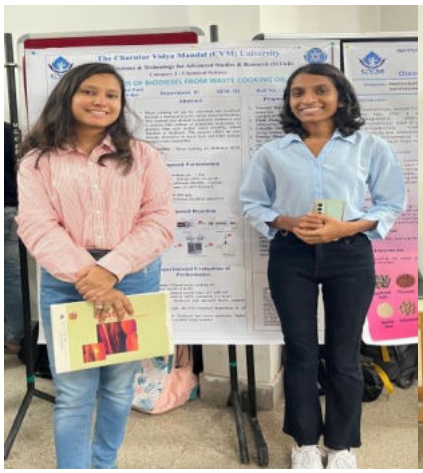
I am grateful for the education and experiences I gained at this department, and I highly recommend the Industrial Chemistry Department to anyone interested in pursuing a career in Chemical Industries.I am fortunate enough to complete my post-graduation in INDUSTRIAL CHEMISTRY from this College. The thing I admire the most is the support from Faculties and Management at every step.Once again I am really grateful to ISTAR College and Department of Industrial Chemistry because whatever I am today is just because of it.

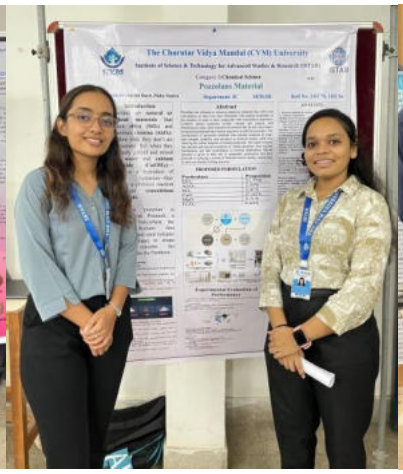
Curricular Activities

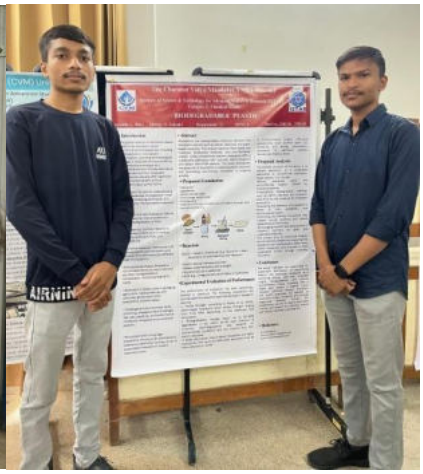
Title	**Expert Talk**
Event Name	Expert talk on Building Employability: Key Professional Skills
Date	2nd July 2025
Organized By	Industrial Chemistry Department
Participants	59 Students of Industrial Chemistry

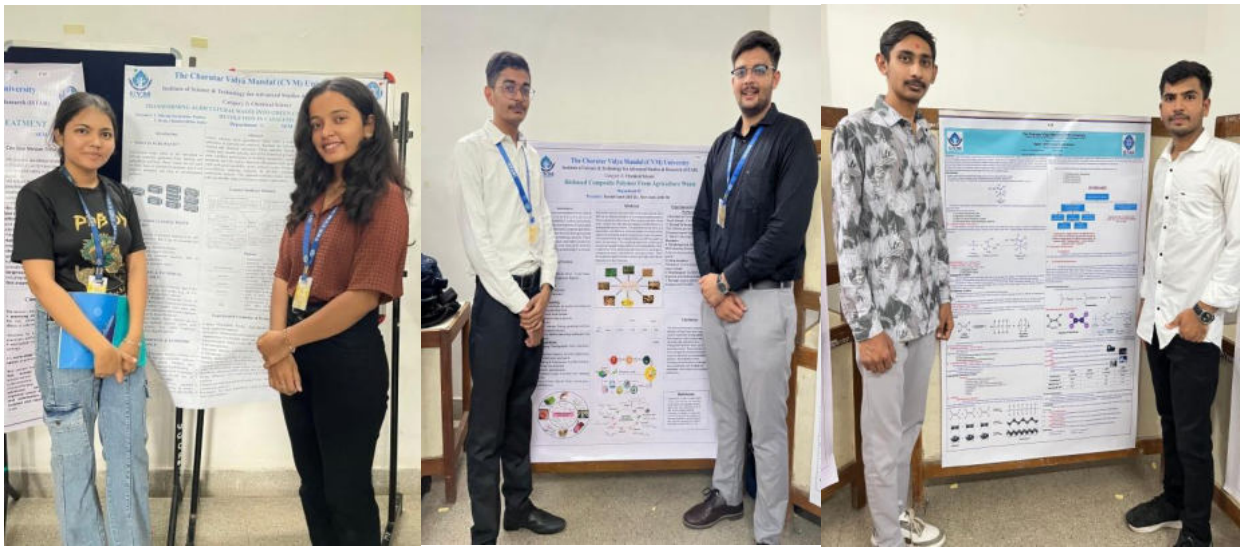
Title	**Expert Talk**
Event Name	Introduction to Pharmaceutical Industry
Date	11th July 2025
Organized By	Industrial Chemistry Department
Participants	70 Students of Industrial Chemistry

Title	**Poster Presentation**
Event Name	**Poster Presentation Competition on "Current Advancement in Sciences"**
Date	02nd August 2025
Organized By	ISTAR College
Participants	22 Students of Industrial Chemistry Department









Title	**Expert Talk**
Event Name	Expert talk on ATTITUDE- Student's Perspective in life
Date	12th August 2025
Organized By	Industrial Chemistry Department
Participants	60 Students of Industrial Chemistry



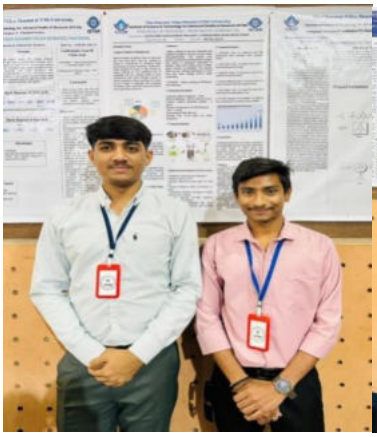
Title	**Industrial Visit**
Event Name	**Meghmani Dyes & Intermediates Ltd. Ahmedabad, & near about places visited**
Date	5th September 2025
Organized By	Industrial Chemistry Department, ISTAR
Participants	60 Students of Semester- 1 & 2 Faculties

Title	**Industrial Visit**
Event Name	**Farmson Basic drugs private Ltd. Nandesari, & near about places visited**
Date	9th September 2025
Organized By	Industrial Chemistry Department, ISTAR
Participants	59 Students of Semester- 3 & 2 Faculties

Title	**Expert Talk**
Event Name	Expert talk on Pharmaceutical Industry Orientation - Manufacturing and R&D
Date	06th December 2025
Organized By	Industrial Chemistry Department
Participants	69 Students of Industrial Chemistry

Title	**National Seminar**
Event Name	Next-Gen Chemical Science: Trends and Transformation for a Sustainable Future (NGCSTTSF)
Date	29-30 January 2026
Organized By	Industrial Chemistry Department, V.P & R.P.T.P Science College
Participants	34 Students of department of Industrial Chemistry Department, ISTAR




Title	**Industrial Visit**
Event Name	**Lupin limited dabhasa & near about places visited**
Date	4th February 2026
Organized By	Industrial Chemistry Department, ISTAR
Participants	58 Students of Semester- 3 & 2 Faculties


Extra-Curricular Activities

Title	**Saraswati Pooja & Fresher's Welcome Function**
Event Name	**New year, New beginning, Eternal Blessings**
Date	26th June 2025
Organized By	Department of Industrial Chemistry
Participants	130 Students of Industrial Chemistry





Title	**Guru Purnima**
Event Name	**Guru Purnima Celebration**
Date	10th July 2025
Organized By	Department of Industrial Chemistry
Participants	130 Students of Industrial Chemistry




Title	**Festival Celebration**
Event Name	**Krishna Janmashtami**
Date	13th August 2024
Organized By	Department of Industrial Chemistry
Participants	131 Students of Semester 1 & 3

Title	**Festival Celebration**
Event Name	**Ganpati Mahotsav**
Date	27th to 29th August 2025
Organized By	Department of Industrial Chemistry
Participants	131 Students of Semester 1 & 3





Title	**Teacher's Day**
Event Name	**Teacher's Day Celebration**
Date	5th September 2025
Organized By	Department of Industrial Chemistry
Participants	70 Students of Semester 3

Title	**Navratri Celebration**
Event Name	**Shakti puja and Garba Mahotsav**
Date	23rd September 2025
Organized By	Department of Industrial Chemistry
Participants	131 Students of Semester 1 & 3

Title	**Gyanotsav 4.0**
Event Name	**Gyanotsav 4.0 “Know with us, Grow with us”**
Date	4th - 8thFebruary 2026
Organized By	The Charutar Vidya Mandal University
Participants	29 Students of Semester-2 and semester - 4 in working model, game zone and food stall

Title	**Farewell Function For Batch 2024-26**
Event Name	**Farewell Function of Final Year Student at Raj Party Plot**
Date	17th February 2026
Organized By	Department of Industrial Chemistry
Participants	Sem-2 Students of Industrial Chemistry Department


DEPARTMENT OF INDUSTRIAL CHEMISTRY
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Placement Details

Sr. No.	Name of the Company	Post Offered	No. of Students
1	Lupin Ltd., Ankleshwar	Production Officer	11
		QC Officer	04
2	Zydus Lifesciences Ltd., Dabhasa	Production Officer	06
		QC Officer	05
3	GSP Crop Science Ltd.	Production Officer	08
4	Kansai Nerolac Paints Ltd., Saykha, Bharuch	Production Officer	05
5	PCBL Chemical Ltd., Mundara	QA Officer	04
6	Unison Pharmaceutical Pvt. Ltd., Ahemdabad	QC Officer	11
7	Intas Pharmaceuticals Ltd., Valia, Baruch	Production Officer	08
8	Lupin Solution Ltd., Dabhasa	Production Officer	01
Total			**63**

DEPARTMENT OF ORGANIC CHEMISTRY

Name	**Alumni Speak**
Batch	2023-2025
Description	Ms. Aarushi Emanuel Macwan Research Chemist in R & D, Synzeal Research Pvt. Ltd., Ahmedabad.

Ms. Aarushi Emanuel Macwan, Research Chemist in R & D, Synzeal Research Pvt. Ltd., Ahmedabad. It is truly a privilege to share my opinion about the Organic Chemistry department, ISTAR, The CVM University.Over the past two years, this department has not only strengthened my academic foundation but has also helped us grow into confident and skilled chemistry professionals. The structured curriculum, combined with practical exposure, has given us a deep understanding of fundamental and advanced concepts in organic chemistry. I would like to sincerely appreciate our faculty members for their dedication and commitment. The way our professors explain complex reaction mechanisms, stereochemistry, spectroscopy and synthetic strategies makes even the most challenging topics clear, logical and engaging. Their ability to connect theoretical knowledge with real-world applications has greatly enhanced our learning experience.The laboratory training provided by the department deserves special recognition. The hands-on experience with instruments, careful guidance during experiments and emphasis on safety protocols has significantly improved our technical skills and research aptitude. The encouragement to think critically, analyse results and troubleshoot errors has prepared us for both academic research and industrial roles.The department also maintains a highly supportive and motivating environment. Faculty members are approachable and always willing to clarify doubts, provide mentorship and guide us in seminars. The guidance provided for competitive exams, higher studies, research opportunities and placements in industry has been extremely valuable. I got the placement in Synzeal Research Pvt. Ltd., Ahmedabad before completion of my masters. Career counselling sessions and guest lectures by experts further broaden our perspective about future opportunities.In addition, the department promotes teamwork, scientific discussions, and presentation skills through seminars and academic activities. These experiences have helped us develop communication skills, leadership qualities and professional confidence.With continued growth, innovation, and the integration of new research developments and technologies, I am confident that the department will achieve even greater heights in the future. I am grateful to be a part of such a dynamic and inspiring academic community.

Curricular Activities

Title	**Alumni Talk**
Event Name	Career Guidance cum Expert Talk on Flow of Pharmaceutical Company
Date	30th December 2025
Organized By	OC Department
No. of Participants	29 Students

Title	**Expert Talk**
Event Name	Expert Talk on “Chemistry Essentials for Competitive Exams”
Date	26th September 2025
Organized By	OC Department
No. of Participants	43 Students

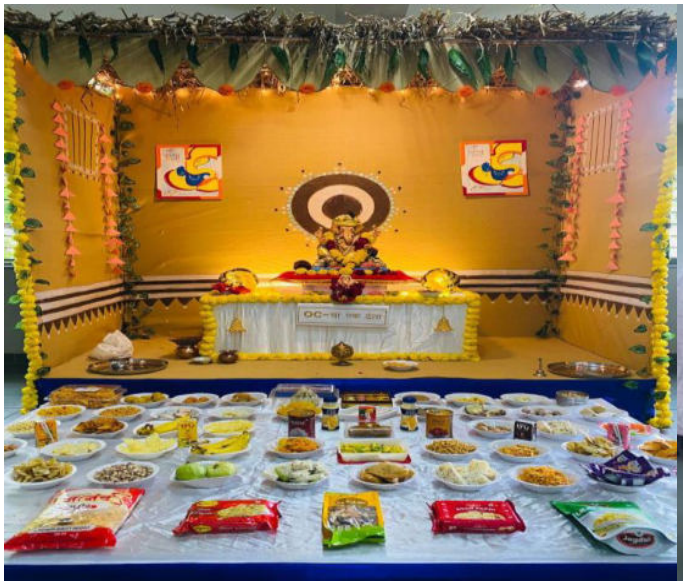

Title	**Satyanarayan Katha / Induction Program**
Date	18th July 2025
Organized By	OC Department
No. of Participants	All Students of Organic Chemistry Department

Title	**Guru Purnima Celebration**
Date	10th July 2025
Organized By	OC Department
No. of Participants	All Students of Organic Chemistry Department

Title	**Industrial Visit**
Event Name	AalidhraPharmachemPvt. Ltd., 163-164, GIDC Rd, Nandesari, Vadodara, Gujarat 391340, Amul Chocolate Unit--Food Complex,Mogar, Gujarat 388340
Date	14th August 2025
Organized By	OC Department
No. of Participants	45 Students


Extra-Curricular Activities

TITLE	**Ganesh Mahotshav Celebration**
Date	27th to 29thAugust 2025
Organized By	OC Department
No. of Participants	All Students of Organic Chemistry Department




Placement Details

Sr. No	Name of company	Post offered	No. of Students
1	SynZeal Research Pvt Ltd	Chemist - R & D	04
2	Alentris Research Pvt. Ltd	Chemist - R & D	05
		Chemist - ADL	01
3	Astral Ltd	Chemist - R & D	02
4	o2h Discovery Pvt. Ltd.	Chemist - R & D	04
5	Torrent Pharmaceuticals Ltd	Chemist - QC	04
6	Alembic Pharmaceuticals Ltd	Chemist - QC	05
7	Nia Innovation LLP	Chemist - R & D	03
		Chemist - ADL	01
8	Atul Ltd.	Chemist - R & D	01
9	Infinium Pharmachem Limited	Chemist - R & D	02
10	Aalidhra Pharmachem Pvt. Ltd.	Research Associate - R & D	02
		Research Associate - ADL	01
		Research Associate - QA	03
11.	Reliance Industries	Field Executive Trainee	02

DEPARTMENT OF SURFACE COATING TECHNOLOGY

Name	Alumni Speak
Batch	2023-2025
Description	Mr. Pranav Ashar CEO, Kalpataru Coatings, Rajkot

Mr. Pranav Ashar
CEO, Kalpataru Coatings, Rajkot

It gives me great pleasure and pride to stand before you today as an alumnus of the Surface Coating Technology Department at ISTAR. Returning to this institution brings back countless memories of learning, experimentation, and personal growth that laid the foundation of my professional journey.My time at ISTAR was truly transformative. The Surface Coating Technology Department did not just provide academic education; it created an environment where students were encouraged to develop practical skills, industry understanding, and entrepreneurial thinking. Today, as a self-employed professional and CEO of Kalpataru Coatings, I can confidently say that the seeds of my entrepreneurial journey were planted right here.One of the most significant strengths of this department is the opportunity it provides to acquire hands-on skills essential for the coatings industry. The well-equipped instrumental and testing facilities allowed us to understand coatings beyond textbooks. These collaborations not only exposed us to industrial practices but also helped me understand raw material sourcing, vendor interactions, and technical requirements of the coatings market. Even during my academic projects, the support received through departmental industry connections helped me in procuring raw materials and gaining practical exposure, which proved immensely valuable in my entrepreneurial journey.The curriculum was designed in a way that balanced theory with industrial relevance. From resin chemistry and coating formulation to application techniques and testing methodologies, every subject contributed to building a strong technical foundation. More importantly, the department encouraged problem-solving and innovation — qualities that are essential for anyone aspiring to become an entrepreneur.Apart from technical knowledge, ISTAR also contributed significantly to my personality development. Presentations, project work, technical discussions, and faculty guidance helped me develop confidence, decision-making ability, and leadership skills. I would especially like to acknowledge the dedication of the faculty members, who always went beyond classroom teaching. Their mentorship, encouragement, and practical guidance helped students discover their potential and pursue diverse career paths — whether in industry, research, or entrepreneurship.To the current students, I would like to say: make full use of the facilities and opportunities provided by this department. The knowledge and exposure you gain here can open doors not only to jobs but also to entrepreneurship and innovation. The coatings industry is expanding rapidly, and skilled professionals with practical understanding are always in demand.I feel honoured to be associated with ISTAR and grateful for the strong foundation it has provided me. I look forward to seeing future graduates of this department contribute significantly to the coatings industry and take this field to greater heights.Thank you, ISTAR, for shaping my journey and being an integral part of my success.

Curricular Activities

TITLE	ALUMNI EXPERT TALK by Bhavika Sharma students regarding the usefulness of various theory and practical subjects in their course, emphasizing how topics related to pigments, resins, paints, and corrosion form the backbone of knowledge required in the coatings industry.
Event Name	Subject Orientation
Date	3rd July 2025
Organized By	Surface Coating Technology Department, ISTAR
Expert Speaker	Ms. Bhavika Sharma (Engineer, Berger Paints)
Participants	All Students of Surface Coating Technology

TITLE	Industry Expert Talk by Dr.Tejas Shah (Usha Coatings) on "Current Scenario of Paint Industries" discussing the significant growth of the Indian and global paint sectors driven by infrastructural development and the increasing demand for protective and decorative coatings.
Event Name	3rd July 2025
Date	Surface Coating Technology Department, ISTAR
Organized By	Dr.Tejas Shah (Owner, Usha Coatings, V.U.Nagar)
Participants	All Students of Surface Coating Technology

TITLE	Career Guidance Talk by Mr. SATISH PATEL (Owner at Dalfon Chemicals, Panoli) on "Career Opportunities in field of Inks".
Event Name	Alumni Talk
Date	17th July 2025
Organized By	Surface Coating Technology
Participants	20

TITLE	Project Topic Identification and Literature Review
Event Name	Literature Review
Date	24th July 2025
Organized By	Surface Coating Technology
Participants	09

TITLE	Industrial Visit of Semester -3 Students at HLEGlasscoat
Event Name	Industrial Visit
Date	5th August 2025
Organized By	Surface Coating Technology
Participants	11

TITLE	**“A Visionary Talk on Paint Industry Dynamics" by Mr. Umesh Singh, CMD of Marigold Paints Pvt. Ltd.**
Event Name	Expert Talk
Date	7th August 2025
Organized By	Surface Coating Technology
Participants	29

TITLE	**Industrial Visit at Marigold Paints Pvt. Ltd.**
Event Name	Industrial Visit
Date	12th August 2025
Organized By	Surface Coating Technology
Participants	32

TITLE	**Career Guidance cum Alumni Expert Talk on "Abroad Job Opportunities" by Mr. Rakesh Patel**
Event Name	Alumni Talk
Date	19th September 2025
Organized By	Surface Coating Technology
Participants	29

TITLE	**Industrial Visit: Mechanical Workshop Unit, BVM Engineering College**
Event Name	Mechanical Workshop Unit, BVM Engineering College
Date	24th September 2025
Organized By	Surface Coating Technology
Participants	21

TITLE	**Alumni Interaction by Dr.Chintan Patel, BASF, Germany**
Event Name	Alumni Interaction on Career Pathways
Date	20th December 2025
Organized By	Surface Coating Technology
Participants	25

TITLE	**Training Session on Manufacturing Water Based Paints by Mr. Hiren Yadav, Berger Paints**
Event Name	**Training Session**
Date	22nd December 2025
Organized By	Surface Coating Technology
Participants	27

TITLE	**Alumni Interaction: Roles and responsibilities of various departments such as R&D, Quality Control, Production, Technical Services, and Marketing**
Event Name	**Alumni Interaction**
Date	1st January 2026
Organized By	Surface Coating Technology
Participants	18

TITLE	**Alumni Interaction: Coating Analysis and Testing**
Event Name	Alumni Interaction
Date	2nd February 2026
Organized By	ISTAR college
Participants	21

TITLE	**Alumni Interaction Session: Career Opportunities, Industry Expectations, Eagerness to Job, Positive attitude.**
Event Name	Alumni Interaction
Date	18th February 2026
Organized By	ISTAR
Participants	21

Co - Curricular Activities

TITLE	**Poster presentation Competition**
Event Name	NEP Celebration
Date	4th August 2025
Organized By	Surface Coating Technology
Participants	17

TITLE	Electroplating Model showcase at Gyanotsav
Event Name	Gyanotsav 4.0 - 2026
Date	4th to 8th February 2026
Organized By	The CVM University
Participants	All students of semester – I of Surface Coating Technology Department.

Student Achievements

Event Name	Sports
Achievement	Secured Second Position in Inter Class Badminton - Singles (Boys)
Organized By	ISTAR
Participants	Jay Patel

Event Name	Sports
Achievement	Secured First Position in Inter Class Badminton – Doubles (Boys)
Organized By	ISTAR
Participants	Jay Patel and Om Patel

Placement Details

Sr. No	Student Enrollment ID	Student's Full Name	Name of Company & City	Designation of Student	Offered Package (Approx. Yearly salary)
1	22401470301002	ALIASGAR SAIFEE KALIYAKUVAWALA	Reliable Paints, ManjusarGIDC	R & D Chemist	3,55,008/-
2	22401470301004	JAYKUMAR RAJENDRAKUMAR PATEL	NA	NA	Entrepreneur, Amura Polymers
3	22401470301006	RONAK TUSHARBHAI PARMAR	Marigold Paints Pvt. Ltd.	Junior Chemist	2,40,000/-
4	22401470301007	SANKET SANJAY KHERDE	BNPA, Delhi/NCR	Assistant Officer, R& D Parts	3,70,164
5	22401470301009	TAHA KHUZAIMA PATRAWALA	Grand Polycoat Pvt. Ltd. Vadodara	Trainee R & D	3,50,004

DEPARTMENT OF POLYMER CHEMISTRY

Name	Alumni Speak
Batch	2020-22
Description	Ronak Dave Asian Paint Ltd.

Mr Ronak Dave
Executive 2 - Asian Paints Ltd
Project Key Account Technologist

I completed my postgraduate studies from the Department of Polymer Science & Technology, ISTAR, CVM University, during the 2020–2022 batch. My time at ISTAR provided me with strong academic knowledge and practical understanding in the field of polymer science and technology.

During my study period, the department was led by Dr. M. M. Raj as Head of the Department, and I had the opportunity to learn under the guidance of Dr. Amit Thummar, whose support and mentorship helped shape my professional foundation.

Currently, I am working as Executive–2 (Project Key Account Technologist) at Asian Paints Ltd. In this role, I am involved in providing technical solutions and supporting key projects in the coatings industry.

I am grateful to ISTAR and my professors for providing the knowledge, guidance, and encouragement that helped me build my career. I wish continued success to the department and hope it keeps inspiring future polymer professionals.

TITLE	CVM University Gyanotsav 2026
Event Name	Presented Working Model as “Resin Casting and Foam Technology for Sustainable Composites”
Date	31st January to 5th February
Organized By	The CVM University
Participants	11 students

PLACEMENT 2025-26

Sr No	Name of the Company	Name of Department	Number of students appeared	Number of students placed	Average Package	Highest Package
1	Jubilant Agri & Consumer Products, Vadodara	R&D	3	1	3.6	3.6
2	Covalent Connections, Vadodara	Technical Sale	3	1	2.88	
3	VijaiPolyproducts Pvt Ltd, Vadodara	R&D	2	1	3.6	
4	AdmarkPolycoats Ltd., Vadodara	R&D	2	2	2.8	

DEPARTMENT OF BIOTECHNOLOGY

Curricular Activities

Title	Expert talk by Mr. Avik Mayur Parekh- Sun Pharma Ltd., Vadodara
Event Name	Expert talk on "Smart Carriers and Targeted Therapies: The Future of Drug Delivery Systems"
Date	19/07/2025
Organized by	Department of Biotechnology-ISTAR
Participants	68

Title	Expert talk by Jay Soni and Hardik Panchal from **Cliantha Research Limited**, Ahmedabad
Event Name	Expert talk on "Opportunities in Clinical Research"
Date	12/02/2026
Organized by	Department of Biotechnology-ISTAR
Participants	35

Title	Industrial visit
Event Name	Industrial visit to **Apicore Pharmaceuticals Pvt. Ltd.**Dhobikuwa, Padra, Vadodara
Date	12/09/2025
Organized by	Department of Biotechnology-ISTAR
Participants	35

Title	Industrial visit
Event Name	Industrial visit to **NDDB** and **NDDB-CALF**, Anand
Date	23/09/2025
Organized by	Department of Biotechnology-ISTAR
Participants	35

I

nternships

Title	Internships for B. Sc Semester-6 students
Event Name	1 month
Coordinators	Dr. Nisha Daxini, Dr. HiralSoni
Date	5th November 2025 to 3rdDecember 2025
Organized by	Department of Biotechnology-ISTAR
Participants	23

Departmental Hands-on Workshop

Title	"One Day Hands-on Workshop Advanced Techniques in Biotechnology"
Event Name	One day Workshop
Coordinators	Dr. Nisha Daxini, Dr. HiralSoni
Date	21/08/2025
Organized by	Department of Biotechnology-ISTAR
Participants	15

Ph.D. Students Fellowship from SHODH (Government of Gujarat)

Scheme Name	Ph.D. Students Fellowship from SHODH
Duration	January 2025 to December 2027
Student name	PriyaNileshkumarPatel (Biotechnology)
Mentor Name	Dr. Nisha Daxini

Ph.D. Student Achievements

Event Name	National Conference on "Emerging Trends in Biological, Chemical, Computer and Interdisciplinary Sciences (BCCIS-2026) held on 19 and 20 February 2026
Achievement	Oral presentation
Title	Anti-biofilm activity of *Bacillus safensis* subsp. *osmophilus* SD2 against multidrug resistant hospital isolates of ESKAPE group
Organized by	ISTAR, The CVM University, Vallabh Vidyanagar
Participant's Name	**SaklainMustakSaiyad (Ph.D. scholar, Biotechnology)- 1st Rank in Oral Presentation**
Mentor	**Dr. Nisha Daxini**

Event Name	1st International Conference on Sustainable Innovations in Drug Development (SIDD-2025) held on 24-26 March 2025
Achievement	Oral presentation
Title	Exploring Anti-Quorum Sensing Strategies: *Staphylococcus*-Derived Compound as a Potential Inhibitor of *Pseudomonas aeruginosa* PAO1 QS System
Organized by	Department of Chemistry, School of Science, Indrashil University, Rajpur-Kadi, Gujarat
Participant's Name	**SaklainMustakSaiyad (Ph.D. scholar, Biotechnology)**
Mentor	**Dr. Nisha Daxini**

Event Name	National Conference on "Emerging Trends in Biological, Chemical, Computer and Interdisciplinary Sciences (BCCIS-2026) held on 19 and 20 February 2026
Achievement	Poster presentation
Title	"PCR based detection and sequence analysis of tumor associated genes in saliva"
Organized by	ISTAR, The CVM University, Vallabh Vidyanagar
Participant's Name	**PriyaNileshkumar Patel (Ph.D. scholar, Biotechnology)- 2nd Rank in Poster Presentation**
Mentor	**Dr. Nisha Daxini**

Event Name	National Symposium "Fusing Biotechnology with Applied and Emerging Sciences: A Multidisciplinary Approach (FBAES-2025)", 5 and 6 March 2025
Achievement	Poster presentation
Title	"Salivary DNA Biomarker in Tobacco Chewing Person for Squamous Cell Carcinoma"
Organized by	Department of Applied and Interdisciplinary Sciences, S. P. University, Vallabh Vidyanagar
Participant's Name	**PriyaNileshkumar Patel (Ph.D. scholar, Biotechnology)**
Mentor	**Dr. Nisha Daxini**

Event Name	Colloquium of Applied Sciences & Healthcare Research (CAHR) – 3rd National Conference
Achievement	Poster presentation
Title	**"**Detection of Salivary Gene MarkersIdentification of Oral Squamous Cell Carcinoma**"**
Organized by	Department of Applied and Interdisciplinary Sciences, CHARUSAT
Participant's Name	**PriyaNileshkumar Patel (Ph.D. scholar, Biotechnology)**
Mentor	**Dr. Nisha Daxini**

