



# THE FOURTH ESTATE

## Volume IV: unison

INDIAN INSTITUTE OF PETROLEUM AND ENERGY



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From Director's Desk

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# From Director's Desk

Dear Friends,

Warm Greetings.

*This gives me mixed feelings while writing this message to our faculty, staff, young student friends and all the readers. While all the things are going well during a flight journey, if a sudden tornado attacks, the crew and the passengers in the flight panic. The smooth run gives comfort and the sudden unexpected hurdle creates a panic situation. The same is being experienced by IPE. When everything was going on well, with the new and regular faculty members having been recruited and joined, new non-teaching staff including the administrators like Registrar, Deputy Registrar joined, ReOPEN-2020 (the first international workshop of IPE) being successfully organized, organizations started coming for campus placements, IPE felt like having a smooth sail.*



*Suddenly came the unexpected and unusual COVID-19, a very dangerous virus, making the entire world panic. This pandemic environment did not spare IPE also. The organizations which had given dates for visiting campus for placements dropped down as the dates fell during the nationwide lockdown period. It became impossible to approach other institutions, which were in consultations with IPE. The students were to leave to their hometowns at short notice. Thanks to the initiatives of the Govt of India, IPE also could take on to the online classes, conduct the examinations and graduate the first batch on time. However, they missed the ceremonious farewell from the institute.*

*Thanks to the best efforts of all the faculty and the staff, the academic work, though not perfectly in the best shape, is going on smoothly with online classes. Once the pandemic situation comes into control, the practical classes will be conducted in the campus. In the meantime, I advise some enthusiastic and entrepreneurial students to identify how some practical experiments can be virtually taken up and inform their respective classes through their faculty mentors, such that this becomes an innovative idea.*

*Based on this year's experience, where the majority of the industry could not keep up to release the appointment orders for some of the candidates selected by them, IPE is trying to do its best by hiring the services of two consultants for placements for the coming academic year. So far, the reports are indicating that the system is in a positive direction in this regard.*

*COVID-19 though changed life in many ways and brought a lot of uncertainty with it, taught us some valuable lessons. Now people realize the importance of the maintenance of hygienic conditions, are learning to use technology for fulfilling most of their needs, students including school-going children are attending online classes and most of all, we are not taking anything for granted. No doubt this is the time for the enthusiastic young guys to think of startups with innovative ideas to meet the challenges.*

*I wish that this newsletter will be a remarkable one with good memories for the entire team with faculty and the students who worked for it, particularly during this pandemic situation. I congratulate the entire team for bringing it out successfully.*

With Best Wishes,

Date: 29<sup>th</sup> May 2020

A handwritten signature in green ink, appearing to read 'V. S. R. K. Prasad', with a horizontal line extending to the right.

(Prof. V S R K Prasad)  
Director



The background features a cream-colored field with several large, overlapping geometric shapes. On the left, there are teal and light blue triangles pointing upwards. On the right, there are large orange triangles pointing downwards, and smaller teal and orange triangles pointing upwards. The word "Events" is centered in a purple script font.

# Events

# Library Day Celebration

12<sup>th</sup> August 2019

National Library Day was celebrated on Padmasree S R Ranganathan's birth anniversary. Padmasree S. R. Ranganathan was a librarian and mathematician, noted as Father of Library science in India. Garlands and flowers were offered by the Prof. V. S. R. K. Prasad, Director of IPE, faculty, staff and students of IPE.

## Library Updates up to 19<sup>th</sup> Oct 2020

The total number of books procured so far by the IPE library is 2372. A Digital Library was initially arranged with 10 systems and now upgraded to 25 systems. As the students' strength is increasing, the Institute is providing sufficient seating accommodation in the library to cater to the needs of the students. There are 6 reading tables and the library has a seating capacity of 70 students.

Recently Library had enrolled academic subscription with OnePetro of SPE (Society of Petroleum Engineering). Journals worth 25 Lakhs were renewed with Wiley Publishers and eBooks were purchased for access to the students by I.P based and domain based access for the benefit of the students who are staying in the remote areas across the country, due to COVID-19 pandemic situation. A total of 5.28 crores of e-resources are accessible through NDLI (Nation Digital Library of India), IIT Kharagpur.



from S R Ranganathan Library  
IPE



# IPE Student Council

27<sup>th</sup> August 2019

*The announcement of the institute election for the year 2019-2020 plunged the students into deciding the candidates who they would like to win. The 'Judgement Day' finally arrived and the excitement in the air was tangible as the institute was waiting eagerly. There were mixed feelings of joy and disappointment as only a few students were elected/ nominated. Putting differences aside, everyone congratulated the victors. Each one of us stood tall, brimming with confidence, and ready to shoulder our newly assigned responsibilities with vigor, zest, and newfound passion.*

*The results were as follows:*

**President:**

Rohan Anand                      16PE10047

**Vice-President:**

K Reshma Reddy                17PE10016

**General Secretary:**

Abhinav Bhardwaj              17PE10025

**Joint Secretary:**

S F Chant Adorat                18CH10007

**Treasurer:**

V Dhanviram                      16CH10013

**Secretary of committees Literary and Cultural:**

Y S Sai Akhila                  17PE10019

**Extra Academic Activities:**

Surendra Nath                  17CH10041

**Technical Events:**

K Neeraj                          17PE10009

**Sports and Games:**

G Srinath                         17PE10004

*This council is a body for periodic discussions with Director of IPE Prof. V S R K Prasad and faculty to get their valuable guidance in the following fields:*

- (a) Academic discipline
- (b) Extra-curricular activities
- (c) Co-curricular activities
- (d) To organize students' activities
- (e) Promoting active participation among members

*It is a great privilege for us to be a part of the students' council and juniors of this institution should be in high spirits from this year and make the IPE flag fly high in our great country in the forth-coming years.*

**by S F Chant Adorat 18CH10007**





photo by G Bhanu prakash  
19PE10024

## Motivational Talk

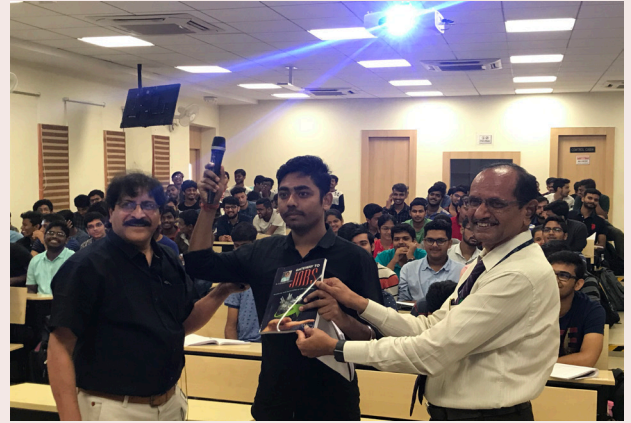
29<sup>th</sup> October 2019

*Prof. K V S G Murali Krishna, a professor of civil engineering by profession at JNTU Kakinada, enthralled the students of IPE with his knowledge-packed session on the of 29<sup>th</sup> October 2019. Prof. Murali Krishna, a polyglot is passionate about interacting with students and imparting life skills to them. He made the students understand how to conduct their lives, with his humorous anecdotes without*



*a dip in energy at any point during the session. He has a unique style of teaching filled with the poems and quotes by famous personalities. Prof. Murali Krishna made the students learn and repeat after him to elevate the enthusiasm and to make learning more fun and lasting. In the session spanning about three hours, he covered various skills that are useful to students*





and presented books authored by him, to the students who volunteered to go onto the dais to recite poems/quotes or to express how they felt. Professor was particular that the students write down the new concepts being taught to them. He even taught some technical formulae as a part of the section “tacit learning”. His session was surely useful to the students who always benefit from new perspectives and exposure to new areas of development, which will in turn pave the way to a bright future. This motivational session was one of the most enjoyable ones for the students.

**by Y Bharath  
19CH10002**

## ‘Life: What Do You Want?’

16<sup>th</sup> November 2019.

A talk by Sushila ji (a trustee of the Vedanta Cultural Foundation) was held on 16<sup>th</sup> Nov 2019. The Vedanta Cultural foundation conveys the philosophy of the Vedanta which includes the eternal philosophy of life and the ultimate goal of self-realization to the people.

In her talk, Sushila ji explained how Vedanta plays a role in our personal development and how Vedas are a source of pure wisdom. She explained how everything plays its own specific role by taking the example of our hand- we take food into our hand and put it into the mouth



and that’s how food enters our body. But at a point, the hand feels that it’s superior, as it is the one which brings food to the body which is then supplied to all other parts and it feels that it is not benefiting directly. It then decided to make a hole in itself to feed itself directly. After a while, the hand got infected and

needed to be cut from the body. It did not realize that the other parts of the body also contribute have also their own role and it must do its assigned job for the collective good. In this way, she highlighted the fact that everything has its own time and importance and the best way to lead our lives is by maintaining a simple lifestyle full of peace and tranquility.

It was a very enlightening session and encouraged the students to apply the principles of Vedanta in daily life.

**by G Bhanu Prakash  
19PE10024**

# *IIFE Inaugurates The IIChE Student Chapter*



*6<sup>th</sup> September 2019.*

**T**he Indian Institute of Chemical Engineers, IIChE is a conglomerate of professionals from academia, research institutes, and industries across the country. It has always been instrumental in the provision of a forum for joint endeavors and a stage for industry-academia interaction. The organization has therefore always proved to be beneficial for the applications of chemical engineering and allied sciences.

*IIFE inaugurated the Indian Institute of Chemical Engineers (IIChE) student chapter on the evening of September 6<sup>th</sup>, 2019. The occasion was graced by Shri K. Narasappa, President of The Andhra Petrochemicals Ltd, who was the Chief Guest of the evening. All Faculty members and members of the student chapter attended the program with great enthusiasm. The event began with the lighting of the ceremonial lamp by the chief guest and further proceeded with his address to the gathering.*

*Shri K Narasappa, President of The Andhra Petrochemicals Ltd. while addressing the gathering, focused on the current standards of engineering in the country and expressed his desire for further betterment. He gave a brief introduction to his organization and shared excerpts from his vast experience in the industry. He also motivated the students to enhance their communication skills along with their studies in order to become complete professionals.*

*Prof. V S R K Prasad, Director, IIFE, Visakhapatnam, on the occasion*





*addressed the gathering and emphasized the importance of the student chapter in building one's professional network through various conferences, competitions, and journals. He urged the students to actively participate in the activities for their development, not just in academic terms but one which encompasses one's personality and intellectual development. He also asked the students to make full use of the opportunity in expanding their contacts with chemical engineering professionals across India and abroad. Also, the official logo for IPE's IChE student chapter was unveiled.*

*Dr. Swambabu Varanasi, coordinator of the chapter explained to the audience about the significance of the student chapter and highlighted the ways in which the chapter can help in boosting students' interest in the field.*



*Shri K. Narasappa, President of The Andhra Petrochemicals Ltd*

**by Naman Rathuri**  
**19CH10013**





photo by D Sree Karthik  
17PE10015

# Celebration of 73<sup>rd</sup> Independence Day

15<sup>th</sup> August 2019

*The 73<sup>rd</sup> Independence Day was celebrated on 15<sup>th</sup> August 2019 with utmost pride and joy at IIPE. The flag hoisting ceremony took place in the basketball court. The Director of IIPE Prof. V S R K Prasad hoisted the flag, and everyone sang the national anthem. The first-year students performed a march past.*

*The rest of the program continued in IIPE's auditorium, 311. Students from 4<sup>th</sup> year and 1<sup>st</sup> year delivered speeches and emphasized the importance of the day which were filled with patriotism and pride for our motherland. A student sang the song "Ae Watan", which was mesmerizing*

*to hear. The Director and Officer on Special duty Mr. A S V Ramanan moved the students with their inspiring speeches.*

*Literary events, namely essay writing competition and elocution were conducted on 13<sup>th</sup> August on the topics-India's Energy Security and Disruptive Technology respectively Prizes to the winners of these events were awarded by the Director. The event was a grand success which was possible due to the coordination of the students and the faculty members.*

**by V Peter Youngreen  
19PE10040**



# Teachers' Day Celebration

5<sup>th</sup> September 2019

5<sup>th</sup> September, Teachers' Day is celebrated all over India as an occasion to appreciate and acknowledge the efforts and hard work of our teachers in making us successful and responsible individuals. Teaching is the profession that contributes a lot to the nation-building, helping create torchbearers of the future. At IPE, every year Teachers'

Day is celebrated with utmost joy and respect for it is a day when we pay regards to the teachers who have been instrumental in shaping our lives. In the program, students spoke about how each faculty member was important in their own way for the Institute and thanked the teachers for towards the students as well as the institute.

The Director Prof. V S R K Prasad gave a wonderful account of teachers and their importance in society. He also said that every teacher feels happy to see their students achieving greater heights and the sole aim of a teacher is to guide their students towards success. Teacher are the backbone of the nation, for they are like a candle that consumes itself to show the way to others. They are the pillars that build a nation. Teachers' Day celebration is a small attempt to show gratitude and respect towards our teachers.

by **G Bhanu Prakash**  
**19PE10024**

# Gandhi Jayanthi

2<sup>nd</sup> October 2019

October 2<sup>nd</sup>, 2019, was not only a special day for India but also for the whole world as we celebrated the 150<sup>th</sup> birth anniversary of one of the greatest visionaries that walked on Earth. In the memory of the "Father of our Nation", IPE celebrated Gandhi Jayanti with utmost happiness and pride.

To cherish the ideas and values of the great visionary Mahatma Gandhi, essay writing competition and elocution were held. The topic was "Gandhi- A life lesson for all". It was a simple yet subtle attempt to remember Gandhiji and his ideologies.

Following the literary events was a gathering to pay respects to Gandhiji. The Director of IPE Prof. V S R K Prasad, Officer on Special Duty, Mr. A S V Ramanan, and other dignitaries offered prayers to Gandhiji. Adivishnu, a fourth-year student, enlightened the gathering with Gandhiji's life, journey, and





struggle. Mr. Ramanan gave an account on the greatness of Gandhiji and said that his ideologies would inspire generations to come. The Director's speech followed. He highlighted the greatness of Gandhiji and encouraged all the students to follow his message. We all should take inspiration from his righteous and truthful life. Director's speech focused on cleanliness and hygiene. He wanted every student to follow Gandhiji's idea of cleanliness and sanitation. He also spoke about the recycling of plastic waste and an eco-friendly environment. The event concluded with a resolution to follow Gandhiji's principles with the utmost diligence to make the society a better place.

**by P Hari Sai 19CH10003**

## Republic Day

26<sup>th</sup> January, 2020

Republic Day, the day on which the constitution of India came into effect is well celebrated with utmost pride and diligence in IPE every year on 26<sup>th</sup> January.

The flag hoisting ceremony took place at the Basketball court in the Andhra University premises. The director of IPE, Prof. V S R K Prasad, Chief Guest of the event hoisted the flag. Then everybody sang the national anthem, with eyes of every citizen filled with pride seeing the tricolour flying high. Everyone saluted the flag paying tributes to the glorious journey of India as a republic. Students from the first year also performed a march past as a symbol of respect towards the nation. Tri-coloured balloons were set free into to air by the director to mark the celebration of 71<sup>st</sup> Republic Day.

The rest of the event was continued in IPE's room 311. Few students from the first and second years shared their views on patriotism and our duties towards the nation as responsible citizens. A student from the first year sang our national song, Vande Mataram which mesmerised the audience.

Then prize distribution ceremony for various events conducted like, Essay writing competition, Group discussion, poster making competition and IChE quiz competition took place. The Director, Prof. Prasad and Officer on Special Duty (OSD) Mr. A. S. V. Ramanan handed over the certificates to the winners.

Later the Director and OSD shared their words of wisdom on the occasion of Republic day, which was enlightening and inspiring. They encouraged the students to follow a path of righteousness and perform our duties towards the nation.



The program concluded by singing the national anthem. All students were provided with refreshments after the program. The event was successful due to the efforts put in by the students and faculties and marked an important day for IPE.

**by V Peter Youngreen  
19PE10040**

# Women's Day Celebration

8<sup>th</sup> March, 2020

Woman, the power to create, nurture, shape and transform. They conjure up an icon of love, care, affection, respect solely by their being. As a mark of respect, 8<sup>th</sup> March is being celebrated as International Women's Day. The ultimate objective of celebrating this day is to express gratitude to women who left no stone unturned for eradicating the menace of social, political and economic gap between them and men which was been created few centuries back due to lack of education and the owing to irrational taboos. This day raises the voices that go unheeded, fights for the rights that are suppressed to reduce discrimination. Envisaged to promote a



sense of equity and integrity in the society they have struggled for decades and are still fighting to express their right to speech, to vote, to equality, to education and to enjoy the freedom.



With all these morals and visions Indian Institute of Petroleum & Energy had celebrated this day at its premises for the promotion of women empowerment in every aspect of life. The

Director of IPE, Prof. V. S. R. K. Prasad had given a heart touching speech on this eve followed by Registrar Dr. B. Sridhar Reddy. Thereafter, students were encouraged to give speeches expressing their views regarding the role of a woman in shaping their life and their importance. Faculty members shared their thoughts and emotions about how women paved their path of success in every field and what women's day means to them. Certificates of achievement were given to some



female students for their praiseworthy performance in academic and extra-curricular activities held in our institute to boost their confidence and recognize their contributions. The event concluded with the National Anthem.



A woman is an epitome of success, pride, wisdom and positivity. She is the fulcrum of happiness for a child from the day he/she opens eyes and sees the new world around. She is the reservoir of inspiration for us and indeed an incredible gift to be treasured. This day unfolds the hidden power and strength of women.

**by Abhishek Kumar 18PE10024**



# CROESO

## Fresher's Day 2019: CROESO 3.0

7<sup>th</sup> September 2019

7th September 2019 was certainly a memorable day in the life of every fresher at IPE. The most awaited event in the life of every school going student or a coaching student had ultimately arrived. After putting rigorous training, hard work, and sweat into JEE preparation, we finally entered our college with many dreams and aspirations.



'Croeso' in WELSH means 'Welcome'. CROESO was held on September 7, 2019, at VUDA Children's Arena. At sharp 4'0 clock in the evening, we all reached the arena, and seeing it, the first thoughts that came to our mind were 'wow', simply wow. The venue was so impressive

that we could not resist ourselves from taking photographs. We took our seats, sitting beside our new friends. Our excitement was doubled when we received such a warm and grand welcome by our seniors. There was no dress code, but "dress your best" was the only requirement.

The event started with our Director, Dr. V S R K Prasad welcoming chief guest DR. S Surya Prakash, Vice-Chancellor, Damodaram Sanjivayya National Law University, Visakhapatnam. He was earlier associated with National Law University, Bhopal as a professor. Together they began the event by lighting the lamp and then the Chief Guest was presented with a token of gratitude.

The Director then addressed the gathering welcoming the freshers to the IPE family and asked us to make the best of our college life and focus on various possibilities and opportunities that our field provides



DR. S Surya Prakash Vice-Chancellor Damodaram Sanjivayya National Law University, Visakhapatnam



# FRESHERS



us with. The chief guest shared some of his life experiences which were truly inspiring.

From here on began the fun part of the evening. There were many outstanding performances, both by freshers as well as our seniors from 2<sup>nd</sup> year. The most eye-pleasing performance was the dance by our senior Rohit Bindal. There were many more performances like dance by Shantanu and group from 1<sup>st</sup> year, group song by 2<sup>nd</sup> years, poetry by

Gyanendra Singh from 1<sup>st</sup> year, and singing performance by Prabhat Dangi from the first year which was highly appreciated. Dance by Amos and Group was one of the highlights of the event.

Next up was the most awaited event of the day-the ramp walk by the freshers. Many people aced it, some by their appearance and some by their witty answers. The title of Mr. Fresher and Ms. Fresher has and will always be a subject of discussion. All the performances were good, and the judges had a tough time deciding the winner. Finally, Hari Sai and Subhadra Jamkar were adjudged Mr. and Ms. Fresher respectively.

After all this fun, enjoyment, music, enthusiasm, and celebrations the students had a group photo session for all four years, followed by a group photo for teachers. Everyone then headed towards the dining hall where they had an option of veg and non-veg food which was very delicious. After the dinner, the first-year students thanked their seniors for organizing such an amazing fresher's day.

The first year looks forward to organizing the fresher's day next year for their juniors and to make it memorable for them. Looking forward to CROESO 4.0.



**by Prabhat Dangi 19CH10031**

# Foundation Day

20<sup>th</sup> October 2019

*The Indian Institute of Petroleum & Energy organized its 4th Foundation Day on 20th October 2019, with His Excellency, the Honorable Governor of Andhra Pradesh, Shree Biswabhusan Harichandan as the Chief Guest of the program.*

*The event began with a cultural program that highlighted the rich cultural heritage of the state of Andhra Pradesh. Ambika, Guinness World record holder dancer and India's Got Talent finalist performed Kuchipudi and folk dance, with such grace and passion that the audience was left awestruck.*

*The main event was commenced by the Director of the IIPE, Prof. V S R K*



*Prasad. In his opening address, he welcomed the Chief Guest and the other dignitaries on the dais- Honorable Minister for Tourism Shri Muttamsetti Sreenivasa Rao; the Director of Indian Institute of Management, Visakhapatnam Shri M Chandrasekhar; Mr. Vinay Chand the District Collector, Visakhapatnam; Rajiv Kumar Meena the Commissioner of*

*Police, Visakhapatnam and also the dignitaries off the dais – Esteemed Members of the Board of Governors of the Institute and requested them to proceed further by giving their valuable message to the students; faculty and the audience.*



*The Chief Guest of the program, the Honorable Governor of the state briefed the objectives of the*

*Institute put forth by the Government of India and assured that the cooperation of the State and Central Government is being extended to the Institute in its development to reach its objectives. He added that IIPE will definitely reach high standards and achieve greater heights. The people of the country will be delighted with the benefits of the research activities conducted in the Institute, as the growth of the energy sector is vast and tremendous. The Honorable Minister for Tourism, Andhra Pradesh, Sri Muttamsetti Sreenivasa Rao while addressing the gathering envisioned that the Institute will definitely achieve its goals as per its aims and assured that the State and Central Governments will extend their cooperation in the development of the Institute.*



*The Director of Indian Institute of Management, Visakhapatnam while addressing the gathering, thanked to the Director of the IPE for inviting him as one of the Guests of Honor along with the Special Dignitary of today's program; and he applauded that IPE will definitely reach its objectives within a short period under the Directorship of Prof. V S R K Prasad and the students will have good career opportunities as the Energy sector requires skill-oriented degree holders and those skills are being imparted to the students by IPE.*



*Following that, The Newsletter "The Fourth Estate"- IPE Visakhapatnam released its volume and issue of COGNOSCO. Certificates of Excellence were awarded to the top three meritorious students of their respective branches, petroleum and chemical of the Batch 2016, Batch 2017, and Batch 2018 and winners of literary events which were held on the occasion of Gandhi Jayanti.*



*The Deputy Registrar of the IPE, Dr. B. Muralikrishna conveyed vote of thanks to all the dignitaries, especially the Chief Guest of the program for gracing the occasion and for his message to the students; other dignitaries for their wonderful messages to the gathering; he conveyed thanks to the Administration of Andhra University for their excellent support for making the program a grand success; the Vice-chancellor; the Register; the Principal of AU College of Engineering and all supporting staff. He conveyed special thanks to the Faculty; Students and Staff for having made this program a grand success. He also expressed gratitude the Director of IPE for his guidance. He thanked the media to the Media for their nice coverage.*

**by Kshitij Soni  
19PE10041**





# Annual Sports Meet 2019-2020

22<sup>nd</sup> October - 2<sup>nd</sup> November 2019

*SPORTS:- the word itself evokes a feeling of power, energy, commitment, and teamwork in everyone. The Indian Institute of Petroleum and Energy, Visakhapatnam organized its ANNUAL SPORTS MEET from the 22<sup>nd</sup> of October to the 2<sup>nd</sup> of November 2019.*



*Several games were organized, both indoor and outdoor. The games were held in two phases. The indoor games were held from 22<sup>nd</sup> to the 25<sup>th</sup> of October 2019 while the outdoor games were held from the 31<sup>st</sup> of October to the 2<sup>nd</sup> of November 2019.*



*The indoor games consisted of badminton (single and doubles), table-tennis (singles and doubles), chess and carrom. The outdoor included cricket, football, volleyball, throw-ball, kho-kho, basketball, and kabaddi. The students participated in various sports events with full zeal and enthusiasm. Students had participated in all the events with the same sporting spirit. Necessary arrangements like availability of first aid kits and glucose drinks*

*were made to ensure that students get the quickest possible assistance in case of an injury or dehydration.*

*For the indoor games, the participants of each batch had to compete with one another to get a winner from their respective batches. Winners from all the four batches would then face each other in the semifinals and then the finals to decide the champion.*

*For the outdoor games, there was one team from each batch. The teams were chosen by the appointed captains of each batch after a rigorous selection process. The teams from all the four batches had to compete with one another to win the trophy for the respective*





events. There was a lot more craze for outdoor events as compared to the indoor ones. All the teams played with sportsmanship and team spirit and the zeal to win.

The sports events were organized not only for the students but also for the faculty and staff members. The faculty members not only helped inculcate competitive spirit among the students but also showcased their skills in the



various sports events, leaving the students in awe. Medals were awarded to the indoor sports events winners and trophies for the winners of the outdoor sports in the evening of 2nd November.



Overall, the seven days of the sports meet refreshed the students' minds. The sports meet was a success and students and staff members participated in huge numbers. The credit of organizing such a successful event goes to the

sports committee headed by our sport co-ordinator, Dr. R. Ramunaidu, the student council members and the volunteers who worked day in and day out to ensure that everything went on smoothly as planned.



**by Bhanu Prakash  
19PE10024  
Peter Youngreen  
19PE10040**

# ReOPEN 2020

24<sup>th</sup> February, 2020 to 27<sup>th</sup> February, 2020

*The ever-challenging landscape of oil and gas sector due to various factors like national policies, alternate energy sources, ever growing demand of energy, environmental concern has created need for an hour of laying stress on innovative technological interventions. Today it has become quite essential to instil and align ourselves with new innovative concepts and technologies to survive and cope up with the challenges in current industrial scenario where cut throat competitions prevail. Everyday several researches are been carried out in the field of oil and gas across the world which is quite essential for the energy soldiers of the nation to poses in order to enhance their skills and expertise in their concerned field.*



*With this objective, Indian Institute of Petroleum & Energy, Visakhapatnam had organised a four days workshop named ReOPEN-Research Opportunities in Petroleum, Energy and Natural Gas 2020 from 24<sup>th</sup> February, 2020 to 27<sup>th</sup> February, 2020. In this workshop different experts and dignitaries associated with well reputed oil and gas industries as well as professors of Petroleum and Chemical engineering departments from different*



*educational institutions across the country and abroad were invited on board to share their skills and expertise. Presentations delivered by them focused primarily on recent advances in research opportunities and challenges in petroleum, renewable energy & natural gas processing and significant emphasis were laid on improving energy efficiency and reduction carbon emissions as well. The workshop was been organized in nine sessions followed by*

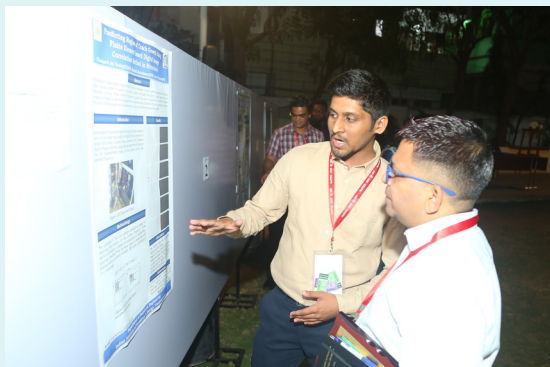
*short question and answer sessions after each session. Coming to the events that took place during the workshop are as follows:*

*1. On day 1, 24<sup>th</sup> Feb 2020 the workshop started in afternoon. Shri. M. K. Surana, Chairman and Managing Director, Hindustan Petroleum Corporation Ltd. (HPCL) graced the inauguration ceremony as the Chief Guest. The dignitaries were felicitated by hon'ble Director and Chairperson of ReOPEN-2020, Dr. V.S.R.K. Prasad followed by inauguration of event by lighting of lamp. Further, the participants were addressed by the director of IIPE and the dignitaries. Then a vote of thanks was given by Shri A. S. V. Ramanan, Officer on Special Duty. Keynote talks were delivered by Shri. R.P Patel, Asset Manager,*





2. On day 2, 25<sup>th</sup> February 2020 the first session was moderated by Dr. Pratibha Biswal, IPE. In this session the speakers delivered their oral presentations which primarily focussed on “Recent and Future Aspects in Energy and Petroleum Sector”. The second session was moderated by Dr. Shailesh Kumar, IPE. In this this session, the speakers delivered their presentations which were centred around “Research and Educational Opportunities in Energy, Engineering”. After lunch break, the third session was moderated by Dr. Pratibha Biswal, IPE. In this session, the speakers delivered their talks and expertise focussing on “Energy conversion and Solar Energy”. Here they talked about mass production of Nonwire-based Energy, Perovskite solar cell manufacturing and design materials for Clean energy (from Solar to Water Splitting). The last session of the day was moderated by Dr. Raka Mondal, IPE. In this session, the speakers shared their works and experiences focussing on “Energy Storage”. Here, they covered various topics like designing electrolytes for high Performance lithium-sulphur batteries, HT-PEMFCs, PCMs assessment in thermal management of buildings. At last, Poster presentation and networking was organized by final year students of IPE followed by dinner.



3. On day 3, 26<sup>th</sup> February 2020 the fifth session was moderated by Dr. V. Swambabu, IPE. In this session, the speakers presented various talks on “Fossil Fuel, Bio Fuel and Biomass”. They covered various topics like energy optimization by utilization of low-grade energy, strategy to improve economy of bioethanol production and conversion of petrol to electricity. The sixth session was moderated by Dr. Ch. Gupta, IPE where the speakers delivered presentations on “Catalysis R&D”. They presented various topics like catalytic conversion of greenhouse gas to chemicals, photochemical reactions and mimicking tge Bio-functions inside I-cells. After lunch break, the seventh session was moderated by Dr. Somnath Ghosh, IPE. In this session, the speakers presented various works on “Carbon free hydrogen Production”. They covered various topics including distributed chemical/ fuel production using renewables, catalytic materials for sustainable energy and hydrogen production using Iodine Sulphur thermochemical process. The eighth and ninth session was moderated by Dr. Arun Kumar Pujari, IPE. In these sessions, the speakers presented various research and innovative works on thermal barrier coating and power generation cycle of steam plants. Finally, the sessions were ended with poster presentation and dinner.

4. On day 4, 27<sup>th</sup> February, 2020 there was a special talk by Shri Ratan Raj, Executive Director of Visakh Refinery, HPCL. Shri Raj spoke elaborately about the overview of energy, natural including challenges and opportunities. Thereafter, a panel discussion with prominent invited speakers was held followed by Valedictory Ceremony.

**by Abhishek Kumar**  
**18PE10024**

# IChE Quiz

9<sup>th</sup> November 2019

*IPE witnessed its first event of the Indian Institute of Chemical Engineers (IChE) Student Chapter, the IChE Quiz Competition. Topics covered were general knowledge, current affairs, logical reasoning, and chemical technology. The screening round was conducted on 8<sup>th</sup> November. The top 10 teams went to the final round.*



*With their quizzing skills brushed up, the students were ready for the five-round long quiz. At the end of each round, two teams with the lowest points got eliminated. The points secured in each round were added to set up a cumulative score that took the teams forward after every round.*



- Round 1 was based on current affairs including sports
- Round 2 was related to Chemical technology and tested the students' knowledge of their academic field
- Round 3 was a logical reasoning test, where every team had to solve four questions involving higher problem-solving skills
- Round 4 was where the quizzers were tested for pure general knowledge, and geography

*The top two teams after Round 4 went for the final Round 5, which was a 'rapid-fire round'. The team with the third-highest score after Round 4, secured the third position in the competition. The rapid-fire round was truly nail-biting. And thus, we had our winners and runners-up.*

*With the excellent efforts put in by the IChE Executive Committee, the quiz competition was well organized and conducted. Definitely, it was a successful attempt to encourage the students to actively take part in quizzes.*

**by Subhadra Jamkar  
19CH10006**



# Beach Cleaning

16<sup>th</sup> November 2019.

*IPE assisted the “Mass cleanliness cum awareness drive” organized by the Andhra Pradesh National Green Corps (APNGC), Government of India as a part of ‘Swachh Visakhapatnam Swachh Bharat’ program. A Beach Cleaning drive was carried out by the IPE students, faculty along with APNGC volunteers at RK Beach (Rama krishna beach). It was an attempt to raise awareness not only among the students but also the people regarding the importance of cleanliness. Students showed immense interest and showed up in large numbers. The program began with a ‘cleanliness pledge’ lead by the APNGC volunteers. All the necessary equipment required for the beach cleaning like gloves, masks, gunny bags, etc were provided by the APNGC. The volunteers gave their best to collect as much waste as they could. People often tend to litter the beaches with plastic wastes ranging from disposable spoons, plates to food packages and wrappers which if washed into the sea are a great threat to the aquatic animals and also the litter spoils the scenic beauty of the place. The event was carried forward by keeping this in mind. The student volunteers got visibly involved in the cleaning and wholeheartedly did their work. It was the unity among the participants who took a step forward for a good cause that made the event noteworthy. Definitely, this would encourage many more people to contribute to a social cause and bring about a change around them.*

**by Peter Youngreen  
19PE10040**



A Beach Cleaning drive was carried out by the IPE students, faculty along with APNGC volunteers at Ramakrishna RK beach.



# Poster Making Competition: Mental Health Awareness

15<sup>th</sup> October 2019

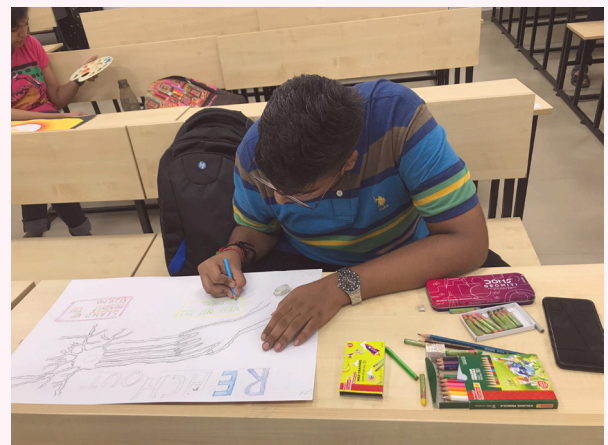
*In today's world, many people are distressed by many kinds of mental illnesses. Some of the common issues that people deal with are depression, anxiety, phobias, obsessive-compulsive disorder, and so on. Chronic use of some drugs can lead to both short- and long-term changes in the brain, which in turn can lead to mental health issues. These types of illnesses are quite often seen in youth. Unfortunately, even in this modern age, mental health is not taken seriously, and people with mental health issues are often shunned and are stigmatized.*



*Keeping all this in mind IPE organized a "Mental Health Awareness Week". On 15th October, the Student Welfare Centre, and the Fine Art Club (under EAA committee) came together to conduct a poster making competition. This was an effort to create awareness about mental health issues and to reduce the stigma that surrounds it even in this day and age.*

*The process started by prior intimating the students through email about the event and registration for the poster making competition. The competition was organized after the classes. The interested students reached the venue and expressed their ideas on the topics "MENTAL HEALTH AWARENESS- LET'S END THE STIGMA" and "MENTAL HEALTH: FROM ILLNESS TO WELLNESS" on the drawing paper provided to them. The active involvement of the students and the motivation to express their views on this important subject of Mental Health made this event a huge success.*

**By Sujal Anand  
19PE10031**





# ABSTRACT ARTICLES



# “CYTOTRON”:

## A Major Breakthrough in Cancer Treatment

*Invented in India by a Bengaluru scientist, Cytotron has been designated as a “breakthrough device” in the treatment of liver, pancreas, and breast cancers by the Centre for Devices and Radiological Health (CDRH) of the US Food and Drug Administration (USFDA). The machine is an outcome of 32 years of research and is an entirely new way to treat cancer.*

*Cytotron is the trade name of the device developed by Centre for Advanced Research and Development (CARD) - a division of Scalene Cybernetics Limited in Bengaluru, India. The team that developed Cytotron was headed by Dr. Rajah Vijay Kumar, DSc, a pioneering researcher and an opinion leader in the field of Biophysics and Radiobiology.*

*This is a state-of-the-art therapeutic device that was invented first in India is based on Rotational Field Quantum Magnetic Resonance (RFQMR) which utilizes highly complex electromagnetic beams in the radio frequency spectrum controlled by a computer and guided by MRI. Cytotron looks like an MRI machine and is the world’s first Rotational Field Quantum Magnetic Resonance (RFQMR) Generator for Tissue Regeneration, Degeneration and Repair for treating several chronic or degenerative diseases such as Cancer. Cytotron produces fast radio bursts, which modulate the life systems and communicate with cells in the body.*



*Cytotron stops the cancer tissue from multiplying and spreading to other organs. Once the tumor stops growing or spreading, Cytotron plants the flag protein down, which determines that the cell is old enough to die. The moment this happens, the cell stops growing and once that happens the first reaction of the immune system is to grab the cell and throw it out. The cancer tissue is thus recycled. This device also works to convert or transform the cancer stem cells into cells that don’t multiply and prevents the cancer cells from spreading. Earlier the patient goes inside the Cytotron, the cancer gets arrested there itself. Once the tumor stops growing and spreading, there are other ways in which the disease can be managed. Apart from cancer treatments, Cytotron is effective in the treatment of damaged knee joints by regenerating the cartilage tissue. India is expected to start using Cytotron by January 2020.*



*Dr. Rajah Vijay Kumar*

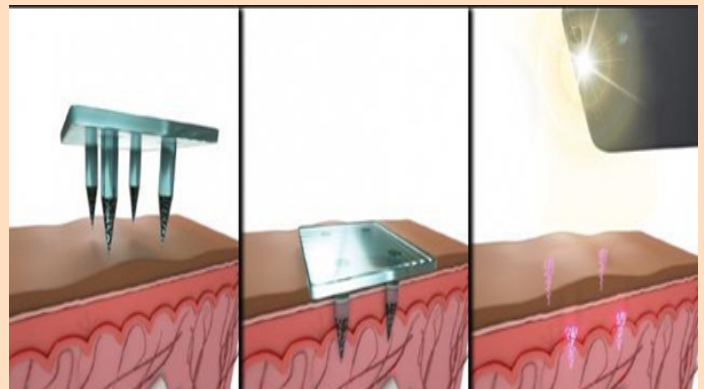
*Article by: Subhadra Jamkar 19CH10006  
Image source-[www.betterindia.com](http://www.betterindia.com)*



# Storing Medical Information Below Skin's Surface

MIT engineers have developed a way to store medical information under the skin, using a quantum dot dye that is delivered, along with a vaccine, by a microneedle patch. This research was led by Dr. Kevin McHugh and Dr. Lihong Jing. The dye, which is invisible to the naked eye, can be read later using a specially adapted smartphone. Every year, a lack of vaccination leads to about 1.5 million preventable deaths, primarily in developing nations. One factor that makes vaccination campaigns in those nations more difficult is that there is little infrastructure for storing medical records, so there's often no easy way to determine who needs a particular vaccine. In areas where paper vaccination cards are often lost or do not exist at all, and electronic databases are unheard of, this technology could enable the rapid and anonymous detection of patient vaccination history to ensure that every child is vaccinated.

The researchers showed that their new dye, which consists of nanocrystals called quantum dots, can remain for at least five years under the skin, where it emits near-infrared light that can be detected by a specially equipped smartphone. Several years ago, the MIT team set out to devise a method for recording vaccination information in a way that doesn't require a centralized database or other infrastructure. Many vaccines, such as the vaccine for measles, mumps, and rubella (MMR), require multiple doses spaced out at certain intervals; without accurate records, children may not receive



all of the necessary doses. In order to be protected against most pathogens, one needs multiple vaccinations. In some areas in the developing world, it can be very challenging to do this, as there is a lack of data about who has been vaccinated and whether they need additional shots or not.

To create an "on-patient," decentralized medical record, the researchers developed a new type of copper-based quantum dots, which emit light in the near-infrared spectrum. The dots are only about 4 nanometers in diameter, but they are encapsulated in biocompatible microparticles that form spheres about 20 microns in diameter. This encapsulation allows the dye to remain in place, under the skin, after being injected. The researchers designed their dye to be delivered by a microneedle patch rather than a traditional syringe and needle. Such patches are now being developed to deliver vaccines for measles, rubella, and other diseases, and the researchers showed that their dye could be easily incorporated into these patches.

The microneedles used in this study are made from a mixture of dissolvable sugar and a polymer called PVA, as well as the quantum-dot dye and the vaccine. When the patch is applied to the skin, the microneedles, which are 1.5 millimeters long, partially dissolve, releasing their payload within about two minutes. By selectively loading microparticles into microneedles, the patches deliver a pattern in the skin that is invisible to the naked eye but can be scanned with a smartphone that has the infrared filter removed. The patch can be customized to imprint different patterns that correspond to the type of vaccine delivered. Tests using human cadaver skin showed that the quantum-dot patterns could be detected by smartphone cameras after up to five years of simulated sun exposure.

The researchers now plan to survey health care workers in developing nations in Africa to get input on the best way to implement this type of vaccination record keeping. They are also working on expanding the amount of data that can be encoded in a single pattern, allowing them to include information such as the date of vaccine administration and the lot number of the vaccine batch. The researchers believe the quantum dots are safe to use in this way because they are encapsulated in a biocompatible polymer, but they plan to do further safety studies before testing them in patients.

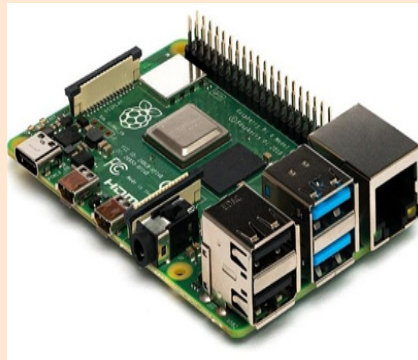
# Internet of Things

The term 'Internet of Things,' otherwise known as IoT was coined by Kevin Ashton (a British visionary technologist). "The Internet of Things (IoT) is a system of interrelated computing devices, mechanical and digital machines, objects, animals or people that are provided with unique identifiers (UIDs) and the ability to transfer data over a network without requiring human-ainternet beyond smartphones and computers to small devices such as sensors so that they can communicate with each other and act according to the data generated by them. Those 'connected' things are used to gather information, send information back, or both.



## Why IoT?

IoT provides businesses and people better insight into and control over the objects and environments that remain beyond the reach of the internet. For example, in agriculture with regards to farming, by automatically getting information about the soil moisture can tell farmers exactly when their crops need to be watered instead of watering too much or too little. The farmers can ensure that crops get the right amount of water which in turn saves money for farmers and increases the yield.



## Components of IoT

### Cloud server

We know that we connect devices to the internet. The devices which are connected to the internet are of three types:

1. Things that collect information and send it.
2. Things that receive information and act on it.
3. Things that do both.

The place where data is stored is called a 'Cloud'. The data collected is sent to a cloud server. Every server has a unique port number and API key (Application Program Interface) to access it securely. The accessed data is sent to another device, which is connected to the internet. The cloud server is not a physical

server, rather it is a virtual server that is created using the software

### Raspbian(OS) and Raspberry Pi :

Raspbian is a Debian-based Operating System used majorly to configure IoT devices. It is an open-source model and it runs on Linux rather than Windows. This OS is primarily targeted for the Raspberry Pi which is a credit card-sized computer, which can be used in most of the IoT devices. Raspberry Pi has nearly 40 GPIO pins (General Input/Output) and RAM varying from 1, 2, and 4 GB. It has USB 2.0, USB 3.0, HDMI, and SD card slots which makes it a headless computer. It has Ethernet, WiFi, and Bluetooth for connectivity which makes it remotely accessible and thus best suited for an IoT product.

Raspberry Pi can even run other OS like Android, Windows 10 IoT core, and any distribution of Linux but the primarily used OS is Raspbian. Raspberry Pi is one of the most powerful devices, which is capable of more than just being an IoT device.

### Microcontroller (MCU):

Microcontroller means a small computer on a single integrated circuit. They are generally less complicated than SoCs (system on chip). An SoC can have a microcontroller as one of its components. They contain at least one CPU (processor core), memory (RAM, flash, ROM), and programmable I/O peripherals. They are designed for embedded applications rather than microprocessors that are used



for general purposes. Many IoT devices that are automatically controlled (using some form of a feedback control system) use microcontrollers. Their main advantage is that they reduce the size and cost of a similar system using separate microprocessors/memory/input/output devices.

### **ESP8266 -WiFi Module:**

(abbreviation for Espressif modules, a semiconductor company). ESP8266 is a WiFi microchip with TCP/IP stack and microcontroller capability. This module has two modes.

1. Station Access (STA) mode.
2. Access Point (AP) mode.

STA:

**Station Access (STA)** mode is used to get an ESP module connected to a WiFi network established by an access point. The Station class has several features to facilitate the management of WiFi connection. In case the connection is lost, ESP8266 will automatically reconnect to the last used access point once it is again available. The same happens on module reboot. This is possible since ESP saves the credentials of the last used access point in flash (non-volatile) memory. Using the saved data, ESP will also reconnect even if the code has been changed because the code does not alter the WiFi mode or credentials.

Switching the module to the Station mode is done with the 'begin' function. Typical parameters passed to begin to include SSID and password so that the module can connect to a specific Access Point.

### **Access Point(AP):**

In this mode, ESP8266 creates a WiFi network in which we can connect other devices to the module. In this way, we can connect our devices remotely with the module.

### **IoT in Oil and Gas Industry:**

As we have seen what IoT is, we need to know how IoT is transforming Oil and Gas Industry. The energy industry also leverages the IoT. One of the energy industries that leverage IoT in the Oil and Gas Industry. Oil and Gas Industry is divided into two streams .

1. Upstream – The extraction and production of raw materials.
2. Downstream – The conversion of raw materials into petroleum products and reaching the customers.

The upstream industry used to lose billions of dollars each year due to NPT or Non-Productive Time. To avoid this, they took the aid of IoT. Internet of Things is using real-time data to predict and perform preventative maintenance on crucial pieces of equipment which in turn reduces the NPT.

A huge amount of data generated from the reservoir is integrated with the real-time field data to plan the critical placement and flow rates.

For midstream business, IoT helps in connecting pipeline networks, leak detection equipment, sensors, and emergency shutdown systems immaculately. All these equipment together provide highly valuable data for interpretation and deep analysis. This helps in significantly reducing the major hazards associated with the oil and gas industry.

Moreover, planned shutdowns, managing various grades of crude, and complying with the dynamic rules of ever-changing environmental regulations are a major part of the downstream industry. They make use of IoT to ensure the seamless flow of the data. Therefore IoT can help in managing major problems in the Oil and Gas industries thereby increasing the efficiency and profits.



Article by: A Balaji 18PE10039

# “COVID-19 and the New Normal”

*I had once asked a person why he wanted to become a doctor. The answer I received completely changed my perception of the profession. He said, “When anyone of my friends and family faces some problem, I will be the first one they call. The most grateful feeling is when people come to you for a solution. It is even more grateful when they show the utmost trust in your advice”.*

*In recent times, the positive perception that I had made has changed to respect, gratitude and above all obeisance. The phrase “new normal” came into limelight recently as a result of the changes in our lifestyles because of COVID-19. The new normal has scores of versions varying from person to person....*

*Who must have imagined in February 2020 that they are going to have the longest vacation of their lives? Who must have thought every normal activity a person does would change so drastically? Somebody said on the eve of the new year, “2020 is going to be a movie!”. But it turns out that the movie is “Contagion”. Sad as it sounds it is even worse when you know, all the things you used to do have become a dream now. And hence the need to define the “new-normal”*

*The toughest time was lockdown. The lockdown was necessary to contain the spread of the virus, but the problems faced by some people cannot be even thought of. Most of us were lucky enough to have all the necessary facilities during the time. But there were many whose daily and monthly wages stopped as the nation came to a standstill. Their new normal was walking home in the blazing sunlight with an empty stomach. Many came forward to help the needy, making us realise the new normal can be a life where charity need not be publicised, rather should be done for the betterment of people, for real.*

*None of us must have worn masks before at the frequency we wear them today. A lot of research was done to make sure which type of mask is most effective in blocking the aerosols coming out of a person’s mouth while sneezing, coughing and speaking. N95 and surgical masks are the most effective they say, then they also said do not use a mask with a respirator. Then research said the good old, two-layered cloth mask works as good as N95. The new normal life now included collecting masks and following the ever-changing advisories about masks and face shields. The new normal meant wearing masks the moment you step out of the house, the new normal more exactly meant being careful about not spreading or not catching the infection. Then the precautions needed to be taken in public places are not only checking your belongings but also saving yourself.*

*How can you forget sanitizers and the good old soaps? The number of times we applied sanitizer on our hands and the number of times we washed our hands from the start of the pandemic must have outnumbered the number from the pre-COVID times. The new normal, rather a positive thing was to become 1000 times more hygienic and taking a bunch of precautions. Stockpiling(not hoarding) the necessary things and being prepared for the coming days was every person’s aim because this pandemic practically showed us, “Expect the unexpected”.*

*“Social distancing” another catchphrase like new normal, has practically become the need of the hour. The virus-laden droplets cannot reach farther than 6 feet; yes the golden distance. The Indian traditional greeting, NAMASTE has now become the signature meeting gesture for us and the world leaders alike. The new normal replacing the handshake. I also know doctors who received hundreds of calls a day inquiring about the symptoms and the implications of catching COVID-19 and some remedies. It is a great thing to see people looking towards boosting their immunity and seriously taking the precautions.*

*In our new normal, meetings, conferences, convocations and even the UN General Assembly Session went online. With the films getting released on OTT platforms, the new normal is turning our homes into theatres. How can one forget the brand new experience of online classes? The new normal is distant learning. Also who hasn’t started frequently checking on the news for the advancement in vaccine development? I do it religiously every morning and before sleeping.*

*But for the doctors, nurses and all the people fighting the virus, the new normal is an endless amount of work. The pressure on the health care system has drastically gone up. Even though the doctors, nurses, police, sanitation workers, etc get exposed to high amounts of viral load, they are firm at their places. They have put their sweat and toil to serve and save people. For us the new normal must have been not visiting malls, not hanging out with friends, cancelling our trips, and the list goes on endlessly. For the COVID warriors(the best way to describe them), the new normal meant a lot of sacrifices, hard work and risk. The PPE kits are the new armours, hospitals the new battlegrounds.*

*The new normals for us and the frontline workers differ a lot, but this has equally brought to us many fresh feelings like- the new normal includes being grateful for everything we have, the new normal is praying for the well being of every entity. The new normal is increased respect for the people serving for our safety. And the new normal is supporting each other to face these tough times, like it is said, “We are in this together”.*

*A lot has changed in the past 7 months. The thing that couldn’t change was humanity’s determination to face and overcome challenges. And once this ends, all of us would live a new life with a changed perception, new enthusiasm and a lot more hope, everyone defining their own new normal.*

Article by Subhadra Jamkar 19CH10006

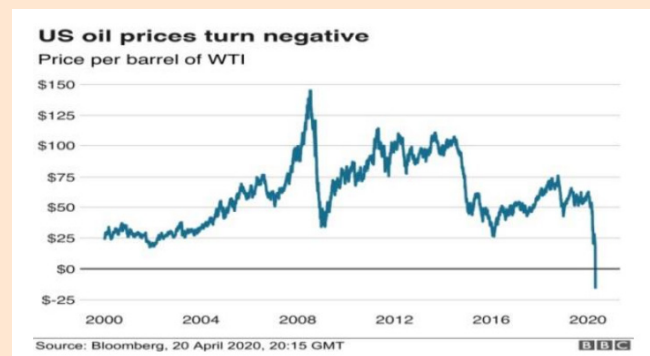


# Petroleum Related World Economy- Analysis Based on the Current Trends

Petroleum is the most important source of energy worldwide. In the mid-1950s, the share of petroleum exceeded coal in the global supply of primary energy. The persistent growth in petroleum production at low cost, and the convenient use of “concentrated liquid energy” which is comparably easy to transport and store, made petroleum the dominant energy source globally. Today, it is the main energy source used in vehicles, planes, electricity, and asphalt. Petroleum is also used in paints, plastics, chemicals and so much more. It's very difficult to imagine a world without petroleum. Many countries are the participants in this process. Right now, there are more than 100 oil-exporting countries in the world. Oil prices influence both oil-exporting and importing countries. The oil price influences the producers and the level of production expenditures. The economies of some countries are extremely dependent on oil and oil products. Oil factors affect political and economic activities. In turn, these activities determine the price level, economic revival, inflation, stock market and finance, and economic growth as a whole. At the same time, it also affects the formation of alternative energy resources and the development of these resources.

According to market research by IBIS World, the total revenues for the oil and gas drilling sector came to approximately \$3.3 trillion in 2019. The estimated 2019 global GDP was \$86 trillion, the oil and gas drilling sector alone makes up around 3.8% of the global economy. The exploration and production sector gives employment to approximately 4 million people across 350,000 businesses.

Since the beginning of the year 2020, prices of crude oil have been falling dramatically. Due to the outbreak of the coronavirus pandemic, consumer demand declined. WTI crude or West Texas Intermediate Crude dropped to minus 37.63 dollars and created an unprecedented circumstance where buyers were paid by sellers to accept deliveries.

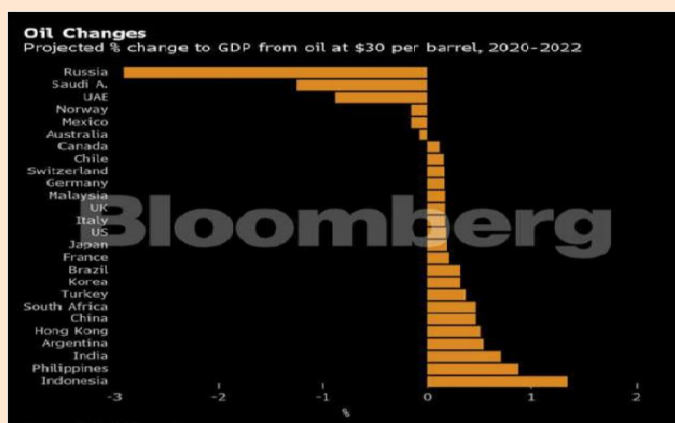


Investors who held contracts did not want to take delivery of oil and incur additional storage costs, they literally paid people to escape conundrum. But the situation is not bad with respect to other benchmark oil indices like Brent crude oil.

According to IEA Oil Market Report, global oil demand is expected to fall by 9.3 mb/d year-on-year in 2020. Due to a sharp reduction in demand for fuels, refining throughout 2020 is forecast to fall 7.6million of barrels per day year over year to 74.3 6million of barrels per day. Due to widespread shutdown in all regions, global refinery intake is expected to drop by 16 million barrels per day year over year in the second quarter of 2020.

If we talk about the impact of falling oil prices on the economies of various countries, we find that the U.S. will not be affected negatively and a change in GDP will be less. But at the same time, according to Oxford Economics, Mexico will lose about 0.15% of GDP.

Since China is a major importer of oil, it will get the advantage of lower oil prices, but this time it will take some time for the effects to materialize. It already has big storage of oil and liquid natural gas, while the coronavirus pandemic is obstructing travel and manufacturing and creating uncertainty. India, being the third-largest importer of crude, will have a big advantage of falling crude oil prices because its import bill will fall significantly. The government of India can increase taxes on fuels rather than pass the entire benefit of the oil price decline to the consumers. Falling oil prices are also good for resource-poor Japan. Since most of the European Union countries are major importers of crude oil mainly from Russia, so they will also be benefitted because of oil price decline. Egypt will gain some relief from the oil price decline. Falling oil prices will damage the economy of the Middle East and North Africa. Saudi Arabia, the world's biggest exporter of oil started a price war with Russia. Due to these situations, Saudi Arabia will surely face economic damage but according to experts Saudi Arabia and UAE have built up substantial reserves of foreign currency so they can afford temporary falls in oil prices. Since Russia gains about 70% of tax revenues from oil and gas, so a decline in oil prices will lead to government budget deficit and contribute to a recession. Iran's economy depends on oil revenues and has been facing the US imposed sanctions since 2018. So Iran has very little to lose compared to other OPEC countries. So, it can be predicted that in coming times, oil exporting countries will suffer a significant amount of economic damage whereas oil importing countries will get advantage of lower oil prices.



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Article by Gaurav Gupta

# Poetry



## SOCIETY

they took away my dreams....  
burned all of my goals....  
they put me in a RACE.....  
and asked me to roll....

i was just a PUPPET....  
they were holding my strings.....  
i was searching for an escape....  
which was not a thing.....

i was chasing the stars.....  
with my wide open eyes.....  
but all those were FAKE.....  
it was too late to realise.....

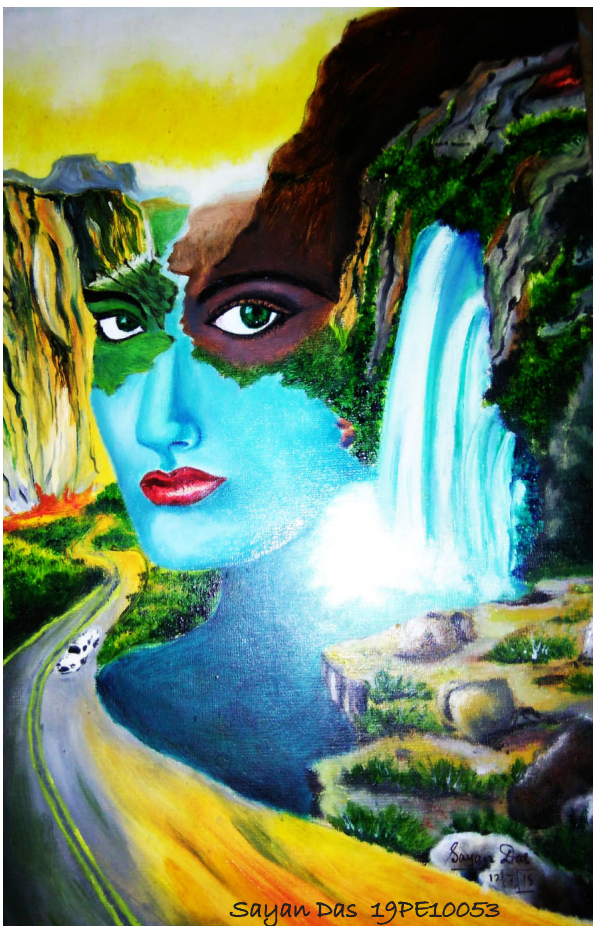
they were a group of devils....  
called them as SOCIETY....  
hunting everyone's dreams....  
was their act of prosperity.....

my vision was blurring....  
my breath was fading....  
although I was dying....  
but they said, "it is just the BEGINNING".

- Rajat Dammu  
19CH10041



# ART GALLERY





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# PHOTO GALLERY







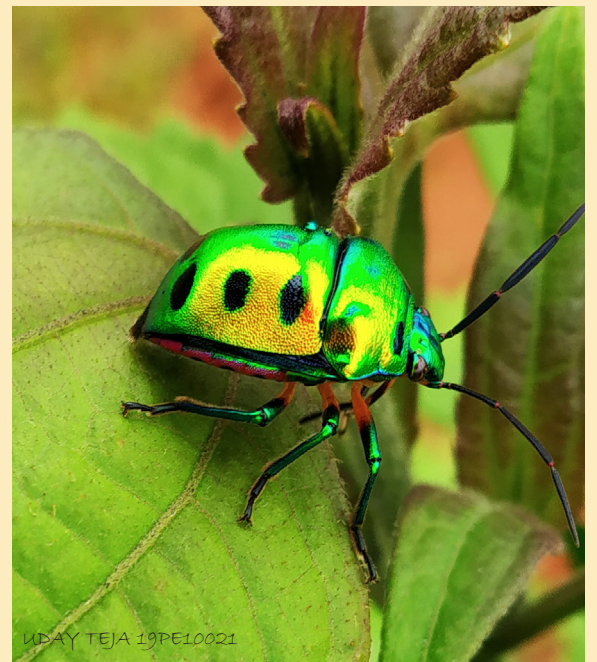
V RAGHURAM 19PE10023



NIKHIL PRASAD 19PE10037



HARI SAI 19CH10003



UDAY TEJA 19PE10021



ANURAG 19CH10016

Anurag  
club



D Sree Karthik  
17PE10015

KARTHIK  
PHOTOGRAPHY



D Sree Karthik  
17PE10015

KARTHIK  
PHOTOGRAPHY





HARI SAI 19CH10003



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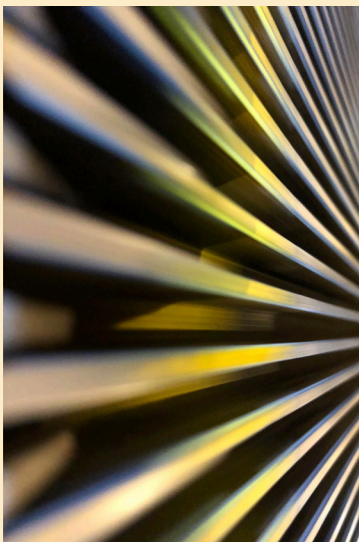
ANURAG 19CH10016



BHANU PRAKASH 19PE10024



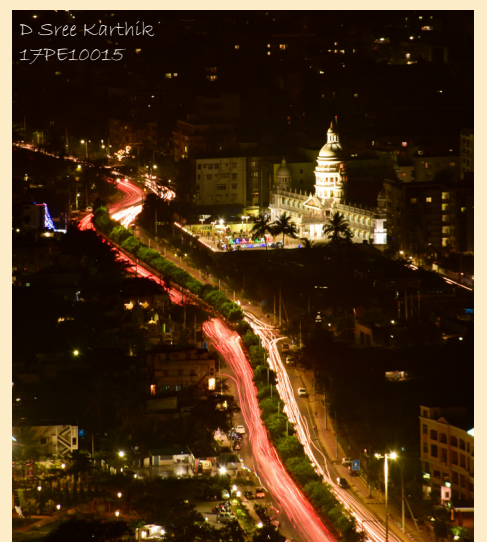
BHANU PRAKASH 19PE10024



N. Naveen Kumar  
18CH10004.



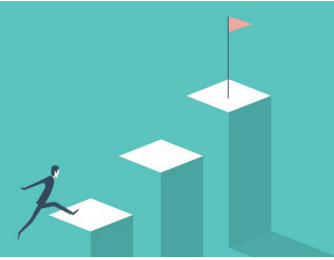
N. Naveen Kumar  
18CH10004.



D Sree Karthik  
17PE10015



# Achievements



## GATE 2020

*“Hope you are fine and reading this article with positive energy. In the next few lines, I talk about the strategy that I followed for attempting Petroleum GATE paper. Firstly,*

*Why GATE?*

*Since the article mainly focusses on the GATE, I brief a few known points about GATE. Check out in which category you come under*

- *Are you aspiring for a job?*

*-> Congrats! ONGC is the only PSU accepts GATE (PE) score and offers the job (as of 2019)*

- *Are you interested in higher studies?*

*-> Wonderful! You can apply for PhD / MTech at IITs, IISc and CFTIs with fellowship; You can also apply for FPM at IIMs and PhD/ MTech at Ac-CSIR.*

*So, I request you to spend some time, talk to professors, seniors and understand the importance, ground reality and then apply for the GATE.*

*My strategy*

1. *Every aspirant must be aware of the syllabus in detail. It helps them to differentiate between the covered and un-covered topics in the curriculum and helps to frame the study plan.*

2. *I divide the paper into 5 parts*

- a. *Reservoir*

- b. *Production*

- c. *Drilling*

- d. *Miscellaneous – Core*

- e. *Miscellaneous – Others*

3. *For getting a very decent rank I feel the 5th part (e) is crucial and has a share of 30%, it consists of general aptitude and engineering maths (EM). Everyone must try to score maximum in these sections as there is always an uncertainty in questions from other parts. So, try to complete the EM and revise it for higher marks.*

4. *Now, coming to the others (a, b, c, d) all are important. Based on your interests be rigid at least three among those four for decent performance on the D day.*

5. *The practice is the only way you can improve yourself for which you need to take some test series for practising. I suggest to choose at least two different series and write at least 15 full mock tests.*

6. *It is not surprising to say that we are the luckiest set of people to have good professors. I am thankful to them for their teachings and their class notes which covers the significant portions of the syllabus. So, please complete class notes first in case you have less time for preparation.*

7. *Write short notes for all subjects and revise it for minimum 15 times before you write the exam.*

8. *For sophomores and freshers, I mainly urge you to prepare for GATE from your second year itself so that you need not get tensed at the end. It allows you to read many books for a better understanding.*

*Caution!*

*I request everyone to have a plan B in your mind and always prepare for the worst so that you won't lose confidence at any stage. Please don't restrict yourself and try to explore various areas.*

*Cheers & Wishing you all the very best!! ”*