# THE FINAL WORD

The official e- newsletter of

**Industrial Chemistry (IC) Department, ISTAR,**
**CVM University, Vallabh Vidyanagar, Anand, Gujarat**

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# March 2022

**Edited by:- Department of Industrial Chemistry**
**Prepare & designed by:- Shree Jaradi (21IC82)**
**Zeel Patel (21IC99)**

**INDUSTRIAL CHEMISTRY DEPARTMENT**

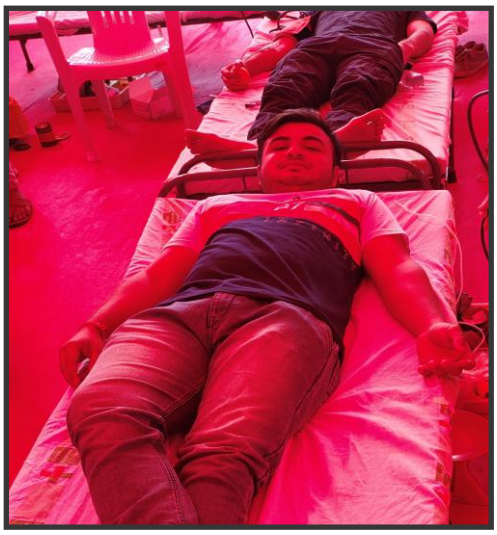
# 77th Vallabh Vidyanagar Day Celebration

## Rangoli

ISTAR has celebrated 77th Vallabh Vidyanagar Day on 3rd March 2022. During a day, 10 students of Semester 2 jointly have drawn Rangoli.

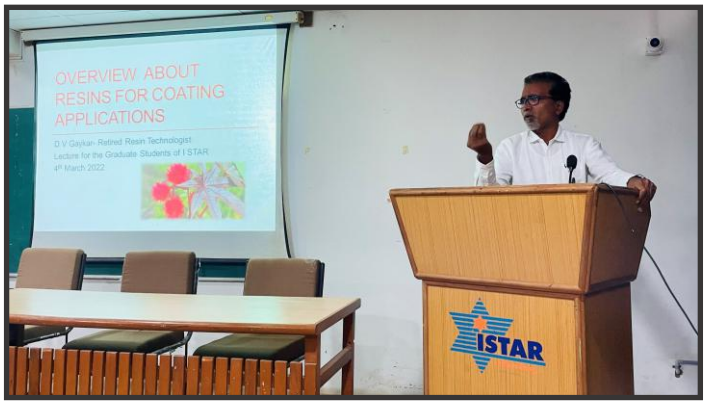

## Blood Donation Camp

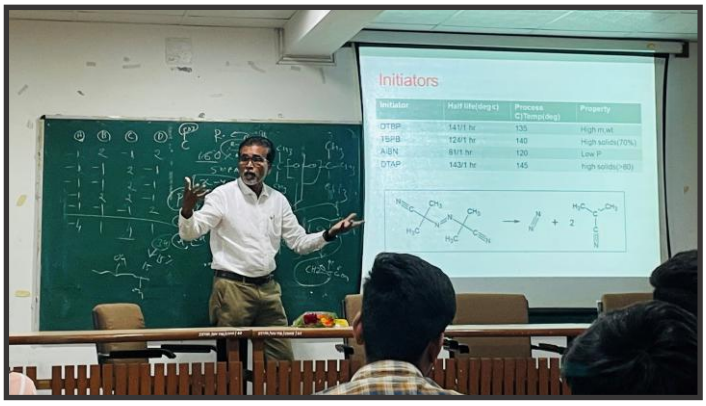
CVM University organized Mega Blood donation camp on 3rd & 4th March 2022. 27 students of our department donated their blood on occasion of 77th Vallabh Vidyanagar day.



# Expert Talk

**Speaker:** Mr. D. V. Gaykar (Retired Resin Technologist, Asian Paints Ltd.)
**Topic:** Overview of Resins for Coating Application
**Date:** 4th March 2022




# Science Manthan-2022

Total 42 students of M.Sc. Industrial Chemistry Semester 2 & 4 were participated in Science Manthan-2022 organized by The P D Patel Institute of Applied Sciences (PDPIAS), CHARUSAT University on 26th March 2022 at Changa (Anand).

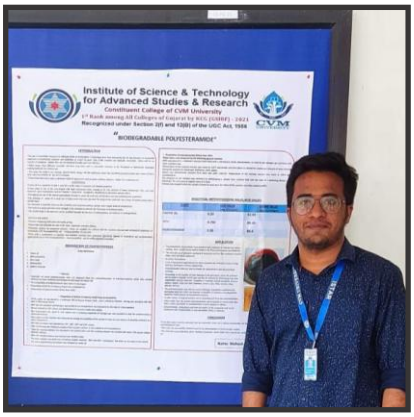

⇒ Fenil Bhalani and Dixitkumar Bavisa of Semester 4 were presented Poster entitled "Formulation of Herbal Mascara" under the guidance of Dr.Mandar Karve and won 2nd Prize.


⇒ Cherish Santoki and Anjali C. Patel of Semester 4 were presented Poster entitled "Bio-Lubricant" under the guidance of Dr.Jigar Patel and won 2nd Prize.

⇒ Oral Presentation on Science to Business entitled "Preparation of Silica from Rise Husk Ash"by Zeel Patel, Shree Jaradi and Parth Satani of Semester 2 won 2nd Prize.

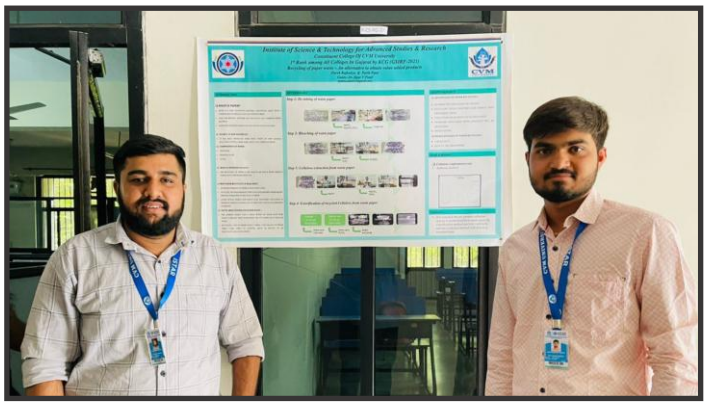
⇒ Participants in poster presentation from semester 2 & 4

Hardik Solanki , Virendra Sindha & Yash D Patel

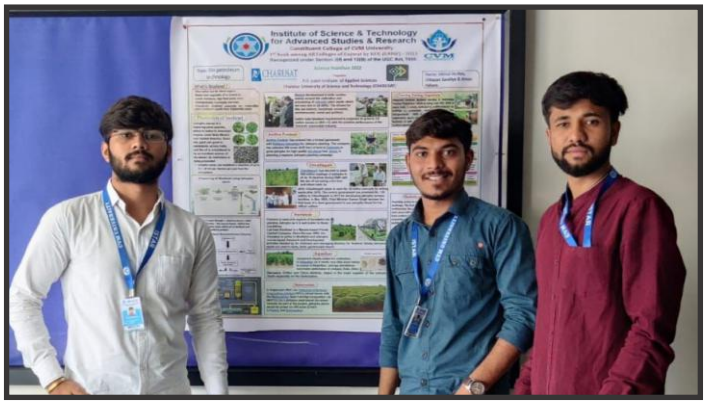



Mahesh Kurup , Jaydip Jotva & Jay Vasava

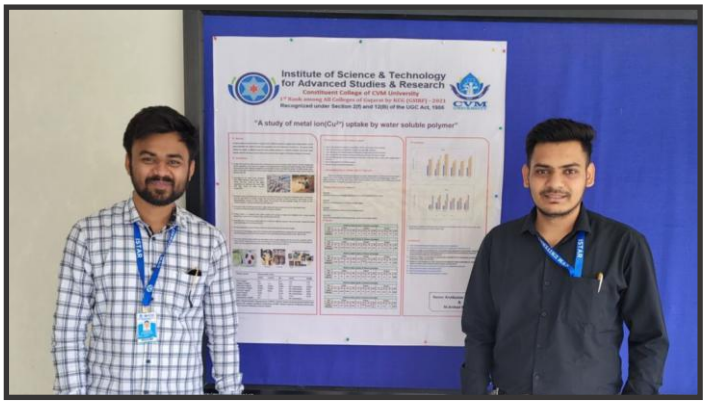
Bhautik Korat & Badal Patel



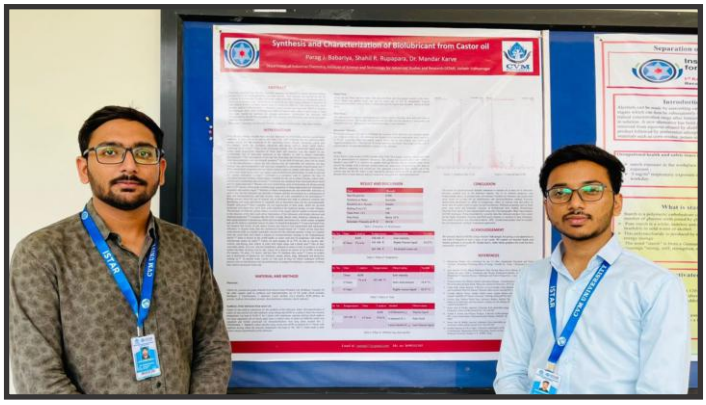
Parth K Patel & Harsh Rajkotiya



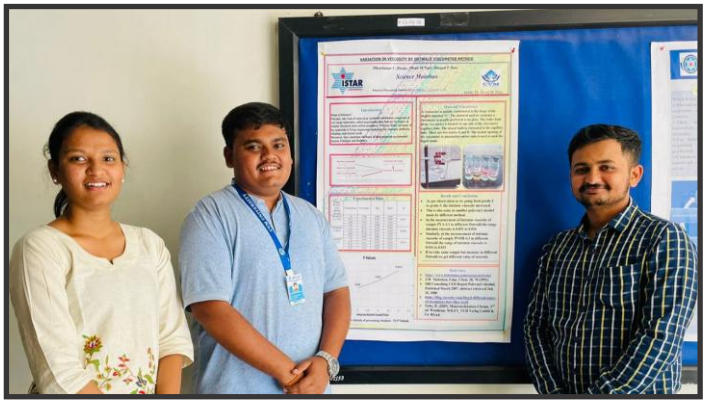

Chhayan Savaliya , Mehulsinh Dodiya & Aman Vohra




Krut Patel & Mohammad Arshad Shurti




Shahil Rupapara & Parag Babariya



Suhagi Chaudhary , Dhruv Bhadja & Dhrupal Ram


Rahul Darbar , Raj Thakor & Sahiel Sharma

⇒ Science poetry was presented by Lakhan Kansara from semester-2

करो जयघोष ये विज्ञान का दौर है
बदलता नवाचार ये विज्ञान का गर्व है

भारतीय रेलवे ने सुरक्षा का इतिहास रच दिया
स्वदेशी सुरक्षा तकनीक 'कवच ' का अविष्कार कर दिया
कोविड 19 की विकट परिस्थितियों मे
स्वदेशी कोवैक्सीन का निर्माण हो गया
बदलता नवाचार ये विज्ञान का मर्म हो गया
करो जयघोष ये विज्ञान का दौर हो गया

पेट्रोल की भयंकर तंगाई से , कुछ नया उपाय खोज किया
इलेक्ट्रॉनिक गाड़ियों का एक नया समाधान खोज दिया
लॉकर के नाम पर, विश्व को डिजिटल लॉकर नवाचार दिया
सैनिको की रक्षा मे "भाभा कवच " उत्पाद किया
यही बदलते दौर मे विज्ञान का नया पर्याय दिया
करो जयघोष ये विज्ञान का दौर दिया

धरती से अम्बर तक विज्ञान रचता गया
नितप्रति नवखोज से विज्ञान सृजता गया
बदलते नवाचार से विज्ञान गर्वित हो गया
करो जयघोष ये विज्ञान का दौर हो गया

⇒ Dr. Mandar Karve was invited as a jury member for the events of Science Manthan 2022.

Article

## Green Hydrogen: Advancement in Renewable Energy

- The Hy.GEN-e systems produce hydrogen through alkaline electrolysis technology. This is the most widely applied and proven technology available today and therefore offers a safer and more reliable alternative to conventional hydrogen supply by trailers.

- The system uses Temperature Swing Adsorption (TSA) technology with the ability to operate under the pressure of 15 bar(g) without the use of any compressor. This is more energy and cost-efficient when compared to traditional gas separation systems.

❖ **Technology:**

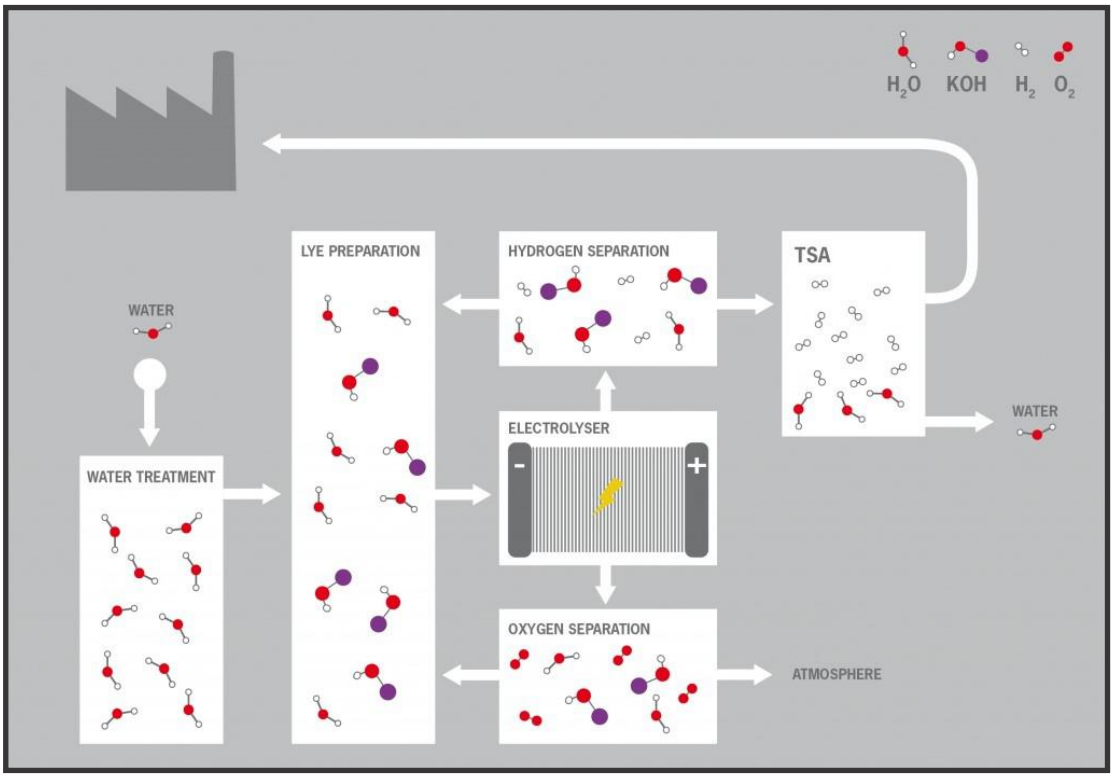



**Figure: 1 Flow diagram of hydrogen production**

As per shown in figure:1 Pre-treated water is fed into the lye tank in which the lye is prepared and sent to the electrolyser. In the electrolyser, water is split into hydrogen and oxygen gas using electric energy. Hydrogen gas is evolved at the cathode side of a cell and exits through perforations at the cathode side separator plate towards the hydrogen manifold channels. The reaction involved at the cathode:
At the same time, oxygen gas is evolved at the anode side of the cells. The reaction involved at the anode:

Cathod side reaction [Reduction]:

$$2H_2O + 2e^- \rightarrow H_2 + 2OH^-$$

Anode side reaction [Oxidation]:

$$2OH^- \rightarrow H_2O + 1/2\ O_2 + 2e^-$$

Hydrogen and oxygen gas then enters the hydrogen separator and oxygen separator respectively, where the lye is separated from the gases and recycled back into the electrolyser via the lye pump. The hydrogen gas is then fed to the temperature Swing Adsorption (TSA) unit for further purification while oxygen is vented out as a by-product or can be upgraded and used if required.

❖ **Green hydrogen project in industries:**


**Green Hydrogen: Reliance Industry Limited**

Reliance Industries Limited and Adani Group - two of India's largest Energy companies announced foray in green hydrogen production in 2021. Reliance Industries announced its to use about 3 gigawatt (GW) of solar energy to generate 400,000 tons of hydrogen.

Gautam Adani, Founder of Adani Group has also announced to invest $70 billion to become the world's largest renewable energy company which will produce the cheapest hydrogen across the globe. Ministry of Power, Government of India have vision to produce a cumulative 5 million tons of green hydrogen by 2030.


ANIL will undertake business of developing and operating projects for the synthesis of low carbon fuels and chemicals, generation of low carbon electricity and the manufacture of key components/material for projects including generation of green hydrogen, related downstream products, electricity generation, manufacture of wind turbines.

**Rahul Darbar**
**(21IC68)**

## Sweet Words from Family

I have a wonderful experience being a part of the IC family. I have learnt numerous important aspects throughout my journey. The credit of my growth which I have observed in my academics and personality is completely because of IC department. I got best of the professor's whose teaching I never going to forget. They helped me to become a better person. These years will always play an important role in my life. I will forever cherish the memories and learnings from them.
I am grateful to had an opportunity to study in ISTAR and thank you to each one of them who helped and became a part my life.

Kamalkishor Pandey (2019-21)
Production officer (Intermediate & PPA)
Lupin Pharmaceuticals,
Dabhasa