Event Name	Hands-on Training on "Molecular Biology: From Basic to Advanced"KAUSHALYA Program), held during 14–25 April 2025
Achievement	Successfully completed 99 hours (Theory + Practical)
Organized by	Gujarat Biotechnology Research Centre (GBRC); Sardar Patel University; Sher-e-Kashmir University of Agricultural Sciences & Technology (SKUAST)
Participant's Name	**PriyaNileshkumar Patel (Ph.D. scholar, Biotechnology)**
Mentor	**Dr. Nisha Daxini**

Event Name	Two Days Research Methodology Workshop (SHODH Scheme)08–09 April 2025
Achievement	Participation
Organized by	Knowledge Consortium of Gujarat, Education Department, Government of Gujarat
Participant's Name	**SaklainMustakSaiyad and PriyaNileshkumar Patel (Ph.D. scholars, Biotechnology)**
Mentor	**Dr. Nisha Daxini**

Event Name	National Seminar on "Biosafety & Biosecurity for Pandemic Preparedness"BSL-4 Facility held on 13 January 2026
Achievement	Participation
Organized by	Gujarat Biotechnology Research Centre (GBRC), DST, Gandhinagar
Participant's Name	**SaklainMustakSaiyad, PriyaNileshkumarPatel and KumudMacwana (Ph.D. scholars, Biotechnology)**
Mentor	**Dr. Nisha Daxini**

Event Name	National Symposium "Fusing Biotechnology with Applied and Emerging Sciences: A Multidisciplinary Approach (FBAES-2025)", 5 and 6 March 2025
Achievement	Oral presentation
Title	"Exploring the potential of Asymmetric field flow fractionation technique in Characterization of Macromolecules, Nanoparticles and colloids in Advanced drug delivery systems"
Organized by	Department of Applied and Interdisciplinary Sciences, S. P. University, Vallabh Vidyanagar
Participant's Name	**AvikMayur Parekh (Ph.D. scholar, Biotechnology)**
Mentor	**Dr. Nisha Daxini**

Event Name	International Conference on "Advance in biological science for

	sustainable development" held on January 5,6-2026
Achievement	Poster presentation
Title	"Optimization of Sequential Mild Acid and Alkali Pre-treatment of Rice straw for Enhanced Cellulose Enrichment and Effective delignification
Organized by	Department of Microbiology and Biotechnology, Gujarat University Ahmedabad and The Indian institute of technology, Gandhinagar
Participant's Name	**KumudKamalkumarMacwana(Ph.D. scholar, Biotechnology)**
Mentor	**Dr. Nisha Daxini**

Students Achievements

Event Name	National Conference on "Emerging Trends in Biological Chemical Computer and Interdisciplinary Sciences BCCIS-2026
Achievement	Poster Presentation
Organized by	ISTAR, The CVM University
Participant's Name	**VrushtiSutariya, Bansari Patel, Dhanvee Thakkar and Nisha Daxini**
Achievement	**1st rank**

Event Name	National Conference on "Emerging Trends in Biological Chemical Computer and Interdisciplinary Sciences BCCIS-2026
Achievement	Poster Presentation
Organized by	ISTAR, The CVM University
Participant's Name	**Iwshika Ray, Priya Patel and Nisha Daxini**
Achievement	**2nd rank**

Event Name	Poster Presentation on "Current Advancement in Sciences" as a celebration of 5th anniversary of NEP
Organized by	ISTAR, The CVM University
Participant's Name	**VrushtiSutariya and Bansari Patel**
Achievement	**2nd rank**

Event Name	Poster Presentation on "Current Advancement in Sciences" as a celebration of 5th anniversary of NEP
Organized by	ISTAR, The CVM University
Participant's Name	**Yasha Thakkar, NiraliParmar and VidhiPatanwadiya**
Achievement	**1st rank**

Event Name	**Folk Dance at Yugantar**
Organized by	The CVM University
Participant's Name	**Yasha Thakkar and VidhiPatanwadiya**
Achievement	**2nd rank/Runner up**

Department of Biotechnology students have participated in the Cultural Events of Yugantar 2025 in Folk dance, Fashion show and One act play:

Dr. Hiral Soni contributed as Coordinator in the Game zone committee during Gyanotsav 4.0 organized by CVMU. Department of Biotechnology students have presented scientific model in the Gyanotsav 4.0

Vrushti Sutaria
Apprentice position in Biosimilarsat Cliantha Research, Ahmedabad

Iwshika Ray
Analyst role at Nexcellife Research, Ahmedabad

Krishna Goswami
Analyst role at Nexcellife Research, Ahmedabad

Nakul Suthar
Production Department at Hester Bioscience Ltd, Kadi

Nikhil Maheraman
Trainee Chemist at Concord Biotech, Limbasi, Kheda

Ayush Tiwari
Intern at NDDB calf, Anand

Harsh Santoki
Trainee in Fermentation Department at Sterling Biotech Ltd, Bharuch

ShivamGour
Trainee in Fermentation Department at Sterling Biotech Ltd, Bharuch

Sandeep Choudhary
Analyst role at Nexcellife Research, Ahmedabad

DEPARTMENT OF MICROBIOLOGY

Name	Alumni Speak
Batch	2024-2025
Description	Ms. Vaishali Ramaiya

Ms. Vaishali Ramaiya
Assistant Professor, Gyanmanjari University, Bhavnagar, Gujarat

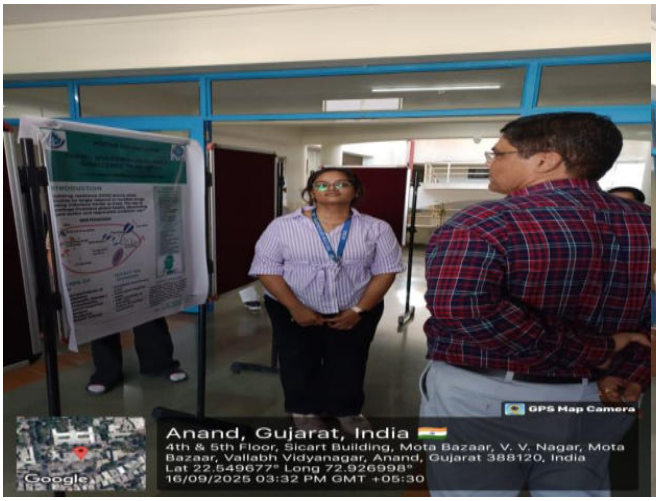
My education at CVM University played a crucial role in my professional journey, providing me with a robust foundation in microbiology and molecular biology. During my time there, I gained essential skills and hands-on experience through practical labs, group projects, dissertation, and industry exposure, which were pivotal in my early career. Currently, I am serving as Assistant Professor at Gyanmanjari University, Bhavnagar. The skills and knowledge I gained in the Microbiology Department have been invaluable. It has made me confident so I can face any challenge in my life. The subject knowledge and practical skill which I have learned during my study is currently very much useful to me for my teaching profession. Due to my curriculum I continue to leverage the interdisciplinary approach and critical thinking skills fostered during my studies to ensure the highest standards of quality and safety in our microbiological evaluations. The comprehensive education and continuous support from my mentors and professors have been invaluable in my growth and success in the healthcare and microbiology sectors. Once again I am really grateful to ISTAR institute and Microbiology Department for shaping my career.

Co-Curricular Activities

TITLE	**Bridging the Skills Gap: Transforming Talent for Modern Manufacturing**
Event Name	**Expert Talk**
Date	19th December 2025
Organized By	Microbiology Department, ISTAR
Expert Speaker	Mr. Saurabh Singh, QC Manager, Zytex Biotech Ltd., Baroda
Participants	All Students of Microbiology, Biotechnology (M.Sc. MI & M.Sc.BT)

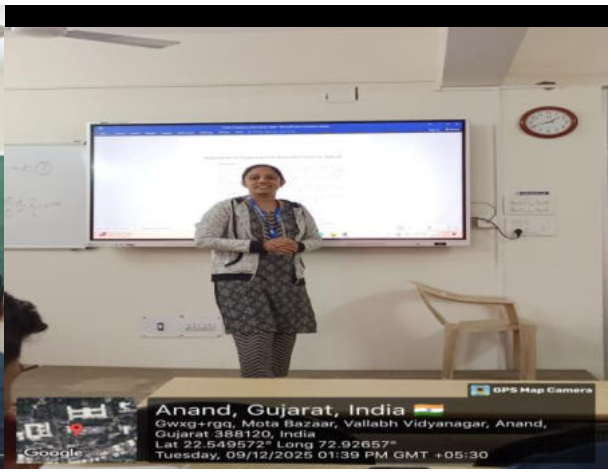
TITLE	**Visit to Centre for Analysis and Learning in Livestock and Food (CALF) at Anand**
Event Name	**Industrial Visit**
Date	13th August 2025
Organized By	Microbiology Department
Participants	22students

TITLE	**International Days Celebration**
Event Name	**World Ozone Day & International Microorganism Day Celebration**
Date	16/09/2025
Organized By	Microbiology Department
Participants	21



TITLE	Internship Program
Event Name	Internship Program of Undergraduate Students
Date	05/11/2025-03/12/2025
Organized By	Microbiology Department
Participants	22

TITLE	Workshop
Event Name	Research Methodology Workshop
Date	09/12/2025
Organized By	Microbiology Department
Participants	24



Title	WorkingModelpresentation
EventName	Gyanotsav4.0
Date	4thFebruary2026-8th February 2026
OrganizedBy	TheCVMUniversity
Participants	12Studentsof Microbiology Department(SEM2)

Placement Details

Sr. No.	Name of Students Shortlisted	Name of the Company
1.	JigarMaheshwari	Pinnacle Therapeutic Pvt. Ltd, SanandGIDC-II, Ahmedabad
2.	Raxit Mori	Bajaj Health Care Ltd. Savli, Baroda
3.	DevanshiJadav	Basic Pharma Life Science, Ankleshwar
4.	MitaliMaheshwari	Aykon Biosciences Pvt Ltd, Survey No 86/1-2-3 At Post Kathlal, Kheda
5.	VaishaliGurumukhbhaiRamaiya	Gyanmanjari University, Bhavnagar
6.	Manisha BipinParmar	Om Corporation Housekeeping, Amul Dairy, Anand
7.	RiddhiRajeshkumar Patel	Centurion Laboratories Pvt. Ltd. GIDC, Baroda
8.	SaloniAjaybhai Lad	Coral Laboratories Limited, Daman, Gujarat
9.	JhalakJayantibhaiParmar	Carolina RCM services Pvt. Thaltej, Ahmedabad
10.	HemaginiChimanbhaiMuniya	Narayani Public School, ZalodDistDahod
11.	Mansi SanjaybhaiRathod	Pursing Ph.D Program at Charusat University, Changa

DEPARTMENT OF ENVIRONMENTAL SCIENCE & TECHNOLOGY

Name	Alumni Speak
Batch	2010-2012
Description	PratiksinhDilipsinhChavda (Assistant Professor)

avda (Assistant Professor)
Energy and Environmental Engineering,
ntiwada Agricultural University,

Reflecting on my career, I often find myself tracing the roots of my professional identity back to the corridors of the Instituteof Science and Technology for Advanced Studies and Research (ISTAR). Choosing the M.Sc. in Environmental Science and Technology (EST) was perhaps the most pivotal decision of my life. At ISTAR, "Environmental Science" wasn't just a subject—it was a mission. The department didn't just teach us about pollutants and ecosystems; it ingrained in us the analytical mindset required to solve the complex sustainability challenges of the 21st century. The M.Sc. EST program at ISTAR is uniquely structured. It bridges the gap between pure science and applied technology. I remember the intensive laboratory sessions where we analyzed water quality parameters and air pollutants. These weren't just exercises; they were simulations of the real-world challenges I now face in my research. The faculty at ISTAR played a monumental role in shaping my trajectory. Their approach was never limited to textbooks. After graduating from ISTAR, the transition into academia felt like a natural progression, yet it was demanding. Currently, as an Assistant Professor at SardarKrushinagarDantiwada Agricultural University (SDAU), I find myself applying the core principles I learned at ISTAR every single day. In the field of Renewable Energy and Environmental Engineering, we deal with the nexus of energy security and environmental conservation. My time at ISTAR gave me the "Environmental DNA" necessary to understand how renewable technologies—be it solar, wind, or biomass—impact the ecosystem and how we can optimize them for a greener future. To the current students of the M.Sc. EST department, I want to share a few insights that helped me navigate my path from a student to a faculty member in a prestigious agricultural university: Don't just aim for grades. Understand the instrumentation. Whether it's a Spectrophotometer or a Gas Chromatograph, knowing how to handle data is what will set you apart in the industry and academia. Treat your dissertation not as a requirement, but as your first professional contribution to the field. It is where you learn the patience and precision required for scientific inquiry. ISTAR has a massive alumni network. Engage with it. The environmental sector is a close-knit community where professional relationships often lead to collaborative research and career opportunities. The world is currently at a crossroads. With the global push toward Net Zero emissions and the urgent need for Climate Change Mitigation, the role of an Environmental Scientist has never been more critical. In my current role at SDAU, I see the intersection of agriculture and environmental engineering. We are looking at how to make farming more sustainable, how to manage waste effectively in rural sectors, and how to harness renewable energy for irrigation. The foundational knowledge of soil science and waste management I gained at ISTAR remains the bedrock of these high-level research projects. I owe a debt of gratitude to the EST Department at ISTAR. The culture of discipline, the library resources, and the constant push for excellence provided me with a competitive edge. It prepared me to take on the responsibility of educating the next generation of engineers and scientists at SardarKrushinagarDantiwada Agricultural University. To the aspiring environmentalists at ISTAR: You are in the right place at the right time. The "Green Economy" is not just a buzzword; it is the future of the global market. Carry the legacy of ISTAR with pride and technical integrity. My journey from a student in Anand to a professor in Banaskantha has been fueled by the curiosity sparked at ISTAR. As I work towards developing sustainable technologies and teaching young minds about environmental stewardship, I carry the lessons of my alma mater in every lecture I deliver and every research paper I write. Stay curious, stay green, and remember that the environment doesn't need us—we need the environment.

Curricular Activities

TITLE	Participation of MSc (EST) Students (ISTAR)
Event Name	Gyanotsav 4.0 (2026)
Date	4 February to 8 February, 2026
Organized By	The CVM University (CVMU), Vallabh Vidyanagar
Participants	6 Students

TITLE	Industrial Visit
Event Name	Ravikiran Ceramic Pvt. Ltd., Kanjari
Date	2.2.2026
Organized By	MIHS, EST & GIS Departments
Participants	27 Students

TITLE	Alumni Expert Talk on 'Process Safety Management' to MSc EST &MIHS Students
Event Name	Mr. Fenil Patel (Executive EHS Manager, Gulbrandsen Industries LLP, Dahej)
Date	5.1.2026
Organized By	EST Department
Participants	27 Students

TITLE	Alumni Expert Talk on 'ABC of Effluent Treatment' to MSc EST Students
Event Name	Mr. Nishant Solanki (Environmental Head, Fluorine Advanced Sciences, Dahej)
Date	21.8.2025
Organized By	EST Department
Participants	22 Students

TITLE	Alumni Expert Talk on 'GPCBXGN 2.0 Manual' to MSc EST Students
Event Name	Mr. Daxesh Patel, Deputy Manager, FS Green Energies Pvt. Ltd., Karajan,Vadodara
Date	4.8.2025
Organized By	EST Department
Participants	24 Students

TITLE	Industrial Visit
Event Name	13.5 MLDSTP Visit (Anand)
Date	31.7.2025
Organized By	EST &MIHS Departments
Participants	23 Students

Student Achievements

Event Name	'Poster Presentation Competition' on "Plastics and Reproductive Health: A Crisis of Fertility and Development" in Biological Science (PG) Category at National Conference: Emerging Trends in Biological, Chemical, Computer and Interdisciplinary Sciences (BCCIS-2026)
Achievement	Secured Second Prize
Date	20.2.2026
Organized By	ISTAR College
Participants	Dhruv Mehta (Sem IV, MSc EST, ISTAR)

Placement Details

Name of Company	Designation	No. of Students
Farmson, Nandesari	Chemist cum Supervisor	1
Gujarat Gas Ltd., Gandhinagar	Senior Officer	1
Hifab Aluminium Pvt. Ltd., Ahemdabad	Safety Officer	1
JMESPL, Gandhinagar	Environmental Intern	1
Inoxcva, Kalol	Junior Officer	1
Schneider Electric Infrastructure Ltd., Jarod	EHS Officer	1
Ajanta Pharma, Bharuch	EHS Executive	1
Meghmani Industries Ltd., Vatva	EHS Executive	1
Sterling Biotech Ltd., Vadodara	Trainee – ETP	1

MCA DEPARTMENT

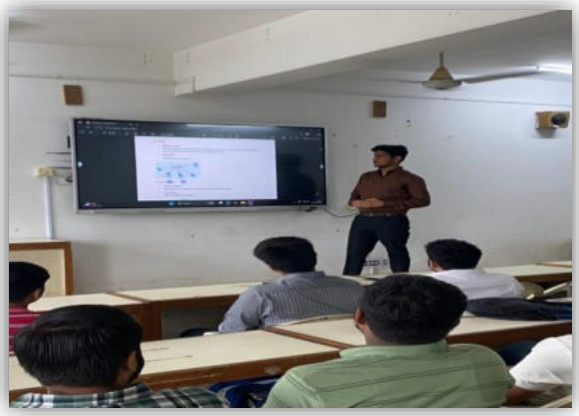
TITLE	**Orientation Program**
Date	17-07-2025
Organized By	Computer Science Department (MCA, M.Sc. -IT)
Participants	SEM-I Students

TITLE	SSIP Lecture
Expert Name	Dr Snehal Ingle (Coordinator) - SSIP(ISTAR)
Date	21/07/2025
Organized By	Computer Science Department (MCA, M.Sc. -IT)
Participants	All Students

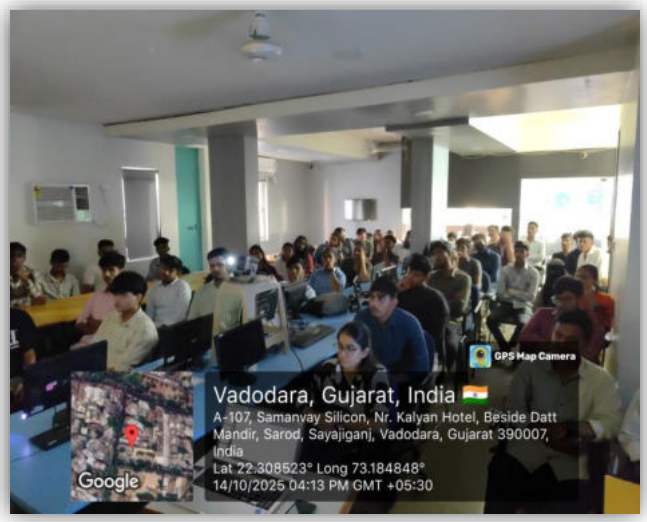
TITLE	Expert Talk by Industrialist
Expert Name	Mr. ShailendraSoni- Tops Technologies Pvt. Ltd.
Date	23/07/2025
Organized By	Computer Science Department (MCA, M.Sc. -IT)
Participate	All Students

TITLE	**Sarasvati Pooja**
Date	25-7-2025
Organized By	Computer Science Department (MCA, M.Sc. -IT)
Participants	All Students

TITLE	Teachers day
Date	05-09-2025
Organized By	Computer Science Department (MCA, M.Sc. -IT)
Participants	SEM-I Students



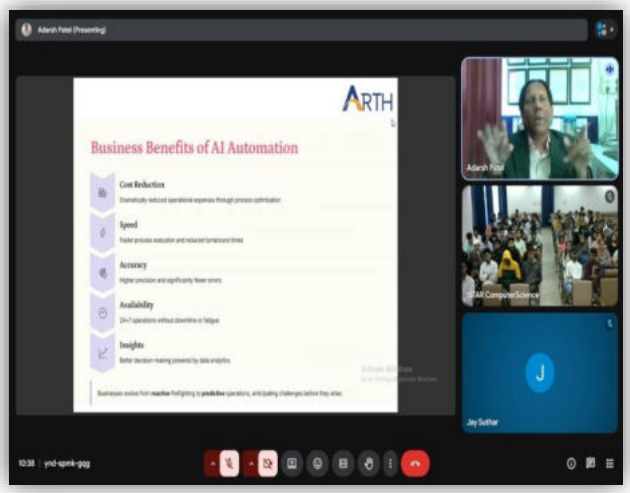
TITLE	Industry Visit
Date	15-10-2026
Company Name	Rishabh Software and TOPS Technologies, Vadodara.
Organized By	Computer Science Department (MCA, M.Sc. -IT)
Participants	SEM-I Students



TITLE	Alumni Talk
Expert Name	Mr. Yash Panchal, Designation of Software Engineer in Infilon Technologies, Ahmedabad
Date	31st January 2026,
Organized By	MCA & M.Sc.-IT
Participate	All student of MCA & M.Sc.-IT Semester – II

TITLE	**Alumni Talk**
Expert Name	Mr. Adarsh Sharma, Designation of Founder & CEO @TechTrio Automation
Date	31st January 2026,
Organized By	MCA & M.Sc.-IT
Participate	All student of MCA & M.Sc.-IT Semester – II

TITLE	Online Expert Webinar
Expert Name	Mr. Adarsh Patel :- Founder and CEO at Arth Consultancy Services, Vadodara
Topic	Role of Artificial Intelligence in Automating Business Processes using Prompt Engineering
Date	10-02-2026
Organized By	Computer Science Department (MCA, M.Sc. -IT)
Participate	All Students of MCA &M.Sc-IT



TITLE	in Current Advancement Sciences organized by ISTAR
Date	02-08-2025
Organized By	Aparna Machhi and MiksuMaheswari
Participants	2nd rank for Poster Presentation

TITLE	CVMU West Zone
Participants	MiksuDineshbhaiMaheshwari
Result	Folk Dance 4th, Procession 3rd, Overall University Wise Champion 2nd

TITLE	CVMUYugantar - 2026
Participants	JankiBharatbhai Thakkar, MiksuDineshbhaiMaheshwari, VaidehiKalpeshbhai Patel, KashishYogeshbhai Patel
Result	6th October to 9th October - 2025 Participated in Folk Dance and secured Rank 3rd

TITLE	Hacklock-2026, Social Media Competition - ISTAR
Date	28-01-2026
Participants	**VaidehiKalpeshbhai Patel**
Result	Hacklock26 : Still Photography 1st Position

TITLE	Hacklock-2026, ISTAR
Date	28-01-2026
Participants	**HimalsinhHarikrishnaGohil**
Result	Tech TooN: Rank 1st

TITLE	IGNITE events
Date	23rd January 2026
Organized By	CHARUSAT
Participants	Mohammad kaifmohammad Anwar Patel Hujaifamohmedsharif
Result	secured 1st position in competition of web warrior

TITLE	Gyanotsav - 2026
Date	04-02-2026 to 08-02-2026
Participants	NandiniSheth and Janki Thakkar
Result	Participated in Industrial Exhibition Zone

TITLE	Gyanotsav - 2026
Date	04-02-2026 to 08-02-2026
Participants	NandiniSheth and Janki Thakkar
Result	Participated in Industrial Exhibition Zone

TITLE	Gyanotsav - 2026
Date	04-02-2026 to 08-02-2026
Participants	Suthar Milan Dedaram, Baraiya Kaushik Lakhabhai, Jay Thakorbhai Patel
Result	Participated in Logistic and Infrastructure Zone

TITLE	BCCIS-2026, National conference, ISTAR
Date	19-02-2026
Participants	Jay PankajbhaiSuthar, Aparna SanjaybhaiMachhi, VaidehiKalpeshbhai Patel
Result	Participated in Poster Presentation

DEPARTMENT OF INFORMATION TECHNOLOGY

Name:	AlumniSpeak
Batch:	2018–2020
Description:	Mr. Sachin Patel

Mr. Sachin Patel
Senior Software Engineer @ Capital Numbers Infotech, West Bangal, India

I completed my **M.Sc. Information Technology** from the Institute of Science & Technology for Advanced Studies & Research (ISTAR) during the 2018–2020 academic sessions. My journey in the Department of Information Technology was both intellectually enriching and professionally transformative. The programme offered a balanced combination of strong theoretical foundations and practical exposure, helping me develop industry-ready technical skills.

The curriculum was comprehensive and aligned with evolving industry standards, covering advanced topics such as software engineering, data structures and algorithms, database management systems, cloud computing, networking, cybersecurity fundamentals, web technologies, and modern development frameworks. Continuous assessments and project-based learning enhanced my analytical thinking, problem-solving abilities, and system design understanding. A major highlight of my academic experience was the strong focus on practical implementation. Laboratory work, real-time mini projects, case studies, and the final dissertation project effectively bridged the gap between academic concepts and industry expectations. These experiences strengthened my coding proficiency, debugging skills, architectural thinking, and teamwork capabilities.

Under the mentorship of Dr. Suchita Patel and Dr. Niky Jain, I received consistent guidance, constructive feedback, and encouragement to explore innovative ideas. Their mentorship also instilled professional ethics, research orientation, presentation skills, and a disciplined approach to continuous learning. The department cultivated a culture of teamwork, leadership, and knowledge sharing through seminars, workshops, technical presentations, and collaborative activities. This holistic environment prepared me to confidently transition into the corporate world.

Today, I serve as a Senior Software Engineer at Capital Numbers Infotech. The knowledge, discipline, and technical expertise I developed at ISTAR continue to support me in designing scalable solutions, managing complex projects, and adapting to emerging technologies. I sincerely thank ISTAR and the Department of Information Technology for providing an academic ecosystem that promotes excellence, innovation, and professional readiness. I strongly recommend this department to students aspiring to build a successful career in Information Technology.

Ms. Riya Singh Anand
Software Engineer | Full Stack Developer @ Estatic Infotech private limited, Ahmedabad

I completed my M.Sc. in Information Technology from ISTAR College, The Charutar Vidya Mandal (Batch 2021–2023). My time at ISTAR provided me with a strong foundation in software engineering and full-stack development through an industry-oriented and practical curriculum.

With the constant support and mentorship of the faculty, I secured 1st Rank in M.Sc. IT. The hands-on learning experience prepared me to confidently face professional challenges. What I appreciated the most was the practical exposure and hands-on learning approach. The projects, assignments, and guidance from faculty members helped me bridge the gap between theory and industry expectations. The constant encouragement to think logically, code efficiently, and solve real problems strengthened my confidence as a developer.

Currently, I work as a Software Engineer, developing scalable healthcare and wearable-integrated applications using modern technologies. I am sincerely grateful to ISTAR and highly recommend the department to students aspiring to build a successful career in technology.

Name:	AlumniSpeak
Batch:	2022–2024
Description:	Ms. Aditi RajnikantSuthar

Ms. Aditi RajnikantSuthar
Project Manager @ Foundation for Ecological Security, Anand

I am truly grateful to M.Sc. (Information Technology) department of ISTAR College for the opportunity to share my experience as an alumna and to reconnect with the institution that shaped my journey.

My name is Aditi RajnikantSuthar. With a background in Mathematics, transitioning into a new field was initially challenging. However, the constant support and encouragement from my teachers helped me overcome my doubts and gradually build confidence. The faculty members were always approachable and guided me patiently, encouraging me to see my background as strength.

Today, I am working as a Project Manager at the Foundation for Ecological Security, where I apply the coordination, planning, and decision-making skills developed during my college years. I sincerely thank my faculty members and the CVM management for building a strong foundation that continues to guide me in my professional life.

CURRICULAR ACTIVITIES

TITLE	An **Orientation Program** to welcome the new batch and familiarize them with the academic structure, institutional policies, and future opportunities. The session aimed to guide students toward a smooth transition into their postgraduate journey.
Date	17th July, 2025
Organized By	Computer Science Department (MCA, M.Sc. IT)
Participants	All Students

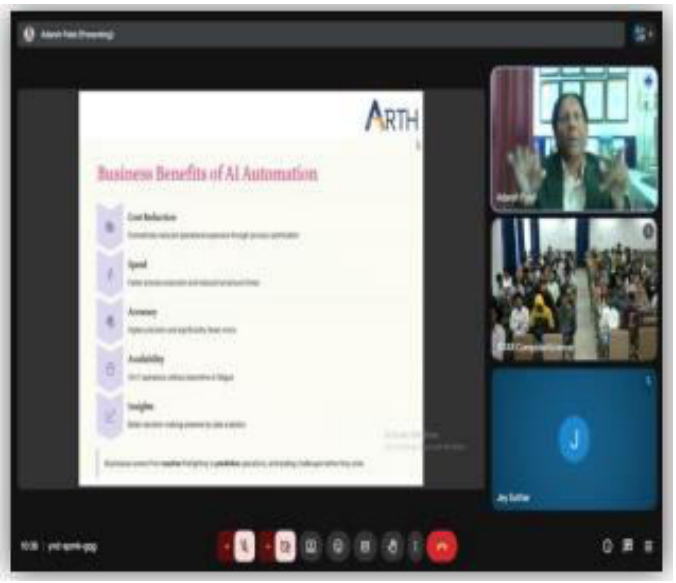
TITLE	**Goddess Saraswati Worship** was solemnly celebrated with devotion, seeking blessings for wisdom, knowledge, and academic excellence for all students and faculty members.
Date	25th July, 2025
Organized By	Computer Science Department (MCA, M.Sc. IT)
Participants	All Students

TITLE	An informative **SSIP lecture** was delivered by **Dr. Snehal Ingle,** Coordinator of SSIP–ISTAR, highlighted innovation, startup support, funding opportunities, and guidance available to students under the SSIP initiative.
Date	21st July, 2025
Organized By	Computer Science Department (MCA, M.Sc. IT)
Participants	All Students

TITLE	An **Expert talk** on **"AWS – Cloud Computing"** was delivered by **Mr. ShailendraSoni**, Tops Technologies Pvt. Ltd. Vadodara. The session provided valuable insights into cloud fundamentals, AWS services, deployment models, and emerging career opportunities in cloud computing.
Date	23rd July, 2025
Organized By	Computer Science Department (MCA, M.Sc. -IT)
Participants	All Students

TITLE	An **Alumni Talk** on *"Prompt Engineering in Practice: Real-World Use Cases and Industry Insights"* was delivered by **Mr. Yash Panchal,** Software Engineer at Infilon Technologies, Ahmedabad,
Date	31st January, 2026
Company Name	Infilon Technologies, Ahmedabad
Organized By	M.Sc. (IT)
Participants	All Students (MCA & MSCIT)

TITLE	A **Webinar Talk** session on **"Role of Artificial Intelligence in Automating Business Processes using Prompt Engineering"** highlighted how AI-driven solutions and effective prompt engineering techniques can streamline workflows, enhance decision-making, and improve organizational efficiency.
Expert Name	Mr. Adarsh Patel
Date	10th February, 2026.
Organized By	Computer Science Department (MCA, M.Sc. -IT)
Participants	All Students (MCA & MSCIT)



TITLE	A**Expert Talk** session o**n "Cloud 3.0: The Intelligent Nervous System of Modern Business"**was conducted by Mr. Ketan B. Rathod as part of the National Conference BCCIS-2026 under the Computer Science Cluster. The talk highlighted the evolution of cloud technologies and their role in building intelligent, scalable, and data-driven business ecosystems, enabling digital transformation and enhanced organizational agility.
Expert Name	Mr. Ketan B. Rathod
Date	19th February, 2026
Organized By	Computer Science Department (MCA, M.Sc. -IT)
Participants	All Students (MCA & MSCIT)

TITLE	An **Expert Talk** session on **"Remote Sensing of Satellite Imagery Using Machine Learning Algorithms"** as part of the National Conference **BCCIS-2026** under the Computer Science Cluster. The talk emphasized the application of machine learning techniques in analyzing satellite imagery for land-use classification, environmental monitoring, and geospatial intelligence, enabling accurate and data-driven decision-making.
Expert Name	**Dr. Ninad More**
Date	**20th February, 2026**
Organized By	Computer Science Department (MCA, M.Sc. -IT)
Participants	All Students (MCA & MSCIT)

TITLE	An **Expert Talk**session on **"AI Research Trends"** was conducted as part of the National Conference BCCIS-2026 under the Computer Science Cluster. The talk highlighted emerging advancements in Artificial Intelligence, current research directions, and innovative applications shaping the future of intelligent systems and data-driven technologies.
Expert Name	**Prof. (Dr.) ShaileshIyer**
Date	20th February, 2026
Organized By	Computer Science Department (MCA, M.Sc. -IT)
Participants	All Students (MCA & MSCIT)

TITLE	**INDUSTRY VISIT** - students bridged academics with industry through insightful industrial visits to gaining valuable exposure to real-world IT practices and professional work environments.
Event Name	Rishabh Software Pvt. Ltd & Tops Technologies Pvt. Ltd. Vadodara
Date	14th October, 2025
Organized By	Computer Science Department (MCA, M.Sc. -IT)
Participants	All Students (MCA & MSCIT)

TITLE	**GYANOTSAV 4.0** at The CVM University, presenting the working model **"AI for Life: Safer Roads and Smarter Farms"** Under this theme, two innovative models—Driver Drowsiness Detection System and Smart Agriculture System—were showcased. The projects demonstrated how Artificial Intelligence can enhance road safety by detecting driver fatigue and improve agricultural efficiency through smart monitoring and automation, highlighting the practical impact of AI in everyday life. In addition, students also performed volunteer duties during the **SPRIEE Industrial Zone - Product Presentation**, contributing to event coordination and management, and gaining valuable organizational and teamwork experience.
Event Name	**GYANOTSAV 4.0 – Working Model & Industrial Zone**
Date	4th to 8th February, 2026
Organized By	The CVM University
Participants	**10 Students of MSCIT SEM(2)** - MEET MAKWANA; MEET PATEL; PRIYA LAD; VISHVA PATEL; KEVAL RANA; DARSHIL PATEL; ARYAN PATELIYA; MEHUL SATIYA; ROMIT PATEL; HARSHIL JADAV

Event Name	Celebrating Five Glorious Years of NEP with Creativity and Innovation! ISTAR proudly hosted Poster Presentation Competition for showcasing Students' Talents, Ideas and Vision for Brighter Educational Future - **Category-4 Computer Science**
Event Date	2nd Aug, 2025
Achievement	Secured 1st Position [Vishva A. Patel, Priya Lad]
Organized by	ISTAR College
Participants:	**07** Students of MSCIT department

Event Name	**"YUGANTAR"** – the Youth Festival, the Rajasthani folk dance *Tera Taal* was performed with devotion and rhythmic coordination using thirteen *manjiras*, and the team secured 3rd prize.
Event Date	6th – 9th October, 2025
Achievement	Team - 3rd Prize Winner
Organized by	The CVM University
Participants:	02 Students from M.Sc.IT department participation.

Event Name	Inter Class Cricket Tournament
Event Date	14th September, 2025
Organized by	ISTAR
Participants:	M.Sc. IT Students (SEM-1 & SEM-III)

Event Name	Voluntary Blood Donation Camp
Event Date	24th September, 2025
Organized by	ISTAR
Participants:	M.Sc. IT Students (SEM-1 & SEM-III)

Placement Details

Sr. No.	Name of the Company	Post Offered	No. of students
1.	Redspark Technologies, Vadodara	MERN STACK DEVELOPER	02
2.	RainDrops InfoTech, Ahmedabad	Project Trainee	02
3.	Arth Consultancy Services, Vadodara	System Developer	01
4.	Vinix Infotech Pvt. Ltd. Anand	Mobile App Developer	04
5.	Technoprism, Vadodara	AI AUTOMATION	03
6.	Haronex Technology Pvt. Ltd, Anand	PHP Web Developer	01
7.	Techno Guide Pvt. Ltd., Anand	Web Developer	01
8.	Sarvasvtechnologies Pvt. Ltd, Anand	Hadoop Trainee	02
TOTAL			**16**

CYBER SECURITY DEPARTMENT

TITLE	**Inauguration of M.Sc. Cyber Security Program at ISTAR College**
Date	03-07-2025
Organized By	M.Sc. Cyber Security department, ISTAR
Participate	All Students

TITLE	**Mihir Rana, a student of M.Sc. Cyber Security, has been appointed as the District Technical Officer for the Anand District Yogasana Sports Championship 2025-26,**
Date	29-07-2025
Organized By	Organized under the banner of the Gujarat Yogasana Sports Association (GYSA).
Participants	SEM-I Student

TITLE	**Shree Satyanarayan Mahapooja**
Expert Name	Dr Snehal Ingle (Coordinator) - SSIP(ISTAR)
Date	07/08/2025
Organized By	M.Sc. Cyber Security department, ISTAR
Participants	All Students

TITLE	**Industrial visit at BISAG-N Gandhinagar**
Date	4/10/2025
Organized By	M.Sc. Cyber Security department, ISTAR
Participate	All Students

TITLE	**Inauguration of the M.Sc. Cyber Security Advanced Technology Lab by Er. Shree Bhikhubhai Patel Sir.**
Date	10/12/2025
Organized By	M.Sc. Cyber Security department, ISTAR
Participants	All Students

TITLE	**HackLock'26**
Date	28/01/2026
Organized By	M.Sc. Cyber Security department, ISTAR
Total Participants Students	358 students from 25 colleges across Gujarat.

TITLE	**Working Models Presentation GYANOTSAV 4.0**
Date	4/02/2026 to 8/02/2026
Organized By	M.Sc. Cyber Security department, ISTAR
Participants	SEM-I Students

TITLE	Participate Students in GYANOTSAV 4.0
Expert Name	Mr. Yash Panchal, Designation of Software Engineer in Infilon Technologies, Ahmedabad
Date	4/02/2026 to 8/02/2026
Organized By	M.Sc. Cyber Security department, ISTAR

TITLE	Food stall activity conducted at GYANOTSAV 4.0
Date	4/02/2026 to 8/02/2026
Organized By	MCA & M.Sc.-IT
Participate	M.Sc. Cyber Security Department, ISTAR

TITLE	Group song(Indian) Participate in YUGANTAR 4.0
Date	9/10/2025
Organized By	THE CVM UNIVERSITY
Participate	M.Sc. Cyber Security department, ISTAR

TITLE	**Winner in Youth fest Festival Group dance in (YUGANTAR 4.0)**
Participants	Sneha Patel
Result	Folk Dance 4th, Procession 3rd, Overall University Wise Champion 2nd

TITLE	**Winners in Interclass badminton tournament GIRLS**
Participants	**Suryanshi Devda**
Result	Secured 1st Rank

TITLE	**Winners in Interclass Badminton tournament GIRLS**
Participants	**Gracy Parmar**
Result	Participated in in interclass badminton tournament GIRLS secured 2nd Rank
TITLE	Runners Up

TITLE	**IGNITE events**
Date	23rd January 2026
Organized By	CHARUSAT
Participants	Mitesh Patel
Result	Secured 1st Position In Competition Of WORKING MODEL

TITLE	**National Seminar –Petlad**
Date	30/01/2026
Participants	M.Sc. Cyber Security department, ISTAR
Result	1st Prize (Mitesh Patel, Bhakti Patel , Harshil)

TITLE	BCCIS-2026, National conference, ISTAR
Date	19-02-2026
Participants	Mitesh Patel,
Result	Participated in Poster Presentation

TITLE	BCCIS-2026, National conference, ISTAR
Date	19-02-2026
Participants	Mitesh Patel,
Result	Participated in Oral Presentation

DEPARTMENT OF INDUSTRIAL HYGIENE AND SAFETY

Name	ALUMNI SPEAK
Batch	2006-2008
Designation	**MR. GUNVANTKUMAR D ZALA** **SR. MANAGER EHS, ALEMBIC PHARMACEUTICALS LTD**

Mr. Gunvantkumar D. Zala

"Industrial Hygiene and Safety was interesting and unique course which I choose after my Graduation . Students can do CIH and CSP after the completion of the programme , without affecting their jobs .With the world which is expanding at high pace …similarly demand and opportunity of Industrial Hygiene and Safety is also increasing at the same speed. Lots of opportunities available in India as well as abroad ."My Best wishes to the Faculty and team at ISTAR

Co-Curricular Activities

TITLE	Counselling
Event Name	Counselling of Graduate Students
Date	11th February 2026
Organized By	NVPAS,V.P Science College
Participants	50 Students

TITLE	5 Years of NEP 2025
Event Name	Poster Presentation
Date	August 2025
Organized By	ISTAR
Participants	30 Students of MIHS (2nd and 4th Semester) participated for developing Communication, Presentationskills for application in Industry

TITLE	Gyanotsav -2026
Event Name	Exhibition of the skills by making Working Models
Date	04/02/2026 to 08/02/2026
Organized By	CVM University
Participants	18 Students (2nd Semester)

The Industrial Hygiene and Safety department exhibited FourWorking Models which can be used in Industrial workplace.

1. Smart PPE Matrix
2. Confined Space gas Detectors
3. Total Flooding System
4. Respirator Fit Test

Extra-Curricular Activities

TITLE	ISTAR Cricket Tournament
Event Name	ISTAR College Inter-Class Cricket Tournament , Table Tennis , Chess , Tug of War Volleyball Yugantar
Date	Semester 1 (2025-2026)
Organized By	ISTAR college
Participants	Studentsof Industrial Hygiene and Safety (Sem-2nd and 4th)

Industrial Visits

TITLE	Industrial Visit
Event Name	Industrial Visit to Various Industries 1. STP Plant 2.Mechanical Workshop and Idea Lab. ADIT 3.Orbit Bearings 4. Jyoti CNC Automation Ltd 5. Ravi-Kiran Ceramics 6. Shree Vallabh Alloys
Date	1. 31/7/2025 2. 11/08/2025 3. 16/12/2025 4. 16/12/2025 5. 3/02/2026 6. 9/02/2026
Organized By	Industrial Hygiene and Safety Department
Participants	Industrial Hygiene and Safety Students (2nd and 4th Semester)

Alumni Support

TITLE	Alumni Support
Event Name	1. Team Attire for Gyanotsav 4.0 sponsored by Mr. Hitharth Mehta 2. Cash Prize for all Industrial Hygiene and Safety Students sponsored by RECOHEHS Services LLP, Mr. Shrenik M. Ranpura for Gyanotsav performance

TITLE	Expert Talk : Alumnus of Industrial Hygiene and Safety Department
Event Name	Expert /Motivational/ Interview Preparation Talk
Name of Expert	1.Mr.Md. Saqlain I Saiyed , IH ,ISSEHS 2. Mr. ManavShinde ,IH, ISSEHS 3.Mr. MayursinhVaghela ,IH Gulf Area 4.Mr. JigneshVadher,IH, Galfar Engineering and Contracting, Muscat, Oman 5.Mr. Hitharth Mehta ,The World Bank 6. SiddhrajsinhGohil, Pinchin Ltd, Mississauga, Canada
Organized By	Industrial Hygiene and Safety Department

Participants	Students (Sem-02 MIHS ,MCA, BT and EST Students)

Convocation

TITLE	Convocation
Event Name	3rd Convocation of CVM University
Date	10th January 2026
Organized By	The CVM University
Participants	Pass out Post Graduates

Celebrations

TITLE	Celebrations
Event Name	Gurupurnima , Ganesh ChathurthiCelebrations
Date	29/07/2026 ,14/09/2026
Organized By	ISTAR
Participants	Students of Industrial Hygiene and Safety

Social Services Activities

TITLE	Social Service for the Benefit of Society
Event Name	Blood Donation, National Road Safety Week, Donation of Respirators and Ear Plugs
Date	22/11/2025, 17/1/2026, 28/1/2026
Organized By	Industrial Hygiene and Safety Department
Participants	Students of Industrial Hygiene and Safety

TITLE	Other Activities of the Department
Event Name	All other Activities of Department Birthday Celebrations (Principal, Students) Lunch On with Hostel Students Leisure Dinner
Organized By	Department
Participants	Students and Faculty

Placement Details of Passing out Batch of 2026 (2025-26)

Sr. No.	Name of Company & City	Designation of Student	No. of Student
1.	PERFETTI VAN MELLE INDIA,	SHE Associate	1
2.	INDUSTRIAL HYGIENE AND SAFETY SERVICES	IH	1
3.	SUSTAINABLE EHS LLP	IH Trainee	1
4.	RECOH EHS LLP	IH Trainee	1
5.	RECOH EHS LLP	IH Trainee	1
6.	SURE SAFETY (INDIA) LTD.	IH Trainee	1
7.	SHAH INDUSTRIAL HYGIENE SOLUTIONS	IH Trainee	1
8.	SHAH INDUSTRIAL HYGIENE SOLUTIONS	IH Trainee	1
9.	ATLANTA ELECTRICALS LTD	EHS Intern	1
10.	KADAM LABS PRIVATE LIMITED	IH Trainee	1
11.	ZYDUS LIFESCIENCE LTD.	EHS Intern	1
12.	EPP COMPOSITES PVT. LTD	Safety Officer	1

DEPARTMENT OF VALUATION

Name	Alumni Speak
Batch	M. Sc. (PMV) – 2019 - 2021; M.Sc. (REV) – 2022-2024
Description	**Jatan Joshi** – Associate, Portfolio & Turnaround, Stride Ventures, Mumbai.

My time at ISTAR marked a defining phase in my professional journey. I still remember how concepts that initially felt technical slowly started making practical sense through site visits, case discussions, and detailed report writing. That shift - from theory to judgment was the most important takeaway for me.

ISTAR did not just teach valuation methods; it trained me to question assumptions, be precise with numbers, and take professional responsibility for my opinion.

One thing that truly stands out about ISTAR is its alumni network. It doesn't feel like a formal database of past students — it feels like a community you can actually reach out to. There's an unspoken understanding and shared rigor that connects us, no matter where we are professionally.

I also remain deeply thankful to my professors. The discipline they instilled in those early years still shapes how I approach

Curricular Activities

Title	**Freshmen Induction Program**
Event Name	**Inaugural Session of Freshmen Induction Program**
Date	3rd July 2025
Organized By	Valuation Department of ISTAR
Participants	Newly admitted students of M. Sc. (REV), M.Sc. (PMV), M.Sc. (IHS), M.Sc.(Micro) and M. Sc. (BT)

Title	**Alumni Lecture**
Event Name	**Alumni Lecture by Mr. Kashyap K. Budhbhatti on "Valuation Practice and Experiences in Australia"**
Date	7th August 2025
Organized By	Valuation Department of ISTAR
Participants	16 students of Real Estate and Plant & Machinery Valuation

TITLE	**Expert Lecture**
Event Name	Expert Lecture on " Valuation for Insurance of Real Estate and Plant & Machinery" by Mr. Nilesh Patel, Insurance Consultant
Date	23rd September 2025
Organized By	Valuation Department, ISTAR
Participants	13 students of Semester 3 of REV and PMV

Extra-Curricular Activities

Title	**Alumni Meet**
Event Name	**Get together of ISTAR Valuation Alumni, South Gujarat Forum at Surat**
Date	17th January 2026
Organized By	**ISTAR Valuation Alumni, South Gujarat Forum and Valuation Department of ISTAR**
Participants	41 Alumni plus one Faculty from ISTAR

Placement Details

M.Sc. (Real Estate Valuation)

Sr. No.	Name of the Company	Post Offered	No. of students
1	Self employed at various locations	Practicing Valuer	08
2	Adroit Technical Services Pvt. Ltd., Vadodara	Assistant Technical Manager	01
3	Jay R. Jivrajani, Regd. Valuer, Rajkot	Assistant Valuer	01
4	Basudev Dey, Regd. Valuer, Kolkata	Site Engineer	01
5	Vasu Consultants, Madurai	Valuation Site Engineer	01
6	Avishkar Technical Services Pvt. Ltd., Mumbai	Technical Manager	01

M.Sc. (Plant and Machinery Valuation)

Sr. No.	Name of the Company	Post Offered	No. of students
1	Vishwakarma Consulting Services Pvt. Ltd., Vadodara	Valuation Assistant	02
2	Self employed, own Firm, Ahmedabad	Consulting Valuer	02
3	Self employed, own Firm, Zansi	Consulting Valuer	01

DEPARTMENT OF GEOINFORMATICS

Activities

Title	**Ravikiran PVT LTD**
Event Name	Industrial Visit
Date	02nd February 2026
Organized By	P.G. Department of Geoinformatics & P.G. Department of MIHS – ISTAR
Expert Speakers	Mr. Baiju Vargish, Shri Ramesh Shah
No. of Participants	27 Students + 02 Faculties

Title	**Bhaskaracharya National Institute for Space Applications and Geo-informatics**
Event Name	Industrial Visit
Date	04th October 2025
Organized By	P.G. Department of Geoinformatics & P.G. Department of Cyber Security – ISTAR
Expert Speakers	Shri JayeshMakwana& Shri PiyushAmbaliya
No. of Participants	56 Students + 03 Faculties

Title	Alumni Meet
Event Name	Interaction with Alumni of GeoinformaticsDept of ISTAR, CVMU
Date	14 nd December 2025
Organized By	P.G. Department of Geoinformatics – ISTAR
Name of Alumni	SrabniBardhan, SnehaGhos

Title	ISRO Scientist Guidance to Students
Event Name	Students Interaction
Date	02 nd December 2025
Organized By	P.G. Department of Geoinformatics – ISTAR
Expert Speaker	Dr. R.P. Singh, Dr. Mehul Pandya, Dr. Vibhuti
Participants	15 Students

Title	ISRO Scientist Interaction
Event Name	Faculty Interaction
Date	02nd December 2025
Organized By	P.G. Department of Geoinformatics- ISTAR,
Expert Speaker	Dr. R.P. Singh, Dr. Mehul Pandya, Dr. Vibhuti
No. of Participants	07 Faculties

Title	Career Counseling
Event Name	Expert Talk
Date	02nd December 2025
Organized By	P.G. Department of Geoinformatics- ISTAR,
Expert Speaker	Dr. Jigar Patel
No. of Participants	56 Students

Title	Fleet Monitoring & Onboard Diagnostic Device (OBD)
Event Name	Industry Expert Talk & Demonstrations
Date	28th November 2025
Organized By	P.G. Department of Geoinformatics- ISTAR,
Expert Speaker	Er. HarshitSuthar
No. of Participants	17 Students

Title	Alumni Visit
Event Name	Interaction with Alumni of GeoinformaticsDept of ISTAR, CVMU
Date	21st November 2025
Organized By	P.G. Department of Geoinformatics- ISTAR,
Name of Alumni	Er. GohelJhonson

Title	Hand on Session of Total Station
Event Name	Industry Expert Talk & Demonstrations
Date	21st November 2025
Organized By	P.G. Department of Geoinformatics- ISTAR,
Expert Speaker	Er. JaypalZala
No. of Participants	22 Students

Title	Alumni Visit

Event Name	Interaction with Alumni of GeoinformaticsDept of ISTAR, CVMU
Date	20th November 2025
Organized By	P.G. Department of Geoinformatics- ISTAR,
Name of Alumni	Er. MukeshRaulji

Title	**Hand on Session of DGPS**
Event Name	Industrial Expert Talk & Demonstrations
Date	20th November 2025
Organized By	P.G. Department of Geoinformatics- ISTAR,
Expert Speaker	Er. MukeshRaulji
No. of Participants	15 Students

Title	**Hand on Session of GPS Satellite**
Event Name	Expert Talk & Demonstrations
Date	17th November 2025
Organized By	P.G. Department of Geoinformatics- ISTAR,
Expert Speaker	Dr. Krunal Suthar
No. of Participants	20 Students

Title	**Remote Sensing & GIS**
Event Name	Industry Alumni Talk
Date	15th November 2025
Organized By	P.G. Department of Geoinformatics- ISTAR,
Expert Speaker	Ms. HimaniParmar

Title	**Fleet Monitoring & Onboard Diagnostic Device (OBD)**
Event Name	Industrial Expert Talk & Demonstrations
Date	10th October 2025
Organized By	P.G. Department of Geoinformatics- ISTAR,
Expert Speaker	Er. HarshitSuthar

Title	**Google Earth Engine**
Event Name	Expert Alumni Talk
Date	09th October 2025
Organized By	P.G. Department of Geoinformatics- ISTAR,
Expert Speaker	Ms. Chancy Shah

Title	**Hand on Session for GPS Satellite**
Event Name	Live Data reception from Satellite for Global Navigation Satellite System (GNSS)
Date	17th September 2025
Organized By	P.G. Department of Geoinformatics- ISTAR,
Expert Speaker	Dr. Krunal Suthar
No. of Participants	08 Students

Title	**1049 IIRS Outreach Program**
Event Name	One Day Online Workshop on Mapping and Monitoring Greenhouse Gases through Space
Date	2nd September 2025
Organized By	P.G. Department of Geoinformatics- ISTAR, CVMU As Nodal Centre
Expert Speaker	Dr. R.P. Singh, Prof. (Dr.) GufranBeig, Prof. (Dr.) Andre Butz, Dr. Mehul Pandya, Dr. Asfa Siddiqui, Dr. Poonam S. Tiwari / Ms. Yamini Aggarwal
No. of Participants	01 Students

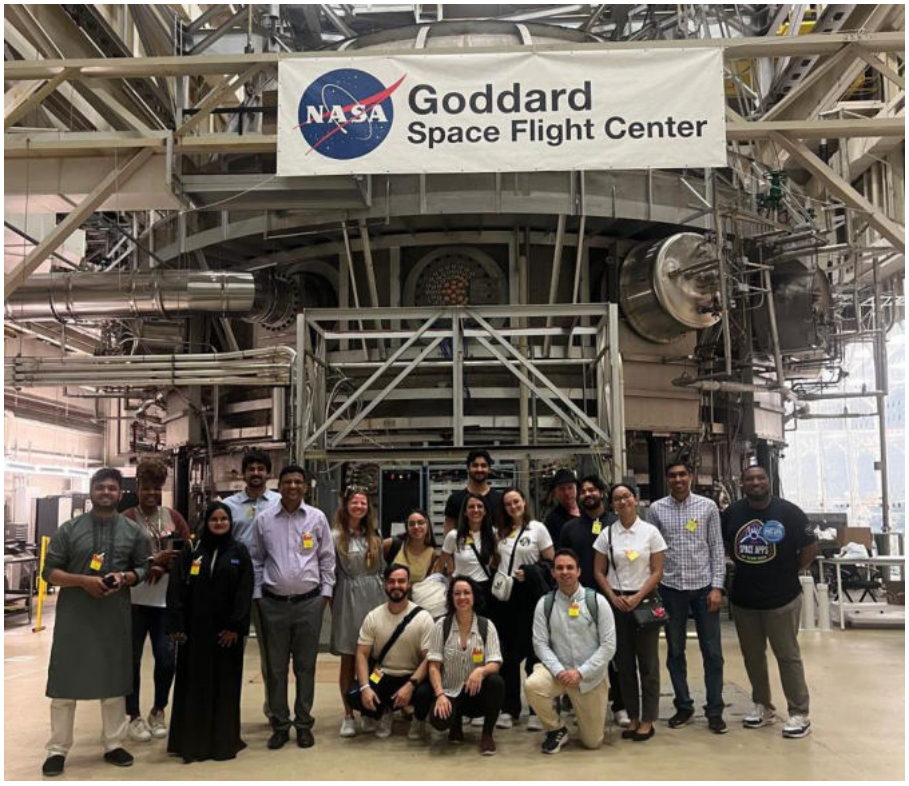
Title	**165 IIRS Outreach Program**
Event Name	Remote Sensing & Digital Image Analysis
Date	25th August 2025 to 19th September 2025
Organized By	P.G. Department of Geoinformatics- ISTAR, CVMU As Nodal Centre
Expert Speaker	Dr. Manu Mehta, Dr. HinaPande, Mr. Vinay Kumar, Ms. Minakshi Kumar, Dr. Poonam S. Tiwari, Dr. Anil Kumar, Mr. Prasun Kumar Gupta, Dr. Shashi Kumar, Dr. Harish Karnatak, Dr. Shashi Kumar, Mrs. Shefali Agrawal
No. of Participants	01 Students

Title	**164 IIRS Outreach Program**
Event Name	Basics of Remote Sensing, Geographical Information System and Global Navigation Satellite System
Date	25th August 2025 to 19th September 2025
Organized By	P.G. Department of Geoinformatics- ISTAR, CVMU As Nodal Centre
Expert Speaker	Dr. Manu Mehta, Dr. HinaPande, Mr. Vinay Kumar, Ms. Minakshi Kumar, Dr. Poonam S. Tiwari, Dr. Anil Kumar, Mr. Prasun Kumar Gupta, Dr. Shashi Kumar, Dr. Harish Karnatak, Dr. Shashi Kumar, Mrs. Shefali Agrawal
No. of Participants	20 Students

Title	**India Space Week Celebration**
Event Name	Expert Talk & Interaction with Scientist
Date	18th August 2025
Organized By	P.G. Department of Geoinformatics – ISTAR, CVMU
Expert Speaker	Dr. Krunal Suthar (Head, M.Sc. Geoinformatics, ISTAR-CVMU), Dr. Himanshu Trivedi (R & D Cell, CVMU)
No. of Participants	106 Students

Title	**Prayer & Well Come of new Admitted Student**
Event Name	Satyanarayan Puja & Induction
Date	20th February, 2025
Organized By	Jointly organized by P.G. Department of Geoinformatics & P.G. Department of Cyber Security – ISTAR
No. of Participants	52 Students

Title	**NASA Space App 2024**
Event Name	Global Winner Celebration
Date	04th June, 2025
Organized By	National Aeronautics & Space Agency (NASA)-USA, at Goddard Space Flight Centre-Washington-DC, USA
Details	At the NASA Space Apps 2024 Global Winner Celebration, held on 4th June 2025 at NASA's Goddard Space Flight Centre, Washington, USA, Dr. Krunal Suthar, Assistant Professor and Head of the M.Sc. Geoinformatics Department, ISTAR-CVM University, was formally invited, felicitated, and awarded by the National Aeronautics and Space Administration (NASA), USA. This prestigious recognition was conferred in appreciation of his remarkable contributions to the NASA Space Apps Challenge (2020–2024). Dr. Suthar's achievements highlight his commitment to innovation in space science and geoinformatics, bringing international acclaim to ISTAR and to India.



ARTICLES

CASE STUDY ON HEAT STRESS: A CRITICAL OCCUPATIONAL HAZARD

AAFTAB THAKOR, SHYAM JADAV, MOHAMMAD WAJID THAKOR, DEVRAJSINH RAULJI, MOHITSINH VANAR, VRAJESH PRAJAPATI

DEPARTMENT OF INDUSTRIAL HYGIENE AND SAFETY

Abstract

Heat stress is a critical occupational health hazard that occurs when the human body is unable to maintain its normal temperature due to excessive environmental heat, high humidity, and heavy physical workload. Workers in industries such as steel plants, foundries, and construction sites are at higher risk due to continuous exposure to radiant and ambient heat. This case study highlights the causes, health effects, and preventive measures related to heat stress emphasizing the importance of engineering controls, administrative practices, and worker awareness to ensure a safe and healthy working environment. Heat Stress is a serious occupational health risk that occurs when the body absorbs more heat than it can release. The human body normally maintains an internal temperature of about 37°C through sweating and blood circulation. However, when environmental heat, humidity, and physical workload increase beyond the body's cooling capacity heat stress develops. If not controlled in time, it can lead to heat cramps, heat exhaustion, or even life-threatening heat stroke. Heat Stress is common in industries such as steel plants, foundries, forging units, boiler sections, and construction sites. Workers operating near furnaces, molten metal, or heavy machinery are particularly vulnerable because they are exposed to both high ambient temperature and radiant heat.

Causes of Heat Stress

High environmental temperature, high humidity, poor ventilation, heavy physical work radiant at from machines or furnaces- wearing heavy or non-breathable PPE. Effects on Workers:

1. Heat Cramps – Painful muscle spasms due to loss of salts.
2. Heat Exhaustion – Fatigue, dizziness, headache, nausea, heavy sweating.
3. Heat Stroke – Body temperature rises above 40°C, confusion occurs, sweating may stop; this is a medical emergency, At a unit of Steel Industry, a heat-related incident occurred during maintenance work near a blast furnace. It was peak summer, with outdoor temperatures above 40°C. Inside the furnace area, radiant heat exposure was significantly highera contract worker performs maintenance duties began to feel dizzy and weak. Initially, it was assumed to be routine fatigue dueto workload. However, within a short time, he collapsed on site. Medical evaluation confirmed severe heat exhaustion caused by heat stress. Immediate first aid was provided: the worker was moved to a cool shaded area, given fluids and transported for care.

Case study of Steel Industry of Eastern India

Causes Identified After Investigation:

- Intense radiant heat from furnace

-Corrective Measures Implemented:

- Structured work-rest cycles
- Mandatory hydration breaks
- Installation of additional cooling fans and heat shields

- Heat stress awareness training
- Inadequate rest intervals
- Irregular hydration
- Lack of continuous heat monitoring
-Monitoring using Wet Bulb Globe Temperature (WBGT) index

Prevention and Control Measures

Engineering Controls:
- Proper ventilation systems
- Heat insulation and shielding
- Cooling systems and air circulation

Administrative Controls:
- Work scheduling during cooler hours
- Acclimatization programs
- Regular medical checks
- Safety training

Personal Protective Measures:
- Lightweight breathable clothing
- Cooling vests if required
- Continuous hydration

Conclusion

Heat Stress is not just discomfort—it is a preventable occupational hazard. Proper planning, monitoring, and worker awareness can save lives and improve productivity. A safe working environment is the foundation of sustainable industrial growth.

References

Morbidity Evidence from India (2025): Evidence indicating that 32% of self-reported illnesses are significantly higher in summer, including heart disease, hypertension and diabetics, particularly among outdoor workers. https://www.medrxiv.org/content/medrxiv/early/2025/07/08/2025.07.07.25330912.full.pdf.com

Occupational Safety and Health Administration (OSHA). Guidelines for Preventing Heat Stress in the workplace. https://www.osha.gov/heat-exposure.com

Specific Studies on Heat Stress in India (nature,2025): A 2025 study Heat Stress Exposure (HSE) in India, highlighting the HSE increases faster than the average temperature in this period, particularly impacting eastern and central India. https://www.nature.com/articles/s41467-025-64840-x

Workers health and productivity under Occupational Heat Strain (The 9Lancet, 2018/2021) https://pubmed.ncbi.nlm.nih.gov/30526938/.com

World Health Organization (WHO)- Heat and Health (2024): A comprehensive face sheet highlighting that heat stress is the leading cause of weather related deaths, with morality for people over 65 rising 85% between 2000-2004 and 2017-2021. https://www.who.int/news-room/fact-sheets/detail/climate-change-heat-and-health.com

NATURE'S PHARMACY: THE RENAISSANCE OF ETHNOBOTANY IN THE AGE OF AI

AHYUSHI H. PATEL AND HIREN B. SONI

DEPARTMENT OF ENVIRONMENTAL SCIENCE AND TECHNOLOGY

Ethnobotany is often misunderstood as the simple cataloging of how "primitive" societies use plants. In reality, it is a high-tech, interdisciplinary science sitting at the crossroads of anthropology, botany, and advanced pharmacology. Defined as the study of the complex relationships between human cultures and vegetation, ethnobotany

provides a vital framework for solving some of our modern era's greatest challenges, from antimicrobial resistance to sustainable healthcare.

Deep Roots and the Shift in Perspective

While the systematic documentation of medicinal plants dates back to the first century with Dioscorides' *De Materia Medica*, the term "ethnobotany" was formally coined in 1895 by John William Harshberger. For centuries, Western science viewed traditional knowledge through a colonial lens, focusing on trade and species identification. However, the modern discipline has undergone an "emic" shift, prioritizing the perspective of the practitioners themselves to understand how plants fit into the social and spiritual lives of communities.

Recent Research: Validating Traditional Wisdom

Recent scientific reviews published in 2024 and 2025 have provided rigorous pharmacological backing for traditional remedies. For instance, a 2025 review of the genus *Adenia,* a group of climbing plants used in Africa and Asia, highlighted its dual nature. While historically used for hunting poisons, species like *A. gummifera* are now essential in managing HIV/AIDS opportunistic infections through tonics like "CareVid". Researchers have identified Type 2 Ribosome-Inactivating Proteins (RIPs) within the genus, which show selective toxicity against cancer cells, though their high neural toxicity necessitates careful dosage regulation. Similarly, research into *Ptaeroxylon obliquum* (Sneezewood) has validated its use by the Zulu and Bapedi tribes for respiratory ailments. Scientists isolated Obliquumol, a compound found for the first time in this species, which demonstrated potent antimycobacterial activity against *Mycobacterium fortuitum* with an impressive Minimum Inhibitory Concentration (MIC) of 20 mu g/mL. These "hit" compounds are now being optimized for potential pharmaceutical development.

The Technology Frontier: AI and Multi-Omics

The most revolutionary change in the field is the integration of Artificial Intelligence (AI). AI is now used to decode massive genomic and metabolomic datasets from medicinal plants 25 times faster than traditional models. Tools like AlphaFold 2 have been used to design enzymes that increase the production of cardiovascular-protecting compounds in plants like *Salvia miltiorrhiza*. Furthermore, deep learning algorithms like ClusterFinder are mining plant genomes to identify biosynthetic gene clusters responsible for therapeutic metabolites, reducing the early-stage drug discovery timeline by nearly 40%.

Global Strategy and Economic Impact

The global market for herbal medicines is no longer a niche sector,it was valued at USD 251.24 billion in 2025 and is projected to reach over USD 515 billion by 2034. Recognizing this, the World Health Organization (WHO) launched the Global Traditional Medicine Strategy 2025–2034. This initiative aims to bridge the gap between traditional wisdom and modern science by integrating evidence-based remedies into national healthcare systems. Success stories already exist: in Mexico, Mayan community health workers helped maternal mortality rates decline by integrating traditional triage forms, while in New Zealand, the inclusion of Māori "Eagle Medicine Men" led to significant improvements in national health morbidity and mortality rates.

The Conservation Crisis and Ethical Imperatives

The future of this "nature's pharmacy" is under threat. The IUCN Red List reports that 38% of the world's trees and 71% of cycads face extinction. Climate change is not only destroying habitats but also disrupting the "cultural continuity" of knowledge as indigenous communities are displaced. Furthermore, the commercialization of this knowledge raises critical ethical questions. The Nagoya Protocol and the 2024 WIPO Treaty on Intellectual Property are attempting to create frameworks for fair benefit-sharing. This ensures that indigenous peoples, who protect 80% of the world's biodiversity, receive moral recognition and economic royalties for their ancestral discoveries.

Conclusion: A Sustainable Perspective

Ethnobotany in 2026 is a science of reconciliation, blending ancient ecological wisdom with the precision of genomic sequencing and AI. As we face global health threats and environmental shifts, this "knowledge bridge" offers a pathway to a more equitable and sustainable medical future. By safeguarding both biological diversity and the cultural systems that understand it, we ensure that the next life-saving drug isn't lost before it can be discovered.

BIOGENIC FLOCCULANTS IN WASTEWATER REMEDIATION: PHYSICOCHEMICAL MECHANISMS AND GLOBAL DEPLOYMENT PARADIGMS

BHUMI A. KOTHIA AND HIREN B. SONI

DEPARTMENT OF ENVIRONMENTAL SCIENCE AND TECHNOLOGY

Introduction and Physicochemical Mechanisms

The exponential escalation of industrial and municipal wastewater generation necessitates the implementation of highly robust, sustainable clarification paradigms. Conventional wastewater treatment relies heavily on chemical coagulants and synthetic flocculants, such as polyacrylamide and aluminumsulfate. While economically viable, these chemical agents generate voluminous, highly toxic sludge and pose severe environmental and human health risks, including established links to neurotoxicity and carcinogenesis. Consequently, microbial bioflocculants have emerged as a critically important ecological alternative. These biologically derived extracellular polymeric substances (EPS) are complex macromolecules comprising polysaccharides, proteins, and glycoproteins secreted by various bacteria, fungi, and microalgae during their metabolic cycles. Bacterial bioflocculants operate predominantly through a combination of adsorption bridging and electrostatic charge neutralization. Extended macromolecular polymer chains adsorb onto dispersed, negatively charged colloidal particles, effectively binding them into dense, three-dimensional porous flocs that precipitate rapidly. For highly anionic biopolymers rich in uronic acids or carboxyl groups, the addition of multivalent metal cations (such as Ca^{2+} or Fe^{3+}) is often required to bridge the electrostatic gaps between the biopolymer backbone and the target pollutants. Biopolymers boast profound operational advantages over synthetic chemicals, notably offering complete biodegradability, absolute non-toxicity, and a remarkable dual capacity for the simultaneous reduction of chemical oxygen demand (COD) and the chelation of heavy metal ions.

Global Case Studies: India and Foreign Deployments

The transition from laboratory-scale bioprospecting to targeted wastewater engineering is evidenced by specialized application studies globally, tailoring specific bacterial isolates to uniquely recalcitrant effluent matrices. In India, bioremediation efforts have focused on identifying robust strains for industrial effluents. The National Collection of Industrial Microorganisms (NCIM) identified *Enterobacter* sp. F NCIM 5545 as highly effective for textile effluent remediation. This isolate degrades anthraquinone-based Reactive Blue 19 dye, highlighting a dual capability to metabolically cleave toxic dye structures prior to physical flocculation. Researchers at The Energy and Resources Institute (TERI) isolated a novel bacterium uniquely capable of utilizing n-hexadecane as an energy source, achieving 87.8% bioflocculating activity while simultaneously executing the aerobic metabolic degradation of complex petrochemical hydrocarbons. Recent advancements also include *Bacillus cereus* strain S55, isolated from Coimbatore soils. This strain produces a polysaccharide-dominant bioflocculant, optimized via glucose and urea supplementation, which demonstrates high efficacy in domestic wastewater treatment and industrial dye remediation. Internationally, large-scale and extremophilic deployments are advancing rapidly. In China, researchers executed a 30-liter pilot-scale application utilizing *Bacillus agaradhaerens* to clarify highly turbid mineral processing wastewater, achieving a 92.35% turbidity removal rate. To circumvent prohibitive substrate costs, this strain was strategically cultivated on municipal kitchen waste. Concurrently, *Corynebacterium glutamicum* Cg1-P30 has been successfully deployed in highly acidic acid mine drainage (AMD). Operating optimally at an extreme pH of 2.0 without prior pH adjustment, this biopolymer effectively precipitates and chelates heavy metals including Pb^{2+}, Zn^{2+}, Fe^{3+}, and Al^{3+}. China has also explored marine isolates like *Alteromonas* sp. CGMCC 10612, which produces a high-molecular-weight proteoglycan bioflocculant capable of 98.5% Congo Red dye removal.In South Africa, researchers utilized a synergistic marine bacterial consortium of *Oceanobacillus* and *Halobacillus* species. This consortium's cell-free culture broth achieved a 98.3% flocculating activity, eradicating 99.9% of COD in heavily loaded dairy wastewater. Further expanding taxonomic diversity, studies have utilized *Pichia kudriavzevii*, which demonstrated substantial removal efficiencies for COD (43%) and biochemical oxygen demand (BOD) (64%) in complex coal mine wastewater matrices.

Emerging Frontiers: Microplastics and Genetic Engineering

Recent advancements have expanded bioflocculant application to the remediation of microplastic (MP) contamination. Microbial biopolymers and extracellular polymeric substances can achieve up to 98% removal of microplastics through adsorption and bridging flocculation, offering a sustainable alternative to chemical treatments. Additionally, to overcome the persistent bottleneck of low biological yields, researchers are increasingly employing genetic engineering. For instance, the targeted overexpression of the epsB gene in *Bacillus licheniformis* has been proven to significantly enhance both the bioflocculant yield and its overall flocculating activity.

Conclusion and Future Perspectives

While the ecological superiority and operational versatility of bioflocculants are well established, their global commercialization remains heavily constrained by the naturally low biological product yields and the high cost of conventional fermentation substrates. The strategic integration of waste-to-wealth substrate utilization paradigms-such as cultivating strains on poultry slaughterhouse wastewater or agricultural

byproducts-coupled with advanced genetic engineering, will be imperative to render bacterial bioflocculants economically competitive with synthetic coagulants on an industrial scale.

HEAVY METAL–LOADED MICROPLASTICS: ENVIRONMENTAL BEHAVIOR, HUMAN HEALTH RISKS AND REMOVAL

DHRUV K. MEHTA

DEPARTMENT OF ENVIRONMENTAL SCIENCE AND TECHNOLOGY

Abstract

In 2025, global plastic production reached approximately 500 million metric tons, generating an estimated 225 million metric tons of plastic waste, of which nearly 72 million metric tons were inadequately managed. Environmental exposure leads to the fragmentation of larger plastic debris into secondary microplastics through physical abrasion, photochemical oxidation, and biological degradation processes. Owing to their hydrophobic surfaces and high surface-area-to-volume ratios, microplastics exhibit strong sorptive capacities for hazardous contaminants, including bisphenol-A (BPA), phthalates, persistent organic pollutants (POPs), and heavy metals. Upon ingestion by aquatic and terrestrial organisms, these contaminant-laden microplastics may desorb adsorbed chemicals under gastrointestinal conditions, facilitating internal exposure to toxicants. This carrier-mediated transfer of pollutants-commonly referred to as the "Trojan horse effect" can induce oxidative stress, inflammatory responses, endocrine disruption, and broader physiological impairments. Wastewater treatment plants (WWTPs) constitute a significant conduit for microplastics entering aquatic and terrestrial ecosystems, as conventional treatment processes are not specifically designed for complete microplastic removal. In this context, a pyrolysis-derived magnetic biochar system presents a promising mitigation strategy. Biochar produced from agricultural biomass can be physicochemically activated to enhance its surface functionality and affinity for synthetic polymer particles. Magnetic modification further enables efficient post-treatment recovery of the sorbent material. Such a system is particularly relevant for India, given its substantial agricultural biomass availability, which can sustainably support large-scale biochar production. Integrating magnetic biochar technology within wastewater treatment infrastructure may therefore offer a circular, resource-efficient approach to microplastic remediation while simultaneously valorizing agricultural residues.

Keywords: Microplastics, Trojan horse effect, Magnetic Biochar Remediation, Waste Water Treatment Plants

Introduction

In 2025, the plastic production reached 500 million metric tonnes, which is an exponential rise as compared to the industrial revolution era during the 1950's, where commercial plastic production first started. Most of it being mismanaged causes plastic infiltration and contamination to proximal and far off terrestrial and aquatic systems. Plastics further degrade into microplastics by physical chemical and biological action leading to the size fraction being 5mm to 1micron. These polymers can be categorized as directly or indirectly polluting, primary and secondary microplastics respectively.

They collaboratively occur with heavy metals like lead (Pb), cadmium (Cd), copper (Cu), and chromium (Cr) which are also persistent toxic pollutants, forming a complex which alters the properties and effect of each respective pollutant. This complexishighly documented, with studies provingthe occurrence called as the “Trojan horse” effect.

Role of Microplastics as Vectors for Heavy Metals

Microplastics do not act as inert materials, instead the smaller the plastic particle becomes, the more its absorbance property increases. This is the main factor in forming the microplastic-heavy metal complex.As per 3000+ experiments and studies, polymers such as polyamide (PA) and polyvinyl chloride (PVC) adsorb a significant amount of heavy metals (i.e.Pb^{2+}, Cd^{2+}, Cu^{2+}, and Cr species), with the complex being formed due to the surface functional groups and physiochemical properties of the plastic and metal itself. This adsorption mechanism is based off of electrostatic forces, surface complexations withoxygen- and nitrogen-containing groups, and van der walls forces.

Environmental Factors Affecting The Adsorption Behavior

Physiochemical components of the Environment including (but not limited to) pH, ionic strength, temperature, and dissolved organic matter (DOM), etc acts on the bond formation and adsorption properties of the both the microplastics and metals, thereby leading to the attraction and repulsion of the respective particles. A stimulated wetland study revealed higher pH, and lower salinity proved to increase the adsorption behavior, whilst the DOM and other co-contaminants could either enhance the adsorption or inhibit it through competitive actions. The aging effect also plays a pivotal role in the microplastics adsorption behavior, as natural UV light exposure, physical abrasion, chemical and biological actions lead to increasing the functional groups androughness, leading to an increased surface area, thereby increasing the adsorption capability of each microplastic particle acted upon.

The Significance of The “Trojan Horse Effect"

Thecapability of microplastic in forming a complex with heavy metals makes it highly polluting, not only to the environment but to the biologicalfood chain too, through which it reaches higher organisms by processes of biomagnification and bioaccumulation. This leads to the toxicity in all organisms where microplastics is ingested.

Emerging Topic

There are intensive studies on microplastic as well as heavy metals individually, however the rising concern for human and ecological health proves to intertwine these subjects and form them as a singular topic, for in depth studies.

Mechanisms of Heavy Metal Adsorption Onto Microplastics

The adsorption of heavy metals onto microplastics relies on the surface chemistry, the characteristics of the particle itself and the environmental condition under which it occurs. Microplastics such as polyethylene (PE), polypropylene (PP), polystyrene (PS), and polyvinyl chloride (PVC) are mostly hydrophobic and possess limited active binding sites, however due to environmental aging (e.g., UV irradiation, thermo-oxidation, and mechanical abrasion) causes functional group formation containing oxygen i.e. carbonyl (C=O), hydroxyl (–OH), and carboxyl (–COOH) moieties on to their surfaces which increases the absorbing characteristic. This microplastic oxidation caused it to have a

negative surface charge and surface roughness, increasing the metal binding capacity. Adsorption behavior is frequently described using Langmuir and Freundlich isotherm models, which encompasses both the monolayer and multilayer adsorption type. Further regulation occurs through environmental condition and its stability. pH is a dominant factor as higher pH generally increases the adsorption affinity due to reduced proton competition and increased deprotonation of functional groups, where decreased pH inhibits the adsorption binding process. Ionic strength and influence of salinity are factors dominant in marine environments, where Na^{+} and Mg^{2+} ions may reduce heavy metal affinity for plastic surfaces. Dissolved organic matter (DOM) interferes with the binding process and can cause either inhibition or enhance it through metal–DOM–plastic bridging mechanisms.Collectively, these mechanisms support the conceptualization of microplastics as dynamic sorbents and vectors, capable of altering the environmental fate and bioavailability of toxic heavy metals.

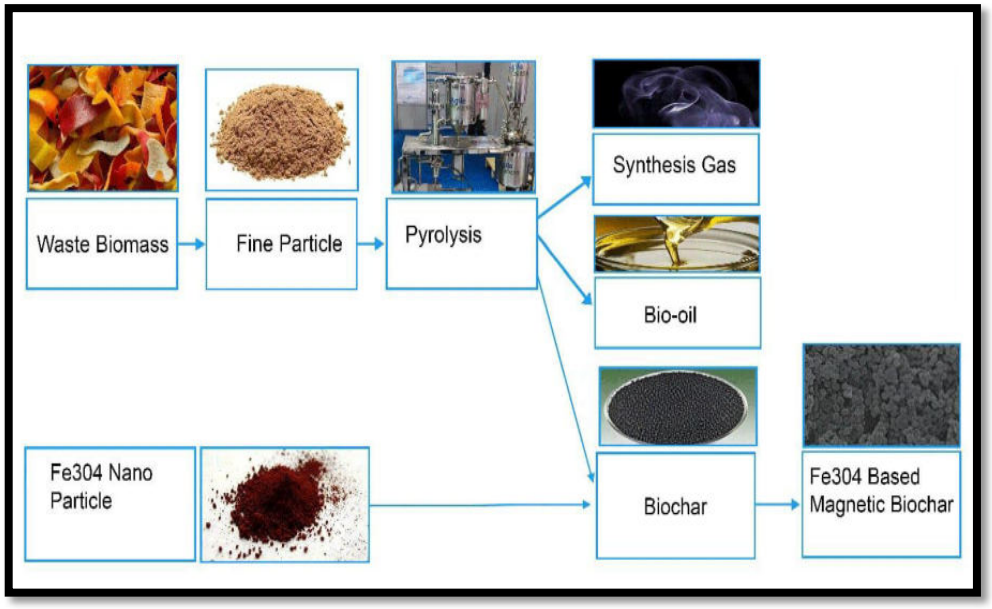
Bioavailability, Desorption, and Toxicological Effects of Heavy Metal–Loaded Microplastics

Once the metal is bound onto the microplastic surface, the toxicity depends on the bioavailability and desorption under physiological conditions. Exposure routes are ingestion and inhalation dominant through food and airborne particles respectively, with increasing evidence of microplastics being found in the blood and lung tissues. In the gastrointestinal tract, acidic gastric conditions can cause partial desorption of metal ions from oxidized plastic surfacesdue to proton competition and destabilization of surface complexes, hence increasing its bio-accessibility. A similar mechanism may occur intracellularly following endocytosis, where lysosomal acidification (pH ~4.5) assists the release of adsorbed metals. At cellular levels both the concentration of microplastics and heavy metals may cause an increased oxidative stress and inflammatory response. Heavy metals such as lead (pb) and cadmium (cd) are well-known amplifiers of reactive oxygen species (ROS), mitochondrial dysfunction, and lipid peroxidation, leading to DNA damage and apoptosis. Chronic exposure raises concerns for organ specific toxicity such as hepatotoxicity, nephrotoxicity, neuroinflammation, and reproductive impairment, where the release of heavy metals is sustained. Dose-response studies have been under investigation, and current findings may asker metal speciation, distribution and toxicodynamics, thereby increasing the need to study them as a system rather than individuals.

Disrupting The Microplastic and Heavy Metal Complex Through Magnetic Activated Biochar

Waste biomass is mechanically reduced to fine particles to increase surface area and ensure uniform heat transfer occurs during the process of pyrolysis. The thermal disintegration of the pulverized biomass under limited presence of oxygen forms three important by-products: synthesis gas (syngas), bio-oil, and solid biochar, with temperature, rate of heating and residence time, fluctuations causing a difference in the product composition. Biochar produced during slow pyrolysis is characterized by a porous carbonaceous structure filled with oxygen-containing functional groups (–OH, –COOH), which are critical for subsequent adsorption applications. To convey magnetic properties, Fe_3O_4 (magnetite) nanoparticles are either co-precipitated onto the biochar surface or incorporated during pyrolysis, forming Fe_3O_4-based magnetic biochar. This modification enhances adsorption capacity through additional mechanisms such as surface complexation and ion exchange, while enabling easy separation of the adsorbent

from aqueous systems using an external magnetic field. This magnetic biocharhas high surface area, abundant functional groups, and magnetic recoverability, hence being a suitable choice formicroplastic-heavy metal complex remediation in aquatic bodies, being used as a treatment addition in waste water treatment plants.



References

Ahmad, M., Rajapaksha, A. U., Lim, J. E., Zhang, M., Bolan, N., Mohan, D., Vithanage, M., Lee, S. S., & Ok, Y. S. (2014). Biochar as a sorbent for contaminant management in soil and water: A review. Chemosphere, 99, 19–33. https://doi.org/10.1016/j.chemosphere.2013.10.071

Bi, S., Liu, S., Liu, E., Xiong, J., Xu, Y., Wu, R., Liu, X., & Xu, J. (2024). Adsorption behavior and mechanism of heavy metals onto microplastics: A meta-analysis assisted by machine learning. Environmental Pollution, 360, 124634. https://doi.org/10.1016/j.envpol.2024.124634

Biswas, B., Joseph, A., Ranjan, V. P., &Goel, S. (2024). Adsorption of Emerging Contaminants on Microplastics in the Environment: A Systematic Review. ACS ES&T Water, 4(12), 5207–5224. https://doi.org/10.1021/acsestwater.4c00666

Brennecke, D., Duarte, B., Paiva, F., Caçador, I., & Canning-Clode, J. (2016). Microplastics as vector for heavy metal contamination from the marine environment. Estuarine, Coastal and Shelf Science, 178, 189–195. https://doi.org/10.1016/j.ecss.2015.12.003

Holmes, L. A., Turner, A., & Thompson, R. C. (2012). Adsorption of trace metals to plastic resin pellets in the marine environment. Environmental Pollution, 160, 42–48. https://doi.org/10.1016/j.envpol.2011.08.052

Inyang, M. I., Gao, B., Yao, Y., Xue, Y., Zimmerman, A., Mosa, A., Pullammanappallil, P., Ok, Y. S., & Cao, X. (2015). A review of biochar as a low-cost adsorbent for aqueous heavy metal removal. Critical Reviews in Environmental Science and Technology, 46(4), 406–433. https://doi.org/10.1080/10643389.2015.1096880

Jaishankar, M., Tseten, T., Anbalagan, N., Mathew, B. B., &Beeregowda, K. N. (2014). Toxicity, mechanism and health effects of some heavy metals. Interdisciplinary Toxicology, 7(2), 60–72. https://doi.org/10.2478/intox-2014-0009

Jenner, L. C., Rotchell, J. M., Bennett, R. T., Cowen, M., Tentzeris, V., &Sadofsky, L. R. (2022). Detection of microplastics in human lung tissue using μFTIR spectroscopy.

Science of The Total Environment, 831, 154907. https://doi.org/10.1016/j.scitotenv.2022.154907
Jian, M., Niu, J., Li, W., Huang, Y., Yu, H., Lai, Z., Liu, S., & Xu, E. G. (2022). How do microplastics adsorb metals? A preliminary study under simulated wetland conditions. Chemosphere, 309, 136547. https://doi.org/10.1016/j.chemosphere.2022.136547
Lehmann, J., & Joseph, S. (Eds.). (2015). Biochar for Environmental Management. Routledge. https://doi.org/10.4324/9780203762264
Leslie, H. A., van Velzen, M. J. M., Brandsma, S. H., Vethaak, A. D., Garcia-Vallejo, J. J., &Lamoree, M. H. (2022). Discovery and quantification of plastic particle pollution in human blood. Environment International, 163, 107199. https://doi.org/10.1016/j.envint.2022.107199
Li, Y., Zhang, Y., Su, F., Wang, Y., Peng, L., & Liu, D. (2022). Adsorption behaviour of microplastics on the heavy metal Cr(VI) before and after ageing. Chemosphere, 302, 134865. https://doi.org/10.1016/j.chemosphere.2022.134865
Li, Z., Chen, L., Gao, W., Li, Y., Li, K., Liu, Y., & Gao, Y. (2026). Adsorption of heavy metals by microplastics in aquatic environments: mechanism, multi-factor regulation and ecological risks. Marine Pollution Bulletin, 225, 119215. https://doi.org/10.1016/j.marpolbul.2026.119215
Mohan, D., Pittman, C. U., Jr., & Steele, P. H. (2006). Pyrolysis of Wood/Biomass for Bio-oil: A Critical Review. Energy & Fuels, 20(3), 848–889. https://doi.org/10.1021/ef0502397
Shi, M., Xie, Q., Li, Z.-L., Pan, Y.-F., Yuan, Z., Lin, L., Xu, X.-R., & Li, H.-X. (2023). Adsorption of heavy metals on biodegradable and conventional microplastics in the Pearl River Estuary, China. Environmental Pollution, 322, 121158. https://doi.org/10.1016/j.envpol.2023.121158
Tang, J., Zhu, W., Kookana, R., & Katayama, A. (2013). Characteristics of biochar and its application in remediation of contaminated soil. Journal of Bioscience and Bioengineering, 116(6), 653–659. https://doi.org/10.1016/j.jbiosc.2013.05.035
Turner, A., & Holmes, L. A. (2015). Adsorption of trace metals by microplastic pellets in fresh water. Environmental Chemistry, 12(5), 600–610. https://doi.org/10.1071/en14143
Wang, J., Liu, X., Li, Y., Powell, T., Wang, X., Wang, G., & Zhang, P. (2019). Microplastics as contaminants in the soil environment: A mini-review. Science of The Total Environment, 691, 848–857. https://doi.org/10.1016/j.scitotenv.2019.07.209
Wright, S. L., & Kelly, F. J. (2017). Plastic and Human Health: A Micro Issue? Environmental Science & Technology, 51(12), 6634–6647. https://doi.org/10.1021/acs.est.7b00423

RESPIRATORS AND APF (ASSIGNED PROTECTION FACTOR)

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Abstract

Respirators are critical components of personal protective equipment (PPE) used to protect workers from inhaling hazardous airborne contaminants such as dusts, fumes,

mists, gases, vapors, and oxygen-deficient atmospheres. They function either by filtering contaminants from ambient air or by supplying clean air from an independent source. Proper selection, fit testing, maintenance, and understanding of Assigned Protection Factor (APF) are essential to ensure effective respiratory protection. This document provides a concise overview of respirator types, filtration mechanisms, classification systems, APF derivation and application, and relevant standards.

Introduction: What Are Respirators?

A respirator is a protective device worn over the nose and mouth or entire face to prevent inhalation of harmful airborne contaminants. Respirators are used when engineering controls and administrative measures are insufficient to reduce exposure below permissible exposure limits. They are regulated and certified under national and international standards to ensure performance and reliability.

Need for Respirators

Respirators are required in the following situations: When airborne contaminant concentration exceeds permissible exposure limits (PEL/TLV). During maintenance or short-duration high exposure tasks. In emergency response situations. In confined spaces. In oxygen-deficient atmospheres (less than 19.5% oxygen). Respirators are considered the last line of defense in the Hierarchy of Controls.

Types of Replacement: Mechanical and Chemical

Mechanical Filters (Particulate Filters)

Mechanical filters remove particulate contaminants such as dust, fumes, and mists. They operate through physical mechanisms including impaction, interception, diffusion (Brownian motion), and electrostatic attraction. Examples include N95 and P100 respirators. Replacement is required when breathing resistance increases, filters become damaged or visibly dirty, or manufacturer service life limits are reached.

Chemical Cartridges (Gas and Vapor Filters)

Chemical cartridges remove gases and vapors using sorbent materials such as activated carbon. Contaminants are removed by adsorption or chemical reaction within the cartridge media. Replacement is required when the service life expires, when odor or irritation is detected, or when end-of-service-life indicators activate.

Classification of Respirators

Air-Purifying Respirators (APR)

Air-Purifying Respirators remove contaminants from ambient air before inhalation. They do not supply oxygen and must not be used in oxygen-deficient atmospheres. Types include: Filtering Facepiece Respirators (e.g., N95) Half-mask Elastomeric Respirators Full-face Respirators Powered Air-Purifying Respirators (PAPR)

Atmosphere-Supplying Respirators (ASR)

Atmosphere-Supplying Respirators provide clean breathing air from an uncontaminated source. Types include: Supplied-Air Respirators (SAR) Self-Contained Breathing Apparatus (SCBA) Combination SAR/SCBA These are essential in Immediately Dangerous to Life or Health (IDLH) conditions and oxygen-deficient environments.

Assigned Protection Factor (APF)
Assigned Protection Factor (APF) is a numerical rating that indicates the level of respiratory protection provided when a respirator is properly fitted and used. APF = Concentration outside the respirator ÷ Concentration inside the respirator For example, an APF of 10 means exposure inside the respirator is reduced to one-tenth of the external concentration.

Common APF Values
Filtering Facepiece / Half-mask APR: APF 10 Full-face APR: APF 50 PAPR (varies): APF 25–1000 SCBA (positive pressure): APF up to 10,000

Application of APF
Example: Airborne concentration of a solvent = 100 ppm Permissible Exposure Limit (PEL) = 1 ppm Required reduction factor = 100 ÷ 1 = 100 Therefore, a respirator with APF of at least 100 must be selected. A half-mask respirator (APF 10) or full-face APR (APF 50) would be insufficient. A PAPR (APF 100 or greater) or SCBA would be appropriate.

Standards and References
OSHA 29 CFR 1910.134 – Respiratory Protection Standard NIOSH 42 CFR Part 84 – Respirator Certification ANSI Z88.2 – Respiratory Protection ISO 16975-1 – Selection, Use and Maintenance of RPE IS 9473 – Respiratory Protective Devices (India) Factories Act, 1948 and OSHWC Code, 2020

THE PARADOX OF PURIFICATION: HOW CHLORINATION IN INDIAN WASTEWATER TREATMENT INDUCES TRANSCRIPTOMIC STRESS AND AMPLIFIES ANTIBIOTIC RESISTANCE

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Introduction
The intersection of urban wastewater management and public health represents a critical environmental challenge for India. As the crisis of antimicrobial resistance (AMR) accelerates, attention has pivoted to environmental reservoirs. In India, Sewage Treatment Plants (STPs) rely almost exclusively on terminal chlorination to neutralize pathogens before discharging effluent into rivers or agricultural fields. However, advanced whole-transcriptome sequencing (RNA-seq) has revealed a deeply concerning paradox: the very chemical deployed to eradicate microbial threats inadvertently induces profound transcriptomic stress in bacteria, triggering genetic adaptations that actively promote the spread of antibiotic resistance.

The Regulatory Blind Spot
India generates an estimated 38,354 million liters per day (MLD) of urban sewage. The Central Pollution Control Board (CPCB) enforces strict discharge standards, primarily focusing on macroscopic indicators like Biochemical Oxygen Demand (BOD) and Faecal Coliform counts. To meet the rigorous coliform limit of ≤ 100 MPN/100 mL, STPs apply high doses of chlorine. However, this framework suffers from a biological blind spot. It

relies on traditional, culture-dependent agar testing, which ignores subcellular biological pollutants like antibiotic resistance genes (ARGs) and fundamentally altered, highly resistant microbial entities that easily pass undetected through the treatment infrastructure.

Transcriptomic Stress Responses: Survival at the Molecular Level

In perfectly optimized conditions, chlorine induces lethal oxidative damage. But Indian domestic sewage is an organically rich, complex matrix that rapidly consumes free chlorine. Consequently, many bacteria in the STP contact chamber are subjected to *sublethal* doses. Instead of dying, these bacteria actively rewire their entire gene expression profiles. High-throughput RNA-seq data demonstrates a massive reallocation of cellular resources to mount a defence:

Upregulation of Efflux Pumps: To survive, bacteria rapidly express multidrug efflux pumps (such as *emrB* and *TolC*) to actively expel internalized chlorine. Crucially, these same pumps are highly promiscuous and will indiscriminately expel medical antibiotics, immediately conferring cross-resistance to vital drugs.

Oxidative Stress Mitigation: The bacterial transcriptome hyper-activates genes like *soxR* and *ahpF* to neutralize reactive oxygen species (ROS) and prevent lethal DNA damage and lipid peroxidation.

The VBNC State: To weather the chemical storm, bacteria aggressively downregulate their central energy metabolism (like the TCA cycle), entering a Viable but Non-Culturable (VBNC) state. In this dormant state, they cannot be grown on standard regulatory testing platesresulting in falsely "safe" coliform readingsyet they remain fully infectious and capable of pathogenic resuscitation.

The Resistome and Horizontal Gene Transfer

The most profound long-term consequence of chlorination is its role in accelerating horizontal gene transfer (HGT). Sublethal chlorination increases bacterial membrane permeability and lyses vulnerable cells, releasing fully intact plasmids encoding ARGs into the wastewater as free extracellular DNA (eDNA). This combination of porous cell walls and a toxic, eDNA-rich environment heavily stimulates natural transformation. Stressed bacteria are forced to scavenge and integrate this foreign DNA to survive, effectively turning the STP contact chamber into a high-density biological incubator that indiscriminately rapidly assimilates multidrug resistance cassettes.

Case Studies from the Indian Subcontinent

The theoretical mechanics of this genetic alchemy are highly visible across India's infrastructure. A comprehensive metagenomic analysis of 26 STPs in Bengaluru revealed 273 distinct ARGs actively moving through the wastewater, including genes conferring resistance to last-resort carbapenems. The treatment processes fundamentally failed to eradicate them. Similarly, in Gujarat's Sabarmati River basin, chlorinated effluent is frequently reclaimed for agricultural irrigation. Studies show that soils irrigated with this treated wastewater experience a massive spike in multidrug resistance markers, such as the *intI1* gene. Standard chlorination physically fails to destroy the structural DNA backbone of these genes, silently inoculating our ecosystems with medical waste.

Conclusion and Future Perspectives

The widespread application of conventional chlorination inadvertently acts as a mutagenic catalyst for antibiotic resistance. To combat this silent epidemic, wastewater engineering must pivot to advanced oxidation processes (AOPs), such as UV/chlorine hybrid systems. These advanced techniques generate aggressive hydroxyl radicals capable of physically destroying the nucleic acid backbones of ARGs before they enter the ecosystem. Furthermore, regulatory bodies must modernize their frameworks. Moving past antiquated culture-based assays to mandate molecular monitoringlike qPCR surveillance for ARGs in discharged effluentsis an absolute necessity. Only by neutralizing both the biological pathogens and their lingering genetic legacy can we truly safeguard human health from the escalating threat of antimicrobial resistance.

GENERATIVE AI: REDEFINING CREATIVITY AND INTELLIGENT AUTOMATION

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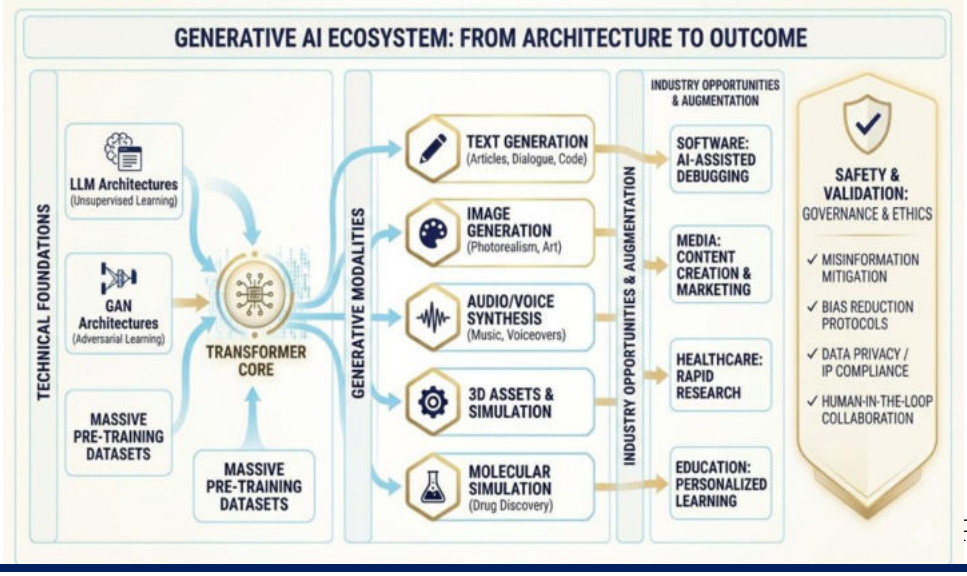
Introduction

Generative Artificial Intelligence (Generative AI) represents a groundbreaking advancement in the field of AI. Unlike traditional AI systems that analyse or classify data, generative AI creates new content such as text, images, audio, video, and even software code. It is powered by advanced deep learning models trained on massive datasets.Generative AI is rapidly transforming industries by enabling machines to perform creative and analytical tasks previously considered uniquely human. Its growing influence in media, education, software development, and research signals a new phase in intelligent automation.

Evolution of Generative AI

The roots of generative AI lie in neural network research and probabilistic modelling. Early models were limited in scope, but the introduction of deep learning architectures such as transformers significantly enhanced performance.The development of large language models (LLMs) and generative adversarial networks (GANs) marked a major breakthrough. These systems are capable of generating realistic text, artwork, music, and simulations. Continuous improvements in computational power and data availability have accelerated innovation in this domain.



Opportunities of Generative AI

Generative AI offers transformative potential across diverse fields:

1. Content Creation – Automated generation of articles, graphics, and multimedia.
2. Software Development – AI-assisted coding and debugging tools.
3. Healthcare Research – Drug discovery and molecular simulation.
4. Education – Personalized learning content and tutoring assistance.
5. Marketing and Business – Automated campaign design and customer interaction.
6. Creative Industries – Film, gaming, music, and digital art production.

By augmenting human creativity and reducing repetitive tasks, generative AI increases productivity and innovation.

Ethical and Societal Challenges

However, generative AI also raises serious concerns:

- Misinformation and Deepfakes
- Intellectual Property Issues
- Bias in Generated Content
- Job Displacement in Creative Fields
- Data Privacy Risks

The ability of AI systems to generate highly realistic content challenges traditional notions of authenticity and accountability. Regulatory mechanisms and ethical guidelines are essential to prevent misuse.

The Future Landscape

The future of generative AI will likely focus on improving reliability, factual accuracy, and transparency. Collaborative models combining human creativity with AI assistance will become increasingly common. As governments and institutions develop governance frameworks, responsible deployment will determine whether generative AI becomes a tool for empowerment or disruption.

Conclusion

Generative AI is redefining creativity, automation, and human–machine interaction. While it offers immense opportunities for innovation and efficiency, it also introduces ethical complexities that require careful management. A balanced approach—encouraging innovation while ensuring accountability—will shape the future impact of generative AI in the digital era.

ROBOTICS AND AUTOMATION: TRANSFORMING THE FUTURE OF INDUSTRY AND SOCIETY

NANDINI SHETH

MCA DEPARTMENT

Robotics and automation are now two of the most important technologies of the 21st century. As industries look for greater efficiency, precision, and productivity, robots and automated systems are taking over manual processes. From factories to hospitals and even homes, robotics and automation are changing how we work and live.

Introduction to Robotics & Automation

Robotics involves designing, developing, and deploying robots to perform specific tasks. Automation utilises technology to automate processes with minimal human intervention. Combining robotics and automation creates smart systems that effectively handle repetitive, dangerous, or complex operations. Modern robotics includes Artificial Intelligence (AI), machine learning, sensors, and advanced software to enhance decision-making and system flexibility.

Industrial Robotics

Manufacturing is where most industrial robots can be found; for example, car manufacturing; electronics assembly; and packaging. Industrial manufacturers such as Tesla use robots for speed/accuracy.

Robots complete common tasks including;

- Welding/Painting
- Material Handling
- Assembly
- Quality Inspection

Through the use of automation you reduce errors during production; increase output; and have a consistent level of quality.

Service Robots and AI Integration

Robots Offering Services to People in Non-Industrial Settings: Robots designed by firms, such as Boston Dynamics, can do many things; including walk, carry things and move around difficult-to-traverse surfaces.

Examples where Service Robots may be utilized include:

- The Healthcare Industry (such as Surgery assistance, Patient monitoring),
- The Hospitality Industry (such as Reception & Room Service Robots),
- The Retail Industry (such as Inventory Management),
- The Agricultural Industry (such as Automated Harvesting).
- Robots use AI to store, analyze and learn about the environment in order to adapt to new and/or changing situations.

Service Robots and AI Integration

- Productivity & Effectiveness – Boosting the output of your operation while reducing costs associated with running an operation.
- Accuracy & Precision – Reducing human error & mistakes from repetitive tasks
- Safety – Doing hazardous jobs in industries (Mining, Construction, etc.)
- Cost Management – Lowering long-term labour & operational costs.
- Innovation – Providing innovative technology solutions to health care providers, manufacturers, and others across all industries.

Service Robots and AI Integration

- Uses for Automation and Robotics
- Dominantly seen in three industries – manufacturing, and logistics.
- Manufacturing – Smart Factories with assembly lines using automation.
- Medicine – Surgery performed by robots, as well as automated diagnostics.
- Logistics – Warehouses with automation and robots to assist with deliveries.
- Smart Homes – Robotic vacuum cleaners and interactive assistants.

- Exploration of Space – NASA is conducting automated robotic missions in space exploration.

Challenges and Ethical Considerations
Robotics and automation provide numerous benefits, yet there are many questions surrounding job loss because of robotics and automation as well as how the workforce will adjust to job loss due to robotics and automation. The more jobs that robots do, the greater the demand for training/developing the workforce.

Additional challenges to consider include:
- Cost of the initial investment is high
- Cybersecurity
- Decision-making regarding ethics in autonomous systems
- The way to ensure that innovation is balanced with impact on society is for government and business to make sure that robotics and automation are implemented in a responsible manner.

Future Prospects
The evolution of robotics and automated processes will not only contain collaboration between human beings and robots, but also include self-driving cars and smart cities using automation for all their operating systems. As we continue to make progress on Artificial Intelligence (AI) and sensor technologies, robots can be expected to become smarter than humans as well as more capable of performing tasks quickly and precisely.

Conclusion
Technological advancements, particularly across the sectors of robotics and automation, are a rapidly-evolving revolution, dramatically impacting daily life and businesses alike. With increased efficiency, safety, and productivity come tremendous advantages to society; yet the need to ensure that automation's evolution advances society in a way that supports humanity (rather than supplanting it) requires the careful consideration of responsibly developing and implementing these technologies' ethical applications.

CRYPTO WALLET SECURITY IN A POST-QUANTUM WORLD

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Abstract
Cryptocurrency wallets currently rely on classical public-key cryptography, which faces an existential threat from the rapid advancement of quantum computing. This article explores the vulnerabilities of current blockchain signature schemes to quantum algorithms, outlines the transition to Post-Quantum Cryptography (PQC), and examines the structural challenges of implementing these quantum-resistant solutions within hardware and software wallets.

Introduction
The foundation of blockchain security and crypto wallets rests on mathematical problems, such as Elliptic Curve Cryptography (ECC), which are practically unbreakable

for classical computers. However, quantum computers utilizing Shor's Algorithm will eventually be capable of deriving a private key from a public key, fundamentally compromising the security of systems like Bitcoin and Ethereum. As the industry faces the "Harvest Now, Decrypt Later" (HNDL) threat—where attackers store encrypted data today to decrypt it when quantum technology matures—the shift toward quantum-resistant security is no longer a futuristic concern but an immediate necessity.

The Quantum Threat to Crypto Wallets

- Shor's Algorithm: This quantum algorithm can break the ECC (like secp256k1 used in Bitcoin and Ethereum) in polynomial time. This allows bad actors to forge transactions and drain funds if a public key is exposed on-chain.
- Harvest Now, Decrypt Later (HNDL): Adversaries are already recording blockchain data and public keys. Even without a cryptographically relevant quantum computer today, early capture means current secrets could be exposed in the future.

Post-Quantum Cryptography (PQC) Solutions:

- Lattice-Based Cryptography: Algorithms like ML-DSA (Dilithium) balance strong security with efficient performance. They rely on complex geometric problems in high-dimensional lattices.
- Hash-Based Cryptography: Schemes like SLH-DSA (SPHINCS+) use well-understood one-way hash functions. They are considered highly secure by design but produce significantly larger signature sizes.
- Hybrid Cryptographic Signatures: To future-proof transactions, developers are designing wallets that combine classical and post-quantum schemes in parallel.

Challenges in PQC Implementation:

- Resource Constraints: PQC signatures (e.g., Dilithium) can be 40 to 70 times larger than standard ECC signatures, reaching 2.4 to 4.6 kilobytes.
- Hardware Limitations: Hardware wallets face major challenges in running PQC algorithms due to severe RAM limits and the need for side-channel protection.
- Network Burden: The increased size of keys and signatures demands more computational resources, storage, and bandwidth. This significantly increases the cost of operating blockchain nodes.

Future Directions:

- Crypto-Agility: Wallet architectures must be designed with abstraction layers that allow for seamless switching of cryptographic schemes.
- Zero-Knowledge Proofs (ZKP): Integrating ZKP with PQC can enhance both the security and user-friendliness of wallets.
- Protocol-Level Upgrades: Major networks are already planning hard forks to address this issue. For instance, Ethereum aims to introduce quantum threat protection by updating transaction verification methods and validator signatures by 2026.

Conclusion

Quantum computing represents a paradigm shift that will eventually obsolete traditional crypto wallet encryption. By integrating NIST-approved PQC algorithms, prioritizing crypto-agility, and evolving hardware security standards, the digital asset industry can successfully mitigate the quantum threat and ensure long-term sovereign security.

SAFEGUARDING THE MODERN WORKFORCE: TOTAL WORKER HEALTH IN THE AGE OF NANOTECHNOLOGY AND AI

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The Total Worker Health Shift

Historically, organizations like the National Institute for Occupational Safety and Health (NIOSH) focused mostly on direct physical hazards—preventing falls, chemical spills, and immediate injuries. But as chronic diseases surged, affecting over half of the U.S. work force, it became clear that a worker's personal health and their workplace hazards are deeply connected. A worker managing chronic asthma, for instance, faces much higher risks if they inhale microscopic manufacturing dust. The TWH framework bridges this gap. It operates on the principle that implementing wellness programs is ineffective if you don't also mitigate toxic workplace exposures, and conversely, that hazard controls are incomplete if they ignore a worker's underlying health status.

The Nanotechnology Challenge

Nano materials are incredibly tiny—between 1 and 100 nanometers—giving them unique properties that make them perfect for next-generation electronics, medicine, and clean energy. But the very traits that make them technologically revolutionary also make them biologically hazardous. When inhaled, materials like carbon nano tubes or Nano scale titanium dioxide can bypass the body's natural filters, settling deep in the lungs or entering the blood stream. Because these particles don't behave like normal dust, traditional safety measures aren't always enough. We have to measure them by surface are and particle count, not just weight. For the past two decades, researchers have been developing specific exposure limits and advanced on-site assessment tools to help companies keep their factory air clean and their workers safe.

Frontline Realities: Chips and Batteries

You can see the collision of high-techhazards and human labor most clearly in two booming industries: semiconductor foundries and lithium-ion battery plants.

- Semiconductors: Building advanced computer chips requires highly toxic chemicals and nano particles. Furthermore, the extreme isolation of clean room environments.
- Battery Manufacturing: Battery production involves dangerous heavy metals and volatile solvents. It also carries the constant risk of catastrophic thermal runaway—uncontrollable chain reactions that can cause intense fires and release lethal toxic gassers. Protecting the workers requires TWH approach that addresses everything from advanced, automated ventilation systems to shift-fatigue and stress management.

Global Rules and "Safe by Design"

Because we still don't know the long-term health effects of many engineered nanomaterial, global health organizations strongly advocate for the "precautionary principle"—treating new materials as hazardous until they are definitively proven safe. Europe has led the charge here with its Safe and Sustainable by Design (SSBD)

framework. Instead of waiting for a product to cause harm after it hits the market, SSBD requires engineers to factor in safety at the molecular level during the early research and development phase. Furthermore, updated 2025 guidelines from the OECD have standardized how we test nanomaterial for safety, making it easier for regulators worldwide to agree on what is safe and what isn't.

AI Safety and the Surveillance Dilemma

As factory floors become increasingly complex, AI and "digital twins" (continuously updating virtual replicas of physical workspaces) are being used to predict and prevent accidents. If a digital wind detects a failing ventilation system during a dangerous chemical mix, an AI agent can instantly trigger. However, this technology comes with a dark side. The continuous biometric and digital monitoring of workers—often called "boss ware"—raises massive privacy and ethical concerns. Any workplace monitoring must be strictly voluntary, transparent, and designed solely to protect the worker, rather than to squeeze out unsustainable levels of productivity.

Institutional Survival

None of this advanced safety research happens without properly funded public health institutions. Between 2025 and early 2026, the U.S. occupational safety networkfaced an existential crisis when sweeping budget cuts and mass layoffs threatened to completely dismantle NIOSH. Critical research on nanomaterial, protective equipment, and emerging technological hazards was nearly wiped out.

Conclusion

Protecting the modern workforce is a rapidly moving target. As nanotechnology and artificial intelligence reshape our industries, our safety frameworks must evolve just as fast. By embracing the holistic Total Worker Health approach, adhering strictly to the precautionary principle, and fiercely defending the scientific institutions that conduct this critical research, we can ensure that the technological breakthroughs of tomorrow elevate, rather than endanger, the global workforce.

References

European Agency for Safety and Health at Work (EU-OSHA). Nanomaterials in the Workplace.https://osha.europa.eu/en/themes/dangerous-substances/nanomaterials.

European Agency for Safety and Health at Work (EU-OSHA). Nanomaterials in the Workplace.https://osha.europa.eu/en/themes/dangerous-substances/nanomaterials

International Labour Organization (ILO). AI and Digitalization Transforming Safety and Health at Work.https://www.ilo.org/global/topics/safety-and-health-at-work/lang--en/index.htm

Jetha, A., Bakhtari, H., Irvin, E., et al. (2025). Do occupational health and safety tools that utilize AI have a measurable impact on worker injury or illness? BMC Systematic Reviews, 14(1), 146

National Institute for Occupational Safety and Health (NIOSH). Total Worker Health® Program.https://www.cdc.gov/niosh/twh/.htm

National Institute for Occupational Safety and Health. (2004). Nanotechnology and Workplace Safety and Health (DHHS Publication No. 2004-175). CDC/NIOSH.

ASSESSING THE CIRCULAR ECONOMY CONCEPTS FOR SUSTAINABLE SYSTEMS

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Introduction

For decades, our global economy has followed a very simple, very straight line: we take raw materials from the earth, make something out of them, and then—sooner or later—we throw them away. Economists call this the Linear Economy. You might just call it "the way things are."But there's a problem: we live on a finite planet, and that straight line eventually leads to a dead end. That's where the Circular Economy comes in. It's not just a fancy buzzword for recycling; it's a complete rethink of how we design, buy, and live.

The Three Pillars of the Circular Economy

The circular economy isn't just about managing waste; it's about designing waste out of the system before it even exists. It rests on three main ideas:

- Eliminate Waste and Pollution: Instead of figuring out what to do with a plastic wrapper after you've used it, we design packaging that can be eaten, composted, or used forever.
- Circulate Products and Materials: We keep things in use at their highest value. This means repairing your phone instead of replacing it, or sharing a car instead of owning one that sits idle 90% of the time.
- Regenerate Nature: Instead of just "doing less harm," we actively improve the environment. Think of it like a forest: in nature, there is no "trash." The fallen leaves of one tree become the food for the next.

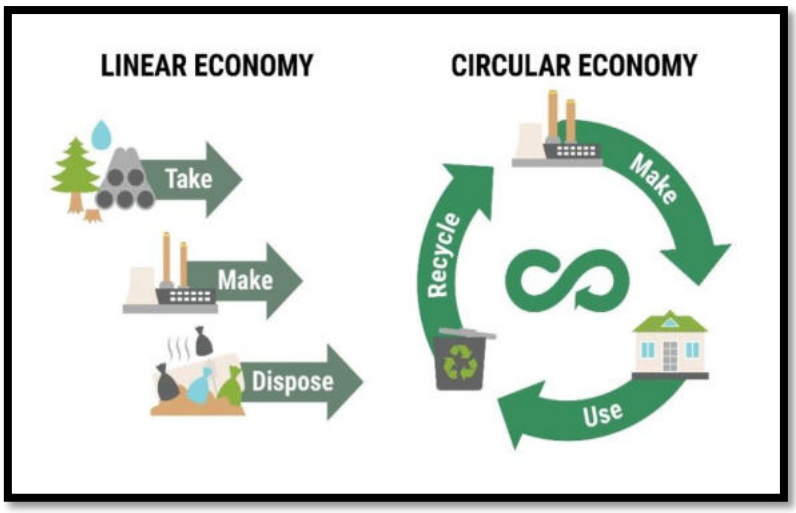
Why Should You Care?

It's easy to think this is just a "corporate thing," but the circular economy actually makes life better for all of us in following ways:

- Better Products: When companies design for the "circle," they build things to last. You get a toaster that actually works for ten years and can be fixed with a screwdriver, rather than one that ends up in a landfill after twelve months.
- New Ways to Save: The "sharing economy" (like tool libraries or clothing rentals) allows you to access high-quality goods without the massive price tag of ownership.
- Job Creation: It takes more people to repair, refurbish, and remanufacture goods than it does to simply dig them out of the ground. This means more local, skilled jobs in our communities.

The "Butterfly" Effect

In the research world, we often visualize this as a Butterfly Diagram. One "wing" represents biological materials (things that can safely return to the soil, like food scraps or wood), and the other represents technical materials (things like metals and plastics that we should keep looping through the system). In circular economy we use 3R system which is Reuse, Reduce, Recycle and beyond that we recreate, repurpose the waste and recirculate it in the ecosystem.



The Goal: To keep these materials moving in tight circles so we never have to go back to the earth to "take" more than it can give.

How You Can Join the Loop

You don't need to be a scientist to participate. Transitioning to a circular world starts with a few shifts in mindset:

- Refuse what you don't need (like single-use plastics).
- Repair what you already have.
- Rent items you only use occasionally.
- Recycle only as a last resort—remember, recycling is the "safety net," not the goal!

The linear economy was a product of the industrial age, but the circular economy is the blueprint for our sustainable future. It's an economy that works with nature, rather than against it. And the best part? The door is open for all of us to step inside the circle. So Lets move toward "Waste Free Globe".

POLYMERS AS ADVANCED MATERIALS IN HEALTHCARE AND MEDICINE

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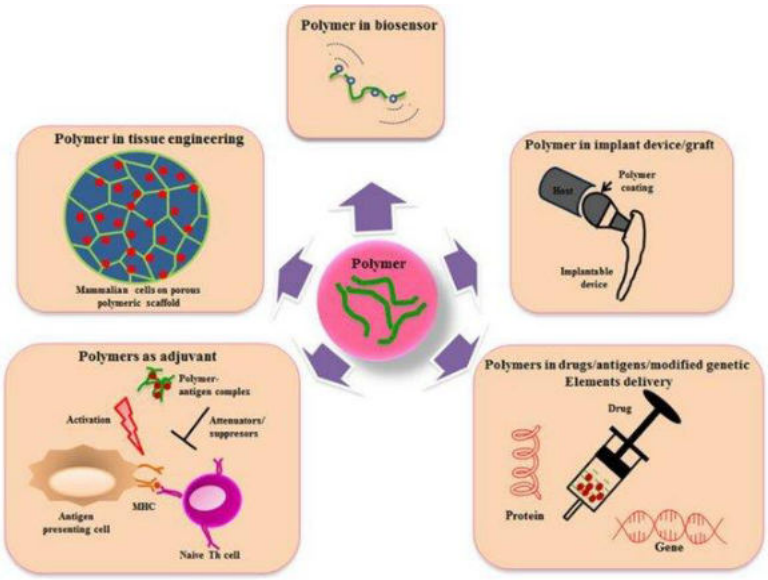

Polymers in Modern Immunotherapy and Regenerative Medicine

Polymers have become fundamental components in the advancement of modern medicine owing to their exceptional versatility, tunable physicochemical properties, and high degree of biocompatibility, which allow them to interact safely with biological systems. Their structural diversity enables precise modification of mechanical strength, degradation rate, hydrophilicity, and chemical functionality, making polymers suitable for a wide range of biomedical applications. In drug delivery systems, polymeric materials serve as protective matrices that encapsulate therapeutic agents and enable controlled, sustained, or targeted release, thereby enhancing drug stability, improving therapeutic efficiency, and reducing systemic toxicity. Polymeric hydrogels, nano-particles, and biodegradable carriers are particularly valuable for site-specific delivery and long-term treatment strategies. In tissue engineering and regenerative medicine, polymers function as three-dimensional scaffolds that mimic the natural extracellular matrix, providing mechanical support and promoting cell attachment, proliferation, and differentiation, which are essential for the regeneration of damaged tissues such as skin, bone, and cartilage.

Furthermore, polymers play a crucial role in the fabrication of medical implants and prosthetic devices, where their lightweight nature, flexibility, and resistance to biological degradation contribute to improved patient comfort and device longevity. Polymeric wound dressings maintain a moist healing environment, absorb exudates, and can be engineered to possess antimicrobial or bioactive properties, thereby accelerating tissue repair. Surgical applications also benefit from polymers through the development of absorbable sutures, adhesives, and meshes that gradually degrade within the body, eliminating the need for secondary surgical removal. Natural polymers, particularly polysaccharides such as pectin, have attracted growing research interest due to their biodegradability, renewability, and non-toxic characteristics. Chemical

modifications, including graft copolymerization and post-saponification, significantly enhance their hydrophilicity, swelling behavior, and functional group availability, enabling improved drug loading, water absorbency, and interaction with biological molecules. Moreover, the emergence of smart or stimuli-responsive polymers capable of responding to environmental triggers such as pH, temperature, or enzymatic activity has introduced new possibilities for precision medicine and responsive therapeutic systems. Collectively, these developments highlight the pivotal role of polymer science in shaping next-generation biomedical materials and sustainable healthcare technologies.

CARBON CAPTURE AND UTILIZATION: TURNING CO_2 INTO VALUABLE CHEMICALS

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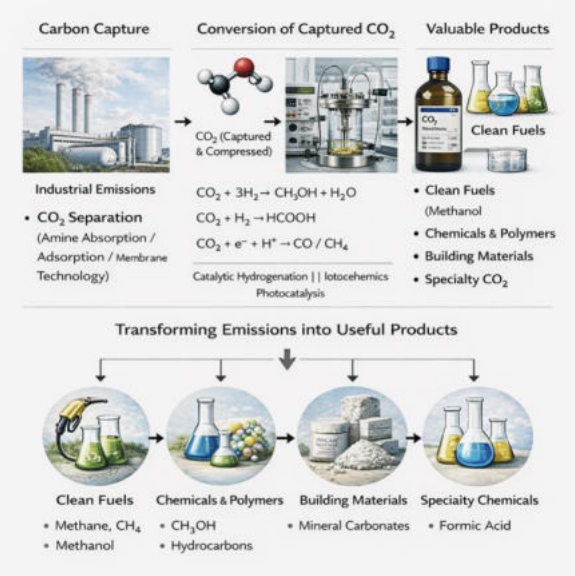

From Emissions to Products: CO_2 Transformation Strategies

Carbon dioxide (CO_2) is often described as the primary driver of global warming, yet from a chemical perspective, it is also a carbon-rich molecule with immense potential. Carbon capture and utilization (CCU) is an innovative field of chemistry that aims not only to reduce atmospheric CO_2 levels but also to convert this greenhouse gas into useful products. The process begins with carbon capture, where CO_2 emitted from power plants, cement factories, and other industrial sources is separated from flue gases. This separation relies on chemical absorption using amine-based solvents, adsorption onto porous materials, or membrane technologies that selectively allow CO_2 to pass through. Once captured, the gas can be compressed and stored or directed toward chemical transformation pathways. At the molecular level, CO_2 is thermodynamically stable, which makes its conversion challenging. However, advances in catalysis and electrochemistry have enabled scientists to activate this stable molecule and incorporate it into new chemical structures. By understanding bond energies, reaction kinetics, and catalytic mechanisms, chemists are designing efficient pathways to transform waste carbon into valuable compounds.

Utilization technologies focus on converting captured CO_2 into fuels, polymers, building materials, and specialty chemicals. Through catalytic hydrogenation, CO_2 can be transformed into methanol, a versatile chemical feedstock and alternative fuel. Electrochemical reduction processes can convert CO_2 into carbon monoxide, formic acid, or even hydrocarbons, powered by renewable electricity. Mineralization is another promising strategy, where CO_2 reacts with metal oxides to form stable carbonates used in construction materials, effectively locking carbon away for decades. Photocatalysis, inspired by natural photosynthesis, uses sunlight and semiconductor materials to drive CO_2 conversion reactions, mimicking how plants transform carbon dioxide into organic matter. These technologies integrate principles of green chemistry, aiming to reduce waste, lower energy consumption, and replace fossil-based feedstocks. While challenges remain—such as improving efficiency, reducing energy input, and lowering costs ongoing research continues to refine catalyst design, optimize reaction conditions, and scale up industrial processes. Carbon capture and utilization represent a shift in perspective: instead of viewing CO_2 solely as a pollutant, chemistry redefines it as a resource. By transforming emissions into economically valuable products, CCU offers a pathway toward circular carbon economies and a more sustainable industrial future, demonstrating how molecular innovation can address one of the most pressing environmental challenges of our time.

QUALIFICATION CRITERIA TO BECOME A REGISTERED VALUER UNDER THE NEW INCOME TAX ACT

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Introduction

The Govt. of India has enacted the new Income Tax Act in 2025 to replace the previous one of 1961. According to the draft Income Tax Rules under the new Act, the qualification criteria have been prescribed to be eligible to become a Registered Valuer under the respective asset class. This article covers these criteria.

Rule 247

Qualification of Registered Valuer for the purposes of section 514 of the Income Tax Act

1. For the purposes of section 514(2), the qualifications for registration as valuers, for different classes of asset shall be as specified in sub-rules (2) to (9).
2. The qualifications for registration as valuers, for classes of assets mentioned in column B of the Table given below shall be as specified in column C of the said Table:

S No.	Class of Asset	Qualification
A	B	C
1	Immovable property (other than agricultural lands, plantations, forests, mines and quarries)	The applicant must— (i) (A) be a graduate in civil engineering, architecture or town planning from a recognised university; or (B) be a post-graduate in valuation of real estate from a recognised university; or (C) possess a qualification recognised by the Central

		Government for recruitment to superior services or posts under the Central Government in the field of civil engineering, architecture or town planning; **AND** (ii) (A) be a person formerly employed— a) in a post under Government as a gazetted officer; or b) in a post under any other employer carrying a remuneration of not less than ₹ 50000 per month, and, in either case, must have retired or resigned from such employment after having rendered service for not less than ten years (or two years, if he possesses a post-graduate degree in valuation of real estate from a recognised university) as a valuer, architect or town planner, or in the field of construction of buildings, designing of structures, or development of land; or c) as a professor, reader or lecturer in a university, college or any other institution preparing students for a degree in civil engineering, architecture or town planning, or for any qualification referred to in clause (i), and must have retired or resigned from such employment after having taught for not less than ten years (or two years, if he possesses a post-graduate degree in valuation of real estate from a recognised university) any of the subjects of valuation, quantity surveying, building construction, architecture, or town planning; **OR** (B) have been in practice as a consulting engineer, valuer of real estate, surveyor or architect for a period of not less than ten years (or two years, if he possesses a post-graduate degree in valuation of real estate from a recognised university) and must have acquired experience in any of the following fields: a) valuation of buildings and urban lands; or b) quantity surveying in building construction; or c) architectural or structural designing of buildings or town planning; or d) construction of buildings or development of land; and his gross receipts from such practice should not be less than ₹ 100000 in any three of the five preceding years (or in any one of the two preceding years, if he possesses a postgraduate degree in valuation of real estate from a recognised university), immediately preceding the year in which the application for registration as a valuer is made by him.
7	Machinery and plant	The applicant must— i. (A) be a graduate or post-graduate in Mechanical, Electrical, Electronic and Communication, Electronic and Instrumentation, Production, Chemical, Textiles, Leather, Metallurgy, Aeronautical Engineering, or Valuation of Plant and Machinery from a recognised university; or (B) possess a qualification recognised by the Central

		Government for recruitment to superior services or posts under the Central Government in the field of mechanical or electrical engineering; **AND** ii. (A) be a person formerly employed— a) in a post under Government as a gazetted officer; or b) in a post under any other employer carrying a remuneration of not less than ₹50000 per month, and, in either case, must have retired or resigned from such employment after having rendered service as a mechanical or electrical or electronic and communication or electronic and instrumentation or production or chemical or textiles or leather or metallurgy or aeronautical engineer or valuer of machinery and plant for a period of not less than ten years (or two years, if he possesses a post-graduate degree in valuation of machinery and plant from a recognised university), or c) as a professor, reader or lecturer in a university, college or institution preparing students for a degree in mechanical or electrical or electronic and communication or electronic and instrumentation or production or chemical or textiles or leather or metallurgy or aeronautical engineering or for any qualification referred to in clause (i), and must have retired or resigned from such employment after having taught for a period of not less than ten years (or two years, if he possesses a postgraduate degree in valuation of machinery and plant from a recognised university); **OR** **(B)** have been in practice as a consulting engineer or valuer of machinery and plant for a period of not less than ten years and must have acquired experience in the valuation of machinery and plant and his gross receipts from such practice should not be less than ₹ 100000 in any three of the five preceding years (or in any one of the two preceding years, if he possesses a postgraduate degree in valuation of machinery and plant from a recognised university), immediately preceding the year in which the application for registration as a valuer is made by him.

(1) The qualifications for a valuer for assets, other than the assets covered in sub-rule (2), shall be determined by the Principal Chief Commissioner or Chief Commissioner, or the Principal Director General or Director General, to whom application for getting registered as a valuer has been submitted. The decision of Principal Chief Commissioner or Chief Commissioner, or the Principal Director General or Director General in this regard shall be final.

(2) No person shall qualify for registration as a valuer, other than as a valuer of works of art or virtual digital assets or other class of assets as may be specified by the Board in this behalf, if he is employed under Government or any other employer.

(3) Notwithstanding anything contained in sub-rules (1) to (4), no person shall qualify for registration as a valuer if,—

a) he has been dismissed or removed from Government service; or

b) he is not a valuer member of a valuers organisation registered under the Companies (Registered Valuers and Valuation) Rules, 2017; or
c) he is not been recommended by the valuers organisation registered under the Companies (Registered Valuers and Valuation) Rules, 2017, of which he is a valuer member for registration as a valuer; or
d) he has been convicted of an offence connected with any proceeding under the Income-tax Act, 1961 (43 of 1961), or the Wealth-tax Act, 1957 (27 of 1957), or the Gift-tax Act, 1958 (18 of 1958), or a penalty has been imposed on him under section 271(1)(iii) or section 273(i) or section 270A or section 271J of the Income-tax Act, 1961, or under section 439 or section 463 of the Income-tax Act, 2025, or under section 18(1)(iii) of the Wealth-tax Act, 1957 or section 17(1) of the Gift-tax Act, 1958 (18 of 1958); or
e) he is an undischarged insolvent; or
f) he has been convicted of any offence and sentenced to a term of imprisonment; or
g) he has been found guilty of misconduct in his professional capacity, where he is a member of any association or institution established in India having as its object the control, supervision, regulation or encouragement of the profession of engineering, architecture, accountancy, or company secretaries or such other profession as the Board may specify in this behalf by notification in the Official Gazette, by such association or institution; or
h) he is a minor; or
i) he has been declared to be of unsound mind; or
j) he has not been found fit to be registered as a valuer, which shall be decided based on reasons to be recorded in writing, after granting an opportunity of being heard to the person or entity concerned; or
k) he is a undischarged bankrupt or has applied to be adjudicated as bankrupt.

(4) The requirement laid down in any of the foregoing sub-rules that the applicant should have, for a period of not less than ten years or five years, as the case may be,—

i. rendered service in any capacity, or
ii. taught any subject, or
iii. practised any profession, or
iv. gained experience in any other capacity or field, as specified therein, shall be deemed to have been fulfilled if the period for which the applicant has rendered such service, taught such subject, practised such profession or otherwise gained experience in such other capacity or field, taken either singly or collectively, is not less than ten years or five years, as the case may be, in the foregoing sub-rules.

(5) For the purposes of this rule, the expressions "recognised University" means any of the universities or institutions specified below, namely:—

i. Any University in India established by law for the time being in force.
ii. Any educational institution recognized by the University Grants Commission (UGC) through a notification in the Official Gazette.
iii. Any foreign university or educational institution, the degree of which is recognized as equivalent to a degree conferred by an Indian university, as determined by the Association of Indian Universities (AIU).

(6) For the purposes of this rule, where the membership of any institution is recognised by the Central Government as a qualification for the purpose of recruitment to civil services or posts under the Central Government in any field, such membership shall not be regarded as a requisite qualification for the purposes of this rule, unless the

membership has been granted on the basis of passing the examinations conducted by the institution.

(7) Nothing specified in clause (b) or (c) of sub-rule 5 shall apply where no valuers organisation is registered under the Companies (Registered Valuers and Valuation) Rules, 2017 for the specific class of asset(s), at the time of submission of application under Section 514(2).

(8) The application referred to in sub-rule (1) of rule 246 may be disposed of by the Principal Chief Commissioner or Chief Commissioner, or the Principal Director General or Director General either by granting approval or rejecting the same, within six months from the end of the month in which such application is made.

(9) The Principal Chief Commissioner or Chief Commissioner, or the Principal Director General or Director General may call for any relevant information from the person who has applied for getting registered as a valuer under section 514 before disposing his application referred to in sub-rule (1) of rule 246.

ASSESSING THE PROTECTIVE POTENTIAL OF PLANT-DERIVED ANTIOXIDANTS ON MALE REPRODUCTIVE CELLS

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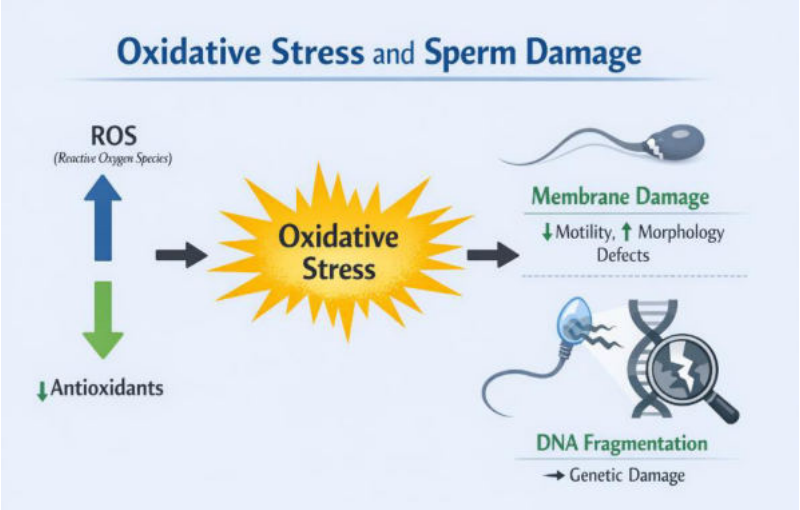
DEPARTMENT OF ENVIRONMENTAL SCIENCE AND TECHNOLOGY

Introduction

One of the most persistent biological determinants of male infertility has been oxidative stress. The physiological susceptibility of spermatozoa and Leydig cells to reactive oxygen species (ROS) is due to the high polyunsaturated fatty acid and low cytoplasmic antioxidant defences alongside the high metabolic activity. Medicinal plants have been a popular subject in research within the past two decades as a source of protective agents, and much of this research has focused on their abundance of phenolic congeners, flavonoid, and other antioxidant metabolites. But the most important question is whether these plant-extracted antioxidants really work in the protection of male reproductive cells or they are largely in vitro artifacts.

Oxidative Stress and Its Role in Male Reproductive Dysfunction

Normal sperm physiological activities including capacitation and acrosome reaction require ROS, although an overproduction causes lipid peroxidation, protein oxidation and DNA fragmentation. The abnormalities of mitochondrial membranes also interfere with ATP production, causing decreased motility and oxidative damage to both nuclear and mitochondrial DNA also adds to compromised embryo fertilization and maturation. Research always demonstrates a high ROS in semen of men with oligozoospermia, asthenozoospermia, and idiopathic infertility. The Leydig cells are also quite sensitive; oxidative stress would be able to damage steroidogenic enzymes needed to produce testosterone. When combined, these processes predispose antioxidant defence to be a biologically plausible therapeutic target.



Plant-Based Antioxidants: Traditional Use and Biochemical Rationale

Traditional systems that include the use of medicinal plants, i.e., *Withania somnifera*, *Asparagus racemosus*, *Tinospora cordifolia* and *Abelmoschus moschatus*, are usually prescribed to treat male reproductive health issues. They are normally justified by the presence of phenolics, flavonoids, lignans, terpenoids, and saponins, with many of these being highly active radical scavengers in chemical analyses. The biochemical explanation is very simple these compounds are able to neutralize ROS, chelate pro-oxidant metals and regulate endogenous antioxidant enzymes. Nonetheless, the data derived manually is not always consistent with traditional knowledge, and a large proportion of the most commonly reported activities are based on simple in vitro tests, not necessarily relevant to intracellular conditions.

Evidence from In Vitro Studies: Strengths and Limitations

There is sufficient evidence of plant extracts lowering levels of ROS, restraining lipid peroxidation, and raising cell viability during oxidative stress when isolated sperm cells, testicular tissue homogenates and Leydig cell lines (e.g., TM3, MA-10) are used. Plant extracts such as *W. somnifera*, *A. racemosus*, *Tribulus terrestris* and polyherbs contain extracts which have been shown to provide a measurable defence against hydrogen peroxide, lipid peroxidation inducers, or heavy-metal induced ROS. However, methodological constraints are general. Numerous literature works rely on crude extracts without phytochemical profiling and the reproducibility is of low quality. The concentrations made on the cell are usually much higher as compared to in vivo, and there is the question of translational relevance. The positive controls are not repeatedly utilized and the difference between antioxidant activity and mere cytoprotection is not always well studied. These limitations imply that the results are only indicative of their potential but cannot be viewed as a direct sign of clinical effectiveness.

Translational Gaps: What the Existing Evidence Is Silent about

Most antioxidant research in plants is restricted to in vitro models or tests on animals and there is a wide gap between laboratory results and actual therapeutic application. Even active compounds can be poorly absorbed, have high metabolism or reach testicular tissue because of the restriction of access by blood-testis barriers. Also, good antioxidants in chemical assays (DPPH, FRAP, ABTS) are not necessarily good antioxidants in a biological system, where regulation of ROS is highly regulated and

context dependent. Absence of standardized extracts is also another limitation. The failure to identify active constituents, dosage ranges and purity makes it hard to compare findings across studies. The same reason also explains why human trials tend to produce inconsistent results even on the situations when the preclinical data was promising.

Conclusion

The emerging research shows that antioxidants in the medicinal plants are capable of protecting the reproductive cells of males in case of controlled experiments. These interactive effects are strongest in vitro, whereby extracts decrease ROS levels and Leydig or sperm viability. But this evidence strength is significantly reduced when application to whole-organism models or possible clinical use are involved. The discipline is in need of standardised phytochemical profilers, practical dosing paradigms, and the need to undertake mechanistic research which extends beyond the simple radical-scavenging assays. The biotechnical potential of plant-based antioxidants has real potential, and needs to be tested methodologically and rigorously, and a clear sense of all their biological limitations is needed.

THE DIGITAL WORKFORCE: ANALYZING THE STRATEGIC IMPACT OF ROBOTIC PROCESS AUTOMATION (RPA) ON MODERN ACADEMIC AND PROFESSIONAL ECOSYSTEMS

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Abstract

As we navigate the complexities of the mid-2020s, the definition of "labor" is undergoing a radical transformation. This paper investigates Robotic Process Automation (RPA)—a technology that utilizes software scripts or "bots" to execute high-volume, repetitive tasks. By analysing the life cycle of RPA implementation and its economic implications, this research explores how students can leverage automation to eliminate administrative burdens, thereby fostering a culture of high-level creative problem-solving and innovation.

Introduction: Redefining the "Robot"

In common discourse, the word "robot" often evokes images of physical humanoids. However, in the professional world, the most impactful robots are invisible. Robotic Process Automation (RPA) is the use of specialized software to handle mundane, rules-based tasks that previously consumed thousands of human hours. For the modern college student, RPA represents more than just a tool; it represents a philosophy of efficiency. Whether it is managing financial ledgers, processing invoices, or organizing vast databases, RPA allows us to delegate the "doing" to the machine, so we can focus on the "thinking."

Methodology: The Four Pillars of Automation

A successful research-based approach to RPA follows a structured four-phase lifecycle, ensuring that the technology is implemented ethically and effectively:

- The Planning Phase: This involves identifying processes that are ripe for automation—typically those that are repetitive and manual.
- The Development Phase: In this stage, automation workflows are created using tools like UiPath, Blue Prism, or Automation Anywhere.
- Deployment & Testing: This critical stage ensures that the "bot" is bug-free and operates without unexpected outages.
- Support & Maintenance: Continuous updates are provided to ensure the digital worker evolves alongside the user's needs.

Analysis of Impact: Accuracy, Cost, and ROI

The economic and psychological benefits of RPA are documented extensively in current industry research:

- Precision and Quality: Unlike humans, a bot does not suffer from fatigue. It ensures consistent, error-free output, which drastically reduces operational risks.
- Operational Speed: RPA can decrease average handling times by significant margins, ensuring 24/7 business continuity without the need for break.
- Economic Viability: Reports from organizations like NASSCOM suggest that businesses can reduce costs by up to 65% through successful RPA adoption, offering a return on investment (ROI) within months rather than years.

Discussion: Misconceptions and Human Agency

A central theme of this research is debunking the myth that RPA is a replacement for human intelligence. RPA lacks a "brain" in the cognitive sense; it cannot perform logical or critical thinking [01:40]. It is a mimic of human action, not a replacement for human judgment. For students, this distinction is vital. Our value in the future workforce will not be our ability to perform repetitive data entry, but our ability to design, manage, and govern the bots that do. Research suggests that by 2025, over 230 million knowledge workers will be impacted by automation [03:57]. This is not a threat, but an invitation to upgrade our skill sets.

Conclusion: Designing Your Future in the Automated Era

The research presented underscores that Robotic Process Automation (RPA) is far more than a technical upgrade; it is a fundamental shift in the human-machine partnership. As we have observed, the value of RPA lies not in the replacement of human effort, but in the amplification of human potential. By automating the "deterministic"—the rules-based, repetitive, and time-consuming—we reclaim the "probabilistic"—the creative, empathetic, and strategic aspects of our intelligence. For the student community, the message is clear: the digital workforce is not a competitor, but a collaborator. Our academic journey in 2026 must focus on becoming the architects of these systems. While the "bots" handle the accuracy and speed of data, we must master the oversight, ethical governance, and innovative application of these tools to solve real-world problems. Ultimately, the goal of studying and implementing RPA is to achieve a Cognitive Surplus. When we are no longer tethered to the manual entry of the past, we are free to build the innovations of the future. Let us not just be witnesses to this automation revolution; let us be the ones who steer it toward a more efficient, creative, and human-centric world.

Further Scope

- Current Trends: Future research should explore the integration of RPA with Generative AI (Agentic RPA) to handle unstructured data.
- Skill Development: Students are encouraged to explore certification in "Citizen Development" to begin building personal automation scripts.
- Economic Impact: Refer to the latest *World Economic Forum Future of Jobs Report* for the evolving landscape of automated labor.

References

McKinsey & Company. (2023). The state of automation and AI adoption in enterprises. McKinsey Global Institute.

NASSCOM. (2022). Robotic process automation: Transforming India's digital workforce. NASSCOM.

Willcocks, Leslie P.., Lacity, Mary C.., & Craig, Andrew. (2015). Robotic process automation:The next transformation lever for shared services. London School of Economics and Political Science.

World Economic Forum. (2023). The future of jobs report 2023. World Economic Forum.

BIOINFORMATICS: BRIDGING BIOLOGY AND COMPUTER SCIENCE

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Introduction

In the modern era of Science and its discoveries, Bioinformatics has emerged as a vital discipline that bridges biology, computer science and data analysiswhich helps scientists understand living organisms in a better way. Bioinformatics domain makes use of computer science and mathematics to solve the biological problem by developing softwares and storing the biological data in the databases which involves DNA sequences, Protein structures and Genetic information.

This technology is important for many areas, including Biotechnology, Medicine, Environmental Science, Agriculture and Drug discovery. By decoding the human genome for the enhancement of researches, Bioinformatics plays a crucial role in health care and solving biological mysteries.

History and Development

The foundation of bioinformatics was laid in 1950s and 1960s when scientists first started using computers for biological research work. One of the earliest milestone was the determination of the DNA double helix structure by James Watson and Francis Crick in 1953 which highlighted the need for the development of computational tools to analyze and decode genetic information. In 1960s and 1970s, researchers began developing algorithms to compare protein sequences. Margaret Oakley Dayhoff – known as the "Mother of Bioinformatics", created the first protein sequence databases and also developed substitution matrices for sequence alignment.. These early efforts set the stage for Modern Bioinformatics. The 1990s was marked as a major turning point in bioinformatics with the launch of Human Genome Project. This project aimed to map and sequences all the human genes using bioinformatics tools which were developed such as GenBank, BLAST, FASTA.

Applications of Bioinformatics in different areas

Genomics and DNA sequencing- Bioinformatics plays an essential role in studying genomes-the complete set of DNA in an organism. It helps in identifying genes and their functions. By comparing the genomes to study the evolution of different species. To detect the mutation which can cause diseases and cancer.

Proteomics and protein structure prediction-The study of proteins and its structure. It helps in finding protein structure and function. Designing new drugs against the disease by studying protein structure. To predict the protein interactions.

Drug discovery and development-The study to design and develop a new drug to trouble shoot the diseases related problem. It helps to discover the potential drug targets in the body. In simulating, the drug interaction with proteins. This can reduce the time and cost for developing new medicines.

Environmental Science and Conservation-The study of ecosystems, climate change, pollution and biodiversity and the conservation of wildlife, forests, water bodies and natural resources. It helps to identify the microorganisms that can clean up the pollution. It helps in studying the genetic diversity of endangered species. It can help in monitoring environmental changes that takes place at the molecular level.

Tools used and Technologies in Bioinformatics

Tools used in bioinformatics

- BLAST (Basic Local Alignment Search Tool) - Compares DNA, RNA, and Protein sequences to find similarities.
- FASTA - A tool for sequence alignment and database searching.
- GenBank - A public database for storing genetic sequences.
- Ensembl - This provides genomic data for various organisms.
- NCBI (National Center For Biotechnology Information) - This can hosts multiple databases for genetic and molecular research.
- Galaxy - A web based platform for bioinformatics workflow.

Technologies in Bioinformatics

- Next Generation Sequencing (NGS)-It allows rapid and cost effective genome sequencing.
- AI and Machine Learning - It enhances pattern recognition in genetic data.
- Cloud Computing - It stores and processes large biological datasets efficiently.
- CRISPR-Cas9 - A gene editing technology for modifying DNA sequences.
- Molecular Docking - This is used in drug discovery which helps in studying the interactions between molecules.

Challenges and Future Prospects

Challenges

- Data Overload.
- Computational complexity.
- Data accuracy and Standardization.
- Privacy and ethical issues.

Future Prospects

- In tailoring treatments based on person's genetic profile.
- In environmental and agricultural applications.
- Advancements in genome editing.

- Artificial intelligence and Machine learning in enhancing predictive analysis and drug discovery.

Conclusion

As the technology evolves, Bioinformatics will continue to shape the future of biotechnology, medicine, environmental science making the scientific research easier and faster. Its growing impact ensures that Bioinformatics will remain a backbone of modern biological research and healthcare innovations.

NDVI AND NDBI AT A GLANCE

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Introduction

Remote sensing is the science and art of observing and gathering data about a phenomena or an object without physically touching it and can be acquired from a distance through different sensors and platforms using Electromagnetic Radiations. In remote sensing, we can get spectral characteristics of any area (ground features) or an object through mathematical formulas called as spectral indices which helps us to isolate and analyse specific ground based features depending on how differently an object or a ground feature reacts with the different Electromagnetic Radiations(EMR). There are two most used indices for Land-use and Land-cover(LULC) applications viz., Normalized Difference Vegetation Index (NDVI), to quantify vegetation health and density and Normalized Difference Built-up Index (NDBI), for quantifying urban spaces (impervious surfaces).

NDVI (Normalized Difference Vegetation Index)

The Normalized Difference Vegetation Index (NDVI) is a standard remote sensing metric used to measure vegetation health, density, and greenness. It calculates the difference between visible and near-infrared light to quantify how much a plant reflects parts of incoming Electromagnetic Radiation. The formula used for the calculation of NDVI is:

$$NDVI = \{NIR - Red\} / \{NIR + Red\}$$

The formula results in a value between -1 and +1, depending upon how different surfaces absorb and reflects NIR and RED, with NIR being the primary driver for the calculations.Below are the different NDVI values for different kinds of surfaces.

Vegetation Cover (Values 0.2 to 1.0): NIR > RED

Plant chlorophyll absorbs Red light for energy, while the internal leaf structure strongly reflects NIR to prevent overheating. Because healthy plants reflect massive amounts of NIR and less of Red ,the numerator is a positive number. NIR becomes the main factor because when a plant faces stress its cell structure collapses causing it to lose the green chlorophyll present on it. A drop in NIR is the earliest mathematical sign of poor health.

Bare Soil or Stressed Plants (Values near 0):

As vegetation dies or in case of bare earth, NIR reflection drops significantly while Red reflection increases slightly. Because the two values become similar, the numerator shrinks toward zero.

Water, Snow, or Clouds (Values -1 to 0): NIR < RED
These surfaces absorb near-infrared light while reflecting visible light. This makes the numerator negative, resulting in a negative NDVI score.

NDBI (Normalized Difference Built-up Index)
The Normalized Difference Built-up Index (NDBI) highlights urban areas, impervious surfaces, and barren land. It separates man-made structures from vegetation and water by using Shortwave Infrared (SWIR) and Near-Infrared (NIR) light. The formula used for the calculation of NDBI is:

$$NDBI = (SWIR - NIR) / (SWIR + NIR)$$

The result ranges from -1 to +1, with SWIR being the main driver for detecting concrete and asphalt objects. Below are the different NDBI values of surfaces.

Built-up Areas (0 to 1): SWIR >NIR.
Concrete and asphalt reflect much more SWIR than NIR, making the numerator positive.

Vegetation and Water bodies (-1 to 0): SWIR > NIR
Plants reflect NIR but absorb SWIR (due to leaf water content), making the numerator negative whereas water strongly absorbs both, but SWIR absorption is nearly total, resulting in highly negative scores.

Applications
NDVI:
1. Agriculture and Precision Farming
2. Forestry and Ecological Monitoring
3. Forestfire Risk and Burn Severity Mapping
4. Drought and Water Resource Management

NDBI
1. Urban Sprawl and Growth Monitoring
2. Urban Heat Island (UHI) Analysis
3. Infrastructure and Zoning (Catching Illegal Construction)
4. Disaster Damage Assessment (“Before and After")

Conclusion
Remote sensing enables efficient Earth surface analysis through spectral indices like NDVI and NDBI. NDVI evaluates vegetation health and stress, while NDBI identifies built-up and impervious surfaces. Together, they transform satellite data into actionable insights for land-use planning, environmental monitoring, and sustainable resource management. With applications of agriculture, urban sprawl etc.

LEGAL ASPECTS IN VALUATION OF IMMOVABLE PROPERTY

TOUSHY BAJAJ

DEPARTMENT OF VALUATION (REAL ESTATE)

In valuation, there are four aspects: Physical, Social, Economic, and Legal. Out of these, one of the most important factors is the legal side of ownership. Two key terms here are **Title** and **Tenure**, which directly affect how much a property is worth.

Title: Who Really Owns It?

- The title of a property is proof of ownership, showing who legally owns the land or building.
- If the title is clear and undisputed, the property is more valuable because buyers and banks place greater trust on it.
- If the title is uncertain or under dispute, the property's value declines, as buyers avoid land that could lead to legal complications or court cases.
- Titles can also carry encumbrances (such as mortgages or claims), which reduce the property's market value.

Tenure: How Long Can You Hold It?

- Freehold Property: The owner has complete and permanent rights. They can sell, lease or develop it without restrictions. Freehold properties usually have higher valuations.
- Leasehold Property: Ownership is for a fixed period (say 30 or 99 years). As the lease period gets shorter, the property's value decreases for the leaseholder.
- Government or Special Tenure: Sometimes land is given with conditionslike restrictions on transfer or use. These conditions affect how much the property is worth.

Transfer of Property Act, 1882 and Property Value

The Transfer of Property Act, 1882 is one of the most important real estate laws in India. It sets out the rules governing how land, houses, and other immovable property can legally change hands. The Act explains how property can be transferred - by sale, gift, mortgage, lease, or exchange. It ensures that transfers are legal and valid and protects both buyers and sellers through clear procedures.

Impact on Title (Ownership)

- A property's title must be clear under the Act.
- If the transfer is invalid (like by a minor or without authority), the title becomes defective.
- A defective title lowers property value because buyers and banks avoid disputes.

Impact on Tenure (Holding)

- The Act also governs tenure, or how property is held.
- Freehold: Complete and permanent ownership, valued higher.
- Leasehold: Ownership for a fixed time; value decreases as the lease period shortens.

The Transfer of Property Act is the rulebook of real estate. It ensures ownership is secure and tenure is valid. For valuation, this law quietly shapes the true worth of immovable property.

Easement Rights in Immovable Property

The **Easement Act, 1882** explains certain rights connected to land and buildings. These rights don't give ownership, but they allow someone to use another person's property for a specific purpose.

Examples of Easement Rights

- Right of Way – using another's land to reach your own.
- Right to Light and Air – making sure your windows are not blocked.
- Right to Water – using water from a neighbor's source.

Impact on Property Value

- If a property benefits from easement rights (like guaranteed access), its value increases.
- If a property is burdened with easement obligations (like allowing others to cross your land), its value may decrease.

Easement rights are invisible but powerful. They can make a property more useful and valuable—or limit its worth—depending on whether they help or restrict the owner.

Development Control Regulations (DCR) and Property Value

The Development Control Regulations (DCR) are local rules made by municipal authorities that decide how land and buildings can be used and developed. They act like a blueprint for city planning and directly affect the value of immovable property.

Below are broad details covered in DCR:

- Zoning – what type of building can be made (residential, commercial, industrial).
- Floor Space Index (FSI) – how much construction is allowed on a plot.
- Height and Setbacks – limits on building height and required open spaces.
- Land Use Rules – restrictions like heritage zones or green belts.

Impact on Valuation

- If DCRs allow more construction (higher FSI or favorable zoning), property value rises.
- If DCRs restrict development (like height limits or heritage rules), property value may fall.
- Properties built without following DCRs lose value because they risk penalties or demolition.

DCRs are the hidden rules of real estate. They shape how cities grow and decide whether a property becomes a high-value asset or a restricted one.

Rent Control Laws and Property Value

Rent Control Laws are government rules that protect tenants from paying very high rents and from being unfairly evicted. These laws fix rent amounts and give tenants strong rights.

Impact on Property Value

- Lower Income: Owners cannot charge market rent, so property earnings are limited.
- Tenant Rights: Strong protections make it harder for owners to sell or redevelop.
- Vacant Properties: Properties free from rent control are valued higher because owners have more freedom.

Rent control laws balance tenant protection with owner rights, but they also reduce property value for owners. For valuation, a rent-controlled property is usually worth less than one without restrictions.

Conclusion
Valuation of immovable property require due consideration of relevant legal factors discussed herewith as well as other factors affecting the subject property under valuation.

EXHAUSTED MINDS IN THE RACE FOR RANKS

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The True Meaning of Education
Education is the foundation and building block of an individual's life. It shapes not only our knowledge but also our character, values, and ability to think independently. It gives us the skills to face challenges, make good decisions, and become responsible members of society. Beyond textbooks and exams, education teaches discipline, confidence, and problem-solving. Just like a strong base supports a tall building, good education supports a person's future and personal growth.

When Learning Became a Competition
But the question is — when did gaining knowledge turn into a racing competition? The process that was meant to be a joyful learning experience has slowly become a source of fear and pressure for students. Many students today are lost. They do not know why they are studying or what they actually want to become. The rest are constantly scared — scared of losing the competition. Education, which was once about understanding life and developing abilities, is now mostly about marks, ranks, and positions.

The Silent Sacrifices of Students
We often forget how exhausting this race is for a student who is trying his or her best just to make parents and teachers proud. A student studies late into the night, sacrifices sleep, ignores health, and gives up hobbies and happiness. But if the result is not good enough, that same hardworking student is called a failure. Slowly, the student starts believing it too. Ask a student preparing for highly competitive exams what they feel. Yes, opportunities should be given to capable students, but does failing one exam mean a person has no value? Why do we make them feel that failing in one place means failing in life? In the process of proving themselves, students forget to eat properly, sleep peacefully, and live freely. Then society says, "You are just a student. What tension do you have? Your life is easy." But is it really easy?

The Pressure of Constant Judgement

Today's world has become a constant race, and while running in this race, students are getting mentally and physically tired. Being a student in today's time is not as simple as it looks. They are judged everywhere — by relatives, teachers, friends, and even by their own families. If a student gets second rank, the first question asked is, "Why not first?" They are made to live in continuous fear that if they do not come first, they will never succeed in life. This kind of pressure does not create successful individuals — it creates anxiety, self-doubt, and depression.

A Question for Society

So we must ask ourselves: Are we really helping students grow, or are we pushing them towards stress and emotional breakdown?

Redefining Success in Education

It is time to change our thinking. Low marks do not mean a person is a failure. Every student has a different talent, a different pace, and a different dream. Education should help students discover their strengths, not make them feel worthless. Success is not only about ranks — it is about learning, growing, and becoming a healthy and confident human being.

What Students Really Need

We need to understand that students do not need constant comparison and criticism — they need support, guidance, and patience. Instead of asking only about marks, we should ask about their well-being, their interests, and the challenges they are facing. Every student is trying in their own way, and sometimes a few words of encouragement can reduce a lot of pressure. Parents, teachers, and society must create an environment where students feel safe to express their fears, make mistakes, and learn at their own pace. When we listen to them without judging and appreciate their efforts, we help them grow into confident and emotionally strong individuals. Education should not be a burden that students carry alone; it should be a journey where they feel understood, motivated, and supported at every step.

WILLOW CHIP: A BREAKTHROUGH IN QUANTUM COMPUTING TECHNOLOGY

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Abstract

The rapid advancement of computing technologies has continuously transformed how complex problems are solved. One of the most revolutionary developments in recent years is the emergence of quantum computing chips, among which the Willow Quantum Chip has gained significant attention. Developed by Google, the Willow chip represents a major milestone toward achieving practical, scalable, and error-corrected quantum computing.

Introduction to Quantum Computing

Unlike classical computers that process information using binary bits (0s and 1s), quantum computers use quantum bits or qubits. These qubits operate based on fundamental quantum mechanical principles such as Superposition and Entanglement,

allowing them to perform an exponentially large number of calculations simultaneously. This capability enables quantum systems to solve highly complex computational problems far beyond the reach of traditional supercomputers.

What is the Willow Chip?

The Willow Quantum Chip is an advanced superconducting quantum processor designed to improve computational accuracy, scalability, and stability. It focuses heavily on reducing quantum errors—historically one of the most significant barriers in quantum computing—while maintaining high processing efficiency. The chip integrates optimized qubit architecture and advanced error-correction mechanisms, such as surface code error correction, which enhance reliability during long computational operations. Such improvements bring researchers significantly closer to achieving fault-tolerant quantum computing systems, moving the industry out of the Noisy Intermediate-Scale Quantum (NISQ) era.

Key Features of the Willow Chip

- Enhanced Qubit Performance: Improved coherence time enables the superconducting qubits to maintain their delicate quantum states for longer durations, allowing for deeper and more complex circuit executions.
- Error Reduction Techniques: Advanced quantum error correction protocols drastically improve calculation accuracy by identifying and fixing errors without collapsing the quantum state.
- Scalability: The architecture is designed to support the integration of exponentially larger quantum systems in the future, paving the way for millions of physical qubits.
- Energy Efficiency: Optimized superconducting circuits and advancements in cryogenic control systems reduce operational limitations and excessive power draw.

Applications of the Willow Chip:

- Cybersecurity and Cryptography: The massive processing capabilities of quantum chips pose a direct threat to traditional cryptographic algorithms like RSA and ECC. This will heavily impact the security of digital assets, making the security of cryptocurrency wallets in a post-quantum world a critical concern. Counteract this, the industry must rapidly accelerate the adoption of NIST-approved Post-Quantum Cryptography (PQC) standards and integrate Security by Design frameworks to protect sensitive financial data from future quantum attacks.
- Artificial Intelligence and Machine Learning: Quantum processing will supercharge AI models. By analyzing historical data and trends, AI can forecast potential vulnerabilities and attacks, allowing organizations to proactively strengthen their defences. Implementing strict AI governance will be essential as this hybrid quantum-AI model's scale.
- Drug Discovery and Healthcare: By perfectly simulating molecular interactions and chemical bonding at a quantum level, researchers can rapidly discover new life-saving medicines and materials.
- Climate Modelling: Quantum simulations can process vast environmental variables to create highly accurate weather prediction models and strategies for carbon capture.
- Financial Optimization: Banks and institutions can utilize quantum algorithms for real-time risk analysis, portfolio optimization, and complex decision-making systems.

Challenges in Quantum Chip Development

Despite its promising capabilities, quantum computing still faces several significant hurdles. Qubit instability remains a core issue, as the slightest environmental noise or temperature fluctuation can cause decoherence. Furthermore, the necessity for extreme cooling requirements—operating at fractions of a degree above absolute zero—results in incredibly high infrastructure and maintenance costs. Continuous research and technological innovation are required to make quantum computing commercially viable and widely accessible.

Conclusion

The Willow Quantum Chip marks a significant step forward in the journey toward powerful, fault-tolerant quantum computing systems. It demonstrates how quantum processors are evolving from fragile experimental prototypes into practical, robust computing platforms. As continuous innovations refine these architectures, quantum computing will soon complement classical systems, redefining computational limits and accelerating technological progress across scientific research, global industry, and national security.

TIME SHARED PROPERTIES

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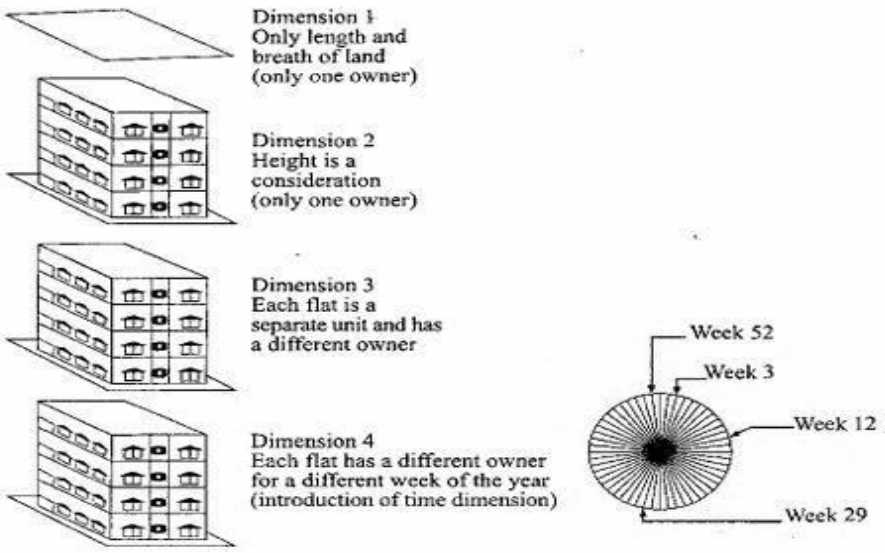
With real estate becoming less and less affordable, a new concept of timeshare ownership has developed. Ownership of a particular property or a flat, i.e. a unit according to this concept, is held for a specified period of time during a year.

What are Timeshared Properties

Ownership concept has gradually evolved over the years. Historically, it was for a parcel of land measured by metes or bounds (measuring length and breadth dimensions by fact) with no consideration for height. This was the first dimension. As land became scarce and tall buildings could be constructed with better technology, ownership included the height factor. This was the second dimension. There was still only one owner of the building and one deed. As cities became more congested and accommodation more scare and unaffordable at reasonable prices the concept of ownership of flats was introduced. This was the third dimension. Each flat had a different owner and there was a different deed for each flat. In the timeshare era, which we are now about to enter, the concept of time has been introduced. Time now will become the fourth dimension. Ownership of property, particularly of certain types of property is likely to be held according to this concept. The deeds will probably show ownership of a flat on a time basis, say on a weekly basis or for a number of weeks in a year which will be specified in the deed. For example, Mr. A would be the owner of flat No. 201 on the second floor measuring, say, 70 sq.m. in a four storeyed residential building with eight similar flats in the building for the 31st week of the year each year.



Type of Timeshared Ownership

In a traditional development, the promoter develops a site, say, of 15 to 20 cottages or flats and sells each one of these units to different owners for about one week or any fixed period of the year for a fixed consideration. Each person becomes the owner of a particular cottage or flat (one unit) for that period of the year. Normally, in this way, the year can be divided into 50 ownerships consisting of one week each, the remaining, two weeks being devoted to repairs and maintenance of the premises. The repairs and maintenance expenses .are shared by all the co sharers of the particular unit. Sometimes a professional company maintains the common areas and does the general repair and maintenance work.

Timeshare ownership can, therefore, be of two types: The first type of timesharing is where the promoter runs the business and lets the owner use the premises, as per agreement. for the specified time of the year. The agreement may be for a number of years e.g. 20 years. Once the period is over, the entire property reverts to the original developer. This type of arrangement is normally referred to a right to use ownership. It is, in other words, a form of lease on a long-term basis. The second type of timesharing is commonly referred to as fee simple or ownership type and it consists of the owner buying interest in the real estate for which he receives title, interest, etc. The owner is allowed to sell or lease as per rules pertaining to other real estate. The benefits of this type of ownership are obvious as there is an opportunity to build equity and to be able to sell or dispose of the property as per the ownership's choice.

SOLVENT FREE ORGANIC SYNTHESIS

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Introduction

Solvent-free organic synthesis has emerged as a sustainable and environmentally friendly approach to chemical reactions. By eliminating or minimizing the use of volatile organic solvents. The chemical industry is one of the largest consumers of organic

solvents, which contribute to environmental hazards such as air pollution, toxicity, and waste disposal issues. In response to increasing environmental concerns, solvent-free organic synthesis has emerged as a promising alternative, aligning with the principles of green chemistry. Solvents play a crucial role in conventional organic synthesis by dissolving reactants, facilitating mass transfer, and controlling reaction kinetics. However, many organic solvents are toxic, volatile, and contribute significantly to industrial waste. The growing focus on sustainable chemistry has prompted researchers to explore solvent-free methods that not only mitigate environmental impact but also enhance reaction efficiency, reduce costs, and improve safety.

Advantages of Solvent-free Reaction

Solvent-free synthesis refers to chemical reactions performed without the use of an external solvent. This approach leverages direct interactions between reactants under solid-state, liquid-phase, or gas-phase conditions. Various strategies, such as mechanochemistry, microwave-assisted synthesis, and solid-supported catalysis, have been developed to facilitate solvent-free reactions with high efficiency.

Principles of Solvent-Free Organic Synthesis: Solvent-free organic synthesis relies on the direct interaction of reactants in the absence of a solvent. Several strategies have been developed to facilitate solvent-free reactions, including:

Mechanochemical Activation: Using mechanical energy via grinding, ball milling, or extrusion to induce chemical transformations. This method enhances reaction rates and selectivity by increasing contact between reactants.

Thermal Activation: Conducting reactions at elevated temperatures to promote molecular interactions without the need for solvents. Heat provides the necessary energy to overcome activation barriers and facilitate bond formation.

Microwave-Assisted Synthesis: Utilizing microwave irradiation to accelerate reactions through dielectric heating. Microwaves enhance molecular vibrations, leading to increased collision frequency and improved reaction rates.

Catalyst and Solid-Supported Reactions: Employing solid catalysts or immobilized reagents to facilitate chemical transformations under solvent-free conditions. Catalysts

such as zeolites, metal oxides, and acid/base-supported materials play a crucial role in solvent-free organic reactions.

Application of alternative solvent

The process of replacing organic solvents with other systems is not easy, especially because most organic compounds are poorly soluble in natural solvents such as water, but there are many systems that are designed to skip the use of organic solvents, such as switchable solvents, supercritical fluids, ionic liquid systems, deep eutectic solvents (DES), and micellar systems.

Using Water as a Neutral Solvent: Water is an ideal alternative solvent in organic synthesis to verify some green chemistry principles because water is safe from a health and environmental point of view. Unfortunately, the utilization of an aqueous medium instead of an organic solvent in organic synthesis is not a simple task. Many organic compounds are insoluble or sparingly soluble in water due to the high polarity of water, so many difficulties are faced.

Switchable Solvents: The liquids that can change their physical properties reversibly are defined as switchable solvents where the reversible change between two different forms takes place by applying external stimulus (or trigger) such as changes in temperature and the addition or withdrawal of a gas. Although switchable solvents have many advantages, their use as reaction mediums is restricted to some specific reactions, such as the polymerization of styrene.

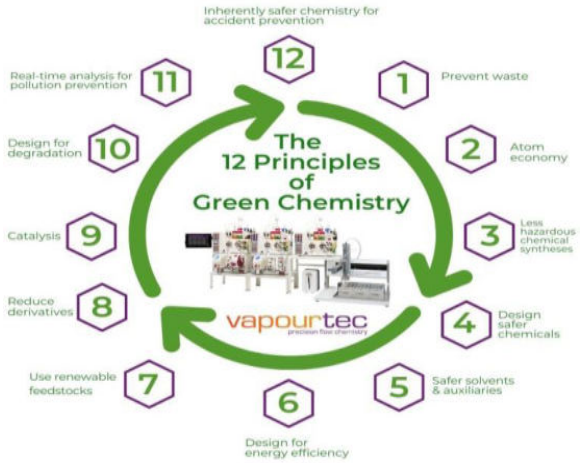
Supercritical Fluids: The most commonly used supercritical fluids are water and carbon dioxide, which are characterized by being inexpensive, non-flammable, and non-poisonous, but the high cost of the used technology, especially for water, is because it needs to perform reactions at high temperature and pressure, which demand special equipment.

Ionic Liquids: Ionic liquids potential to take the place of common solvents as a reaction medium has been studied using a variety of organic processes. Ionic liquids are characterized by the catalytic activity of homogeneous transition-metal and the easy separation of the products of the reaction, but, unfortunately, ionic liquids are not easily prepared, are expensive, and are sensitive to moisture, and have other hazardous properties.

Deep Eutectic Solvents: Deep eutectic solvents are considered a good alternative to ionic liquids because they have similar physicochemical properties.

Why Are Solvent-Free Reactions Required?

A solvent-free reaction is a chemical reaction carried out without adding any solvent. The reactants interact directly (often by heating, grinding, or melting).Industries and researchers prefer solvent-free reactions mainly because of environmental, economic, and safety reasons.



A Solvent free reaction has many advantages Includes:

- Reduce the amount of hazardous chemical waste
- Minimizes air and water pollution
- Decreases emission of volatile organic compounds (VOCs)
- Supports principles of green chemistry

Solvent less organic reaction techniques

Many techniques have been exploited to go through chemical reactions without the need for solvents or using very small amounts compared to traditional methods. Grinding in a mortar (mechanochemistry) is one of the oldest methods used to conduct reactions without solvents. Manual grinding has been developed into many automated methods that apply reactions by friction force, such as grinding by rotating mortar, and high-speed ball milling. Many other technologies have resorted to using energy to conduct reactions such as microwave-assisted reactions, reactions under ultrasonic waves (sonochemistry), Photochemistry, and electrochemistry, in addition to reactions that depend on microorganisms (biosynthesis).

Solventless Organic Reactions by Friction Force (Mechanochemistry)

The term “mechanochemistry” or “grindstone chemistry” is often used in a wide sense, covering the chemical reactions that depend on mechanical force as a source of energy (e.g., grinding, rotating mortar, and high-speed ball milling).Studying mechanochemistry became very important because it can assist the reactions quickly and quantitatively under solventless conditions. It is obvious that mechanochemical reactions are effective and advantageous, so we can say that mechanochemistry could in the future develop a more conventional technique in addition to the unsustainable dependence on solvents, which are hazardous and problematic.

Conclusion

Solvent-free organic synthesis has emerged as a powerful and sustainable alternative to conventional solution-based methods. By eliminating or drastically reducing the use of organic solvents, this approach aligns strongly with the principles of green chemistry, particularly waste minimization, safer chemical processes, and energy efficiency.Solvent-free organic synthesis represents a major advancement toward environmentally responsible chemistry. While not universally applicable, it offers a practical, efficient, and sustainable pathway for many organic transformations. Continued research and innovation are expected to expand its scope, improve scalability, and further integrate it into modern synthetic strategies.

PHASE TRANSFER CATALYST (PTC)

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"The catalyst is an agent used to enhance the rate of chemical reaction which itself not consumed throughout the reaction process and act continuously which is the rational of using it in a very small amount." It usually works by lowering the activation energy or altering the mechanism of reaction. In biological system, the enzyme acts as a catalyst. PTC has been introduced in around 1965 and within a decade, it became popular in synthetic organic chemistry. Many researches with employing PTC are published. The phase transfer catalyst (PTC) is that which allows exchanging of the chemical reactions between the two non-miscible, heterogeneous systems. PTC itself has both functional sites to get solubilized in both system and allow transferring substance from one system to another. It is usually a salt of quaternary ammonium, phosphonium compound and crown ether etc. So PTC is usually used in a heterogeneous reaction system where it facilitates migration of reactant from one phase to another. Since it accelerates the reaction, decreases reaction time, needs less solvents, obtains higher yield, has less side reaction, and eliminate hazardous waste etc, so regarded as good agent for Green Chemistry which allows reaction in water and the use of organic solvents is dramatically decreased. The reactants with ionic nature are soluble in aqueous system but insoluble in organic medium so to make the reaction happen, the PTC is used which acts like a detergent to solubilize the salt in to the desired organic medium. Normally, the reaction with PTC can be carried out in mild conditions and easy workup procedure so highly used in industrial scale. With contrary to the general understanding, PTC is not limited to hydrophilic and lipophilic system but in some cases it is highly useful and utilized in liquid/gas and liquid/solid reaction conditions.

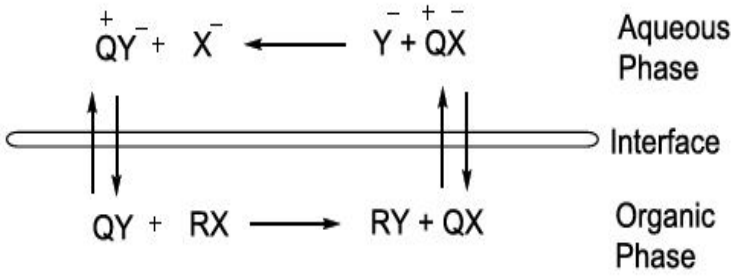
Principle of PTC

The general principle can be discussed as the ability of PTC to facilitate transfer of the reagent from one phase (e.g. Hydrophilic) to another phase (e.g. Lipophilic) which are immiscible and it is regenerated to its original state so the amount of PTC is in catalytic amount. So those reactions are also possible which are originally not in contact with each other due to their insolubility in two different phases.

Mechanism of PTC reaction

In 1971 the mechanism of PTC reaction was proposed by Starksi original research where a quaternary ammonium halide undergoes dissolution in aqueous phase (Q+X-)

and anion exchanges with another anion from the reactants dissolved in aqueous phase. The formed ion pair (Q+X-) now can pass through liquid-liquid interface because of its lipophilic nature and undergoes diffusion from interface to the lipophilic phase, this key step is the phase transfer. In the lipophilic phase, the anion from ion pair is nucleophilic which undergoes reaction (nucleophilic substitution) with the organic reagents and forms subsequent desired product (RY). Again, the catalyst after its work is done, returns back to the aqueous phase and the cycle is repeated continuously. The overview of PTC reaction is explored below.



Application of PTC

More new and new applications are reviling with PTC. Usually it plays a great role in Green chemistry to minimize waste, use of less solvent, faster and convenient approach etc. In organic synthesis also, various reactions are catalyzed by PTC usually where the reagents form heterogeneous nature in a reaction medium. So the PTC is now employed industrially. Like the polyester polymer are made from bisphenol-A and acid chloride, the PTC catalyzed pesticide production are popular usually via alkylation of phosphothioates. The asymmetric alkylation is another advance application of PTC where the chiral quaternary ammonium salt is employed which are derived from cinchona alkaloids.

Limitations

Quaternary ammonium cations degrade by Hofmann degradation to amines, especially at higher temperatures preferred by process chemists. The resulting amines can be difficult to remove from the product. Phosphoniumsalt are unstable toward base, degrading to phosphine oxide.

Conclusion

From past 4 decades, the PTC popularity is increasing and many significant reactions are performed as desired with employing PTC. Only in a commercial scale the disadvantage is that, we need to separate PTC from the product containing organic phase. Nowadays more diversified chemical structure with ammonium, phosphonium, crown and the nonionic PTC are developed and available commercially which allows us to select the specificity to the certain reaction nature. Moreover, the chiral PTC are playing great role in organic molecules synthesis.

E-WASTE

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E-waste/(Electronic waste) is any electronic device that has reached its end-of-life, including those destined for disposal, refurbishment, or recycling.In today's modern world, electronic devices like mobile phones, laptops, televisions, refrigerators, and other gadgets have become an essential part of our daily life. Due to rapid technological advancement, frequent upgrades, and increasing consumer demand, these devices are replaced very quickly. As a result, a huge amount of discarded electronic products is generated every year. This discarded electrical and electronic equipment is known as E-waste. E-waste is one of the fastest-growing waste streams globally. It contains both valuable materials like gold, copper, and silver, as well as hazardous substances such as lead, mercury, cadmium, and brominated flame retardants. If not managed properly, E-waste can cause serious environmental pollution and health problems. Global E-waste generation reached a record 62 million tonnes (Mt) in 2022, an 82% increase from 2010, and is projected to reach 82 Mt by 2030. This, one of the world's fastest-growing waste streams, is rising five times faster than documented recycling rates, with only 22.3% of the 2022 total formally recycled. Various kinds of sources are responsible for generated this kind of E-waste was responsible for this waste.

Composition of E-waste

E-waste is composed of a variety of materials, including metals, plastics, and hazardous substances, with significant environmental and health implications if not managed properly.

Key Components of E-Waste

Metals: E-waste contains both ferrous and non-ferrous metals.

Common metals include:

- Ferrous Metals: Iron and steel are the most abundant materials in E-waste.
- Non-Ferrous Metals: These include copper, aluminium, silver, gold, and palladium, which are often found in circuit boards and connectors. For instance, a mobile phone can contain over 40 different elements, including precious and base metals like lithium, cobalt, and indium.

Plastics: Plastics make up a significant portion of E-waste, often used in casings and components. Many of these plastics are treated with flame retardants, which can release toxic substances when burned or improperly disposed of.

Hazardous Substances: E-waste is known to contain various toxic materials, including:

- Heavy Metals: Lead, mercury, cadmium, arsenic, and chromium are commonly found in electronic devices. For example, lead is often present in solder used on circuit boards, while mercury can be found in switches and flat-screen monitors.
- Flame Retardants: Polybrominated diphenyl ethers (PBDEs) are used in many electronic devices and can be harmful to health and the environment.
- Other Components: E-waste may also include glass (from screens), batteries (which can contain lithium and other hazardous materials), and various electronic components that can release toxic substances if not handled correctly.

Risks Associated with E-Waste

Improper handling and recycling of E-waste can lead to the release of these toxic substances into the environment, resulting in various health risks, including:

- Respiratory Issues: Exposure to dust and particles from E-waste can irritate the respiratory system, leading to chronic conditions such as asthma and bronchitis.
- Neurological Damage: Long-term exposure to heavy metals like lead and mercury can result in cognitive impairments and developmental delays in children.
- Cancer Risks: Certain chemicals found in E-waste have been linked to increased cancer risks, particularly in communities near informal recycling sites.
- Reproductive Health Issues: Pregnant women exposed to E-waste toxins risk passing developmental problems to their unborn children, including low birth weight and neurological issues.

Current scenario in India

India is the world's third-largest E-waste generator, producing over 1.75 million metric tonnes annually as of 2023-24, with a 73% surge in volume over five years. Driven by rapid digitalization and 5G adoption, only about 40-45% of this waste is formally treated, while over 70% of the remainder is handled by the unsafe informal sector.

Key Aspects of the Current E-Waste Scenario:

- Generation and Growth: E-waste in India is growing at roughly 10-15% per annum. The surge is largely due to increased consumption of electronics and faster replacement cycles.
- Top Generators: Maharashtra, Tamil Nadu, Uttar Pradesh, Delhi, Karnataka, and Gujarat are the leading states for E-waste generation. Mumbai ranks first among cities.
- Informal Sector Dominance: Over 70% of E-waste is handled by the informal sector, which lacks environmental safeguards, often leading to toxic materials entering the environment.
- Environmental & Health Hazards: Improper, unscientific recycling of, for example, printed circuit boards (PCBs), leads to significant soil, air, and water pollution, causing severe health issues for workers (liver/kidney damage, neurological disorders).
- Untapped Potential: While only a portion is recycled, E-waste in India holds high value; for example, one tonne of PCBs can yield 1.5 kg of gold.

E-waste management techniques & solutions

E-waste management involves collecting, repairing, refurbishing, and recycling electronic devices to recover valuable materials and prevent hazardous pollution. Key techniques include manual dismantlinghydrometallurgical/pyrometallurgical processing for metal recovery, and using AI-powered sorting systems. Solutions focus on Extended Producer Responsibility (EPR) (take-back programs) and promoting a circular economy through reuse.

- Collection and Segregation: Systematic collection from consumers, followed by sorting into categories like plastics, metals, and circuit boards.
- Refurbishing and Repair: Extending the lifespan of devices by repairing them for resale or donation.
- Mechanical Processing: Shredding and grinding electronics to separate components.
- Material Recovery: Using specialized methods to extract precious metals (gold, copper, palladium).
- Pyrometallurgy: High-temperature smelting.

- Hydrometallurgy: Using chemicals/acids to extract metals.
- Safe Disposal: Landfilling hazardous, non-recyclable components, such as lead or mercury, in compliance with environmental regulations.

Some other Solutions and Strategies for E-waste decrease

- Extended Producer Responsibility (EPR): Mandating manufacturers to take responsibility for the entire life cycle of their products, including disposal.
- Circular Economy Initiatives: Designing products for durability, repairability, and recyclability to minimize waste.
- AI and Advanced Sorting: Utilizing machine learning and robotics to improve the accuracy and efficiency of sorting E-waste components.
- Public Awareness and Collection Drives: Encouraging individuals to use certified E-waste recyclers instead of throwing items in the trash.
- Cloud Computing: Reducing the need for physical hardware, which lowers the overall volume of E-waste.

THE RISE OF LOCATION INTELLIGENCE: TRANSFORMING THE GEOSPATIAL WORLD

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The geospatial field is experiencing a significant transformation. For many years, geospatial technology was mainly associated with static maps and Geographic Information Systems (GIS) used to visualize spatial information. Today, however, the discipline has evolved into a dynamic ecosystem powered by artificial intelligence, real-time data streams, cloud computing, and advanced analytics. Spatial data is no longer used only for creating maps; it has become an essential tool for generating insights that support decision-making across multiple sectors. With rapid technological development and growing demand for location-based intelligence, the global geospatial market is expected to expand dramatically and may reach nearly 1.44 trillion US dollars by 2030. A major shift is also occurring in geospatial education. Traditional GIS education primarily focused on teaching students how to operate mapping software and perform basic spatial analysis. While these skills remain important, modern educational programs now emphasize Spatial Data Science, programming, and data management. Students are increasingly learning programming languages such as Python and working with large spatial datasets that require analytical and computational approaches. This transition reflects the evolving needs of the industry, where professionals must not only create maps but also analyse complex geographic data to generate meaningful insights.

Educational reforms are also encouraging the development of spatial awareness at an earlier stage. In India, initiatives introduced through the National Education Policy (NEP) 2020 support the inclusion of geospatial concepts in school-level education. The aim is to develop spatial thinking skills among students so they can better understand relationships between geography, society, and the environment. Early exposure to spatial concepts can help students build problem-solving abilities that are useful in fields such as environmental science, urban development, disaster management, and natural resource planning. Another important development is the increasing

accessibility of geospatial learning. Online platforms and Massive Open Online Courses (MOOCs) have made geospatial training available to learners worldwide. In addition, open-source tools such as QGIS and other community-driven platforms have reduced the dependence on expensive proprietary software. These developments have expanded opportunities for students and professionals to develop geospatial skills regardless of their geographic or financial background. Despite these advancements, several challenges still exist. Many institutions face a shortage of trained faculty with expertise in emerging areas such as machine learning, Geo-AI, and cloud-based spatial analysis. The cost of commercial software and the absence of standardized professional certification systems in some regions also remain barriers to broader adoption.

Alongside educational developments, the geospatial industry itself is expanding rapidly. Organizations across sectors are increasingly relying on location intelligence to improve efficiency and guide strategic planning. In India, the geospatial economy has already grown significantly and is estimated to be worth ₹29,000 crore, with expectations of strong growth in the coming years. Government initiatives have played an important role in supporting this expansion. The National Geospatial Policy 2022 aims to improve access to geospatial data, encourage private sector participation, and strengthen domestic innovation. These reforms support the broader vision of Atmanirbhar Bharat, which promotes technological self-reliance and local industry development. Geospatial technologies now support a wide variety of real-world applications. In urban planning, cities are adopting digital twin models, which create virtual representations of physical environments. These models allow planners to simulate infrastructure development, analyse transportation networks, and evaluate environmental impacts before implementing projects. In agriculture, geospatial technologies enable precision farming, where satellite imagery, drones, and ground sensors monitor crop conditions, soil moisture, and irrigation patterns. Such approaches help farmers use resources more efficiently while improving productivity.

The logistics and transportation sector also benefits from location-based intelligence. Real-time tracking systems allow companies to monitor shipments, optimize delivery routes, and improve supply chain efficiency. In disaster management, geospatial technologies play a crucial role in emergency response. Satellite imagery, drone surveys, and high-resolution spatial data enable authorities to quickly assess damage, identify affected areas, and coordinate relief operations during events such as floods, earthquakes, and landslides. Looking ahead, emerging technologies are expected to further transform the geospatial sector. One of the most important developments is Geo-AI, which combines artificial intelligence with spatial analysis to process and interpret large volumes of geographic data automatically. These technologies can identify patterns, detect changes, and generate predictions related to traffic flow, agricultural productivity, or environmental change. Another important trend is the growing use of real-time data processing and edge computing, allowing geospatial systems to analyse information instantly from sensors, drones, satellites, and connected devices.

Immersive technologies are also beginning to influence geospatial applications. Augmented Reality (AR) and Virtual Reality (VR) enable users to visualize and interact with spatial environments in new ways, supporting activities such as infrastructure planning, training simulations, and remote inspections. In addition, blockchain

technology is being explored to enhance the security and reliability of geospatial data, particularly for applications such as land record management and property registration. Geospatial technologies are also critical for addressing environmental challenges. Spatial data is widely used to monitor climate change, manage water resources, track deforestation, and analyse environmental patterns. Governments and research organizations rely on geospatial analysis to support initiatives aligned with the United Nations Sustainable Development Goals (SDGs).

As the world becomes increasingly data-driven, geospatial technologies will play an even greater role in shaping the future. The integration of artificial intelligence, real-time sensing, and advanced analytics is transforming how societies understand and manage spatial information. With continued investment in education, research, and policy support, the geospatial sector will remain central to building smarter cities, improving agriculture, strengthening disaster resilience, and supporting sustainable development worldwide.

ASSESSMENT OF WATER QUALITY OF MAHI RIVER AT DABKA USING PHYSICOCHEMICAL AND BACTERIOLOGICAL ANALYSIS

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Abstract
Global natural resource degradation is a result of urbanization and rising socioeconomic activity. This study examined the physiochemical and bacteriological characteristics of river water in Dabka to assess the water quality. Water samples were gathered from 3 subsites in Mahi River at Dabka. Using laboratory base analysis, several physiochemical water quality parameters were assessed, on-site Parameters such as temperature, pH, EC, TDS and off-site parameters such as alkalinity, total hardness, calcium and magnesium hardness and chloride. Total coliform count (TC), and faecal coliform count (FC) were among the microbiological parameters tested for determine the water quality of Mahi River at Dabka.

Keywords: Total coliform, Total faecal coliform, Water quality

Introduction
A vital natural resource for agriculture, environmental stability, and human survival is water. Urbanization, industrial discharge, agricultural runoff, and household activities are all contributing factors to the growing contamination of surface water bodies, especially rivers. Aquatic biodiversity and public health are directly impacted by river water quality. Coliform bacteria are frequently used as indicator species to measure microbial contamination. Recent faecal contamination and possible pathogenic risk are indicated by the presence of faecal coliforms, particularly Escherichia coli. Thus, a thorough evaluation of water quality is possible by analyzing both physicochemical and bacteriological characteristics.

Materials and Methods
Study Area

Dabka village is located in Padra Taluka, Vadodara district, Gujarat (22.2473°N, 72.9564°E). This area passes through by the Mahi River, which is utilized for transportation, domestic use, and for religious events. Based on the impact of human activity, three subsites were chosen:
Subsite 1: Temple area with ceremonial waste disposal
Subsite 2: Central location with anthropogenic debris
Subsite 3: Opposite river bank used for daily transportation and domestic activities

Sample Collection
Water sample collected in sterilized sampling bottles from each subsites every month between December and March.

Physicochemical Analysis
Standard analytical methods were used for determination of parameters:
- pH (pH meter)
- Temperature (Digital thermometer)
- Electrical Conductivity (EC meter)
- Total Dissolved Solids (TDS meter)
- Turbidity (Nephelometry)
- Chloride (Mohr's method)
- Alkalinity (Acid titration)
- Total Hardness, Calcium and Magnesium Hardness (EDTA titrimetric method)
- Dissolved Oxygen (Winkler's method)
- BOD (Dilution method, 5-day incubation at 20°C)
- COD (Open reflux method)

Bacteriological Analysis
Serial dilution technique was employed. Samples were cultured on:
- MacConkey Agar
- Brilliant Green Bile Agar

Plates were incubated at 37°C for 48 hours. Colony forming units (CFU/ml) were calculated for Total Coliform Count (TCC) and Faecal Coliform Count (FCC).

Results and Discussion
Physicochemical Parameters
The pH ranged from 6.6 to 7.5, indicating neutral to slightly alkaline conditions within acceptable limits. The increase in temperature from December to March affected the growth of microorganisms. With the highest values seen in March, electrical conductivity, and TDS demonstrated increasing trends, indicating a rise in the concentration of dissolved ions. Turbidity varied from 13 to 40 NTU, suggesting the influence of surface runoff and suspended particles. Water with a total hardness of 160–180 mg/l was considered equally hard. Although the dissolved oxygen content ranged from 6 to 8 mg/l, the presence of organic pollution is indicated by high BOD and COD readings.

Bacteriological Parameters
Faecal coliform reached at 7500 CFU/ml, whereas total coliform reached up to 5000 CFU/ml. The largest microbial load was regularly found at Subsite 3, most likely as a result of transportation and household use. These values show faecal contamination

and possible public health risk because they are higher than allowable limits for drinkable water.

Conclusion

According to the result of this study, there was highest number of faecal coliform and total coliform found at subsite-3.Based on this study, it has been concluded that the increasing load of bacterial count resulted in it being unfit for either domestic or agricultural purposes. The majority of the physiochemical data indicated a quality that was tolerable in terms of pH, BOD, COD, Alkalinity, total hardness, Mg and Ca hardness, DO. The surface water of Mahi River at Dabka had the highest turbidity which ranges from 10-40 NTU. Also had the highest TDS level in March. Variations in the quality of Mahi River at Dabka are observable. This study provides a baseline assessment of the water quality of Dabka.

References

Maiti, S. K. (n.d.). Handbook of Methods in Environmental Studies Vol. 1: Water and Wastewater Analysis.

Minz, A. O., & Nath, S. (2023). Assessment of River Water Quality during Summer Season in Prayagraj, Uttar Pradesh, India. International Journal of Environment and Climate Change, 13(11), 487–497. https://doi.org/10.9734/ijecc/2023/v13i113192

Mishra, S., Sharma, M. P., & Kumar, A. (2015). Assessment of water quality in Surha Lake based on physiochemical parameters, India. J. Mater. Environ. Sci, 6(9), 2446-2452.

Sitaram, D. U. (2022). Study of the physio-chemical parameters for testing water: A review. World Journal of Advanced Research and Reviews, 14(3), 570-575.

DETECTION OF POTASSIUM-40 IN HUMANS USING NAI(TL) SCINTILLATION DETECTOR

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Abstract

The human body contains naturally occurring radionuclides, of which potassium-40 (K-40) is a major source of internal radiation exposure. The current study uses a sodium iodide doped with thallium [NaI(Tl)] scintillation detector to detect and quantify natural K-40 activity in the human body. We caught and examined gamma radiation from K-40 decay at 1.46 MeV.The work shows how NaI(Tl) scintillation spectroscopy can be used to estimate the radiation dose contribution from K-40 and detect internal natural radioactivity. The results advance knowledge of internal dosimetry and natural background radiation.

Keywords: Gamma Spectroscopy, Internal Dosimetry, NaI(Tl) Detector, Potassium-40, Natural Radioactivity

Introduction

Natural background radiation is an inevitable aspect of living. It comes from terrestrial radionuclides, cosmic rays, and internal radionuclides found in the human body. One of the most important internal radionuclides is potassium-40 (K-40). A naturally occurring

radioactive isotope of potassium, K-40 has a half-life of about 1.25×10^9years. K-40 is evenly dispersed throughout the human body's soft tissues and muscles since potassium is a necessary component of biological tissues. It produces a distinctive gamma photon of 1.46 MeV through beta decay and gamma emission, which can be found using gamma spectroscopy methods. The identification of K-40 aids in radiation monitoring research and offers information about internal radiation exposure. Because of their high efficiency and gamma radiation sensitivity, sodium iodide doped with thallium [NaI(Tl)] scintillation detectors are widely used.

Materials and Methods

Principle of Detection

NaI(Tl) scintillation detectors work on the basis of the interaction between incident gamma radiation and the crystal, which results in the production of light photons, or scintillations. A photomultiplier tube (PMT) transforms these light pulses into electrical signals. The energy of the incoming gamma photon determines the pulse height. Gamma spectrometry is used to identify the distinctive gamma ray that K-40 emits at 1.46 MeV in the energy spectrum.

Instrumentation

The following made up the experimental setup:

- Detector of NaI(Tl) scintillation
- PMT, or photomultiplier tube
- High-voltage power source
- MCA, or multichannel analyzer
- Shielding with lead to lower background radiation

Standard gamma sources were used to calibrate the apparatus prior to measurement.

Experimental Procedure

- The spectrum of background radiation was recorded without the person present.
- The subject was sat in close proximity to the detector.
- For a predetermined amount of time, the gamma spectrum was captured.
- It was determined that the K-40 characteristic peak was located at 1.46 MeV.
- Background counts were subtracted to get the net count rate.
- Detector efficiency and calibration parameters were used to determine the K-40 activity.

Results and Discussion

- The presence of K-40 in the human body was confirmed by the gamma spectra, which revealed a clear photopeak at 1.46 MeV.
- Body mass and potassium levels had an impact on the measured activity. The average human body has between 4000 and 5000 Bq of K-40 activities. The existence of K-40 is normal and inevitable since potassium is necessary for nerve activity and muscle contraction.
- Natural background radiation exposure is largely influenced by the internal radiation dosage from K-40, which is normally between 0.15 and 0.20 mSv annually.
- The intermediate energy resolution and good detection efficiency of the NaI(Tl) detector made it useful for detecting gamma radiation from internal radionuclides.

Conclusion

The research demonstrates that a NaI(Tl) scintillation detector may effectively detect the naturally occurring potassium-40 found in the human body. For K-40 identification, the distinctive 1.46 MeV gamma emission provides a trustworthy signal. People naturally and continually receive low-level internal radiation from ^40K throughout their lives since potassium is an important biological element. ~40K is a normal and inevitable part of the human body and does not represent a threat under normal physiological settings, even though it contributes to internal radiation exposure. The results emphasize that humans are frequently exposed to natural background radiation as part of typical ambient conditions, and they also highlight the significance of gamma spectroscopy in environmental radiation studies and internal dosimetry assessment.

References

ICRP (2007). Recommendations of the International Commission on Radiological Protection.

Knoll, G. F. (2010). *Radiation Detection and Measurement*.

UNSCEAR (2000). Sources and Effects of Ionizing Radiation.

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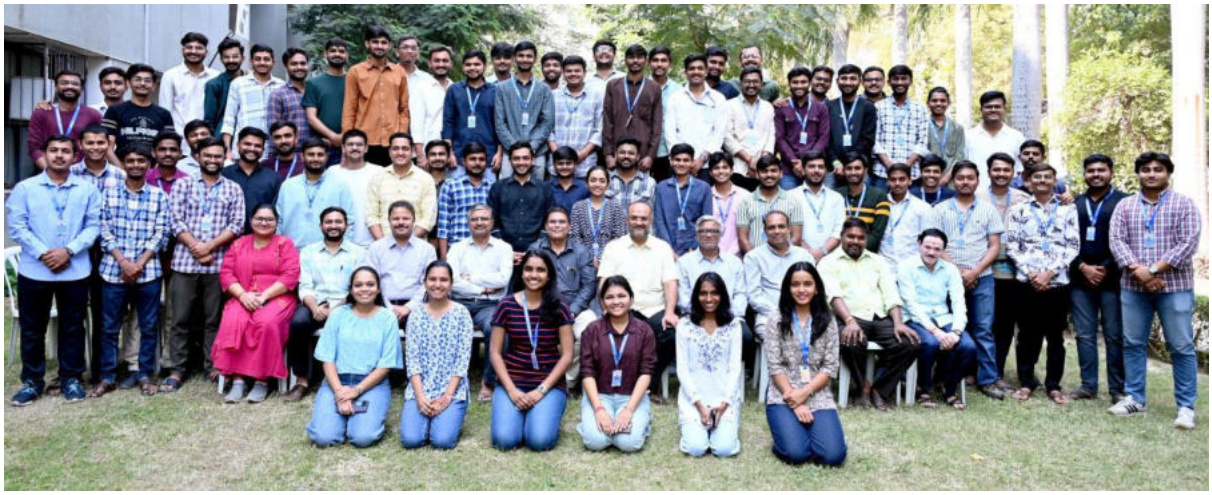

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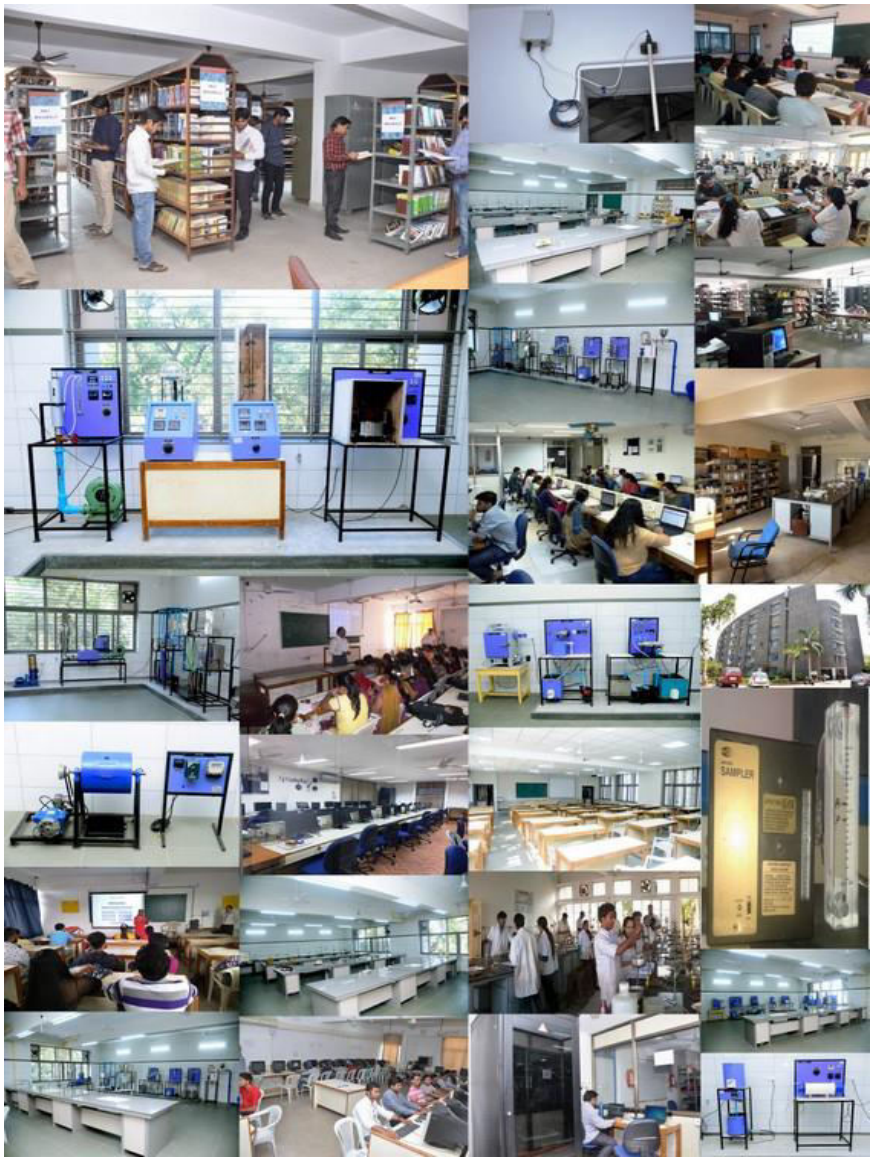

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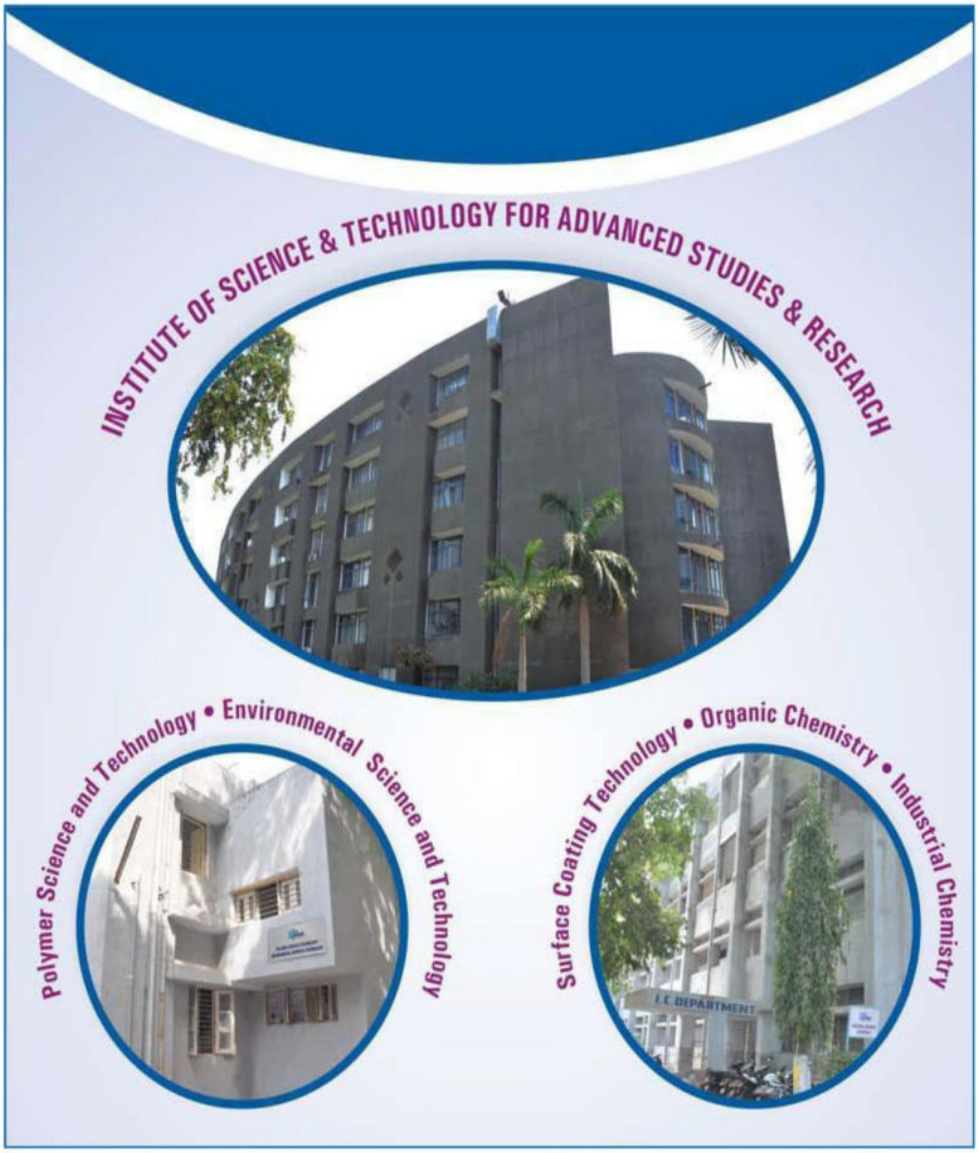

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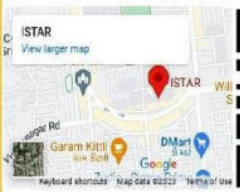

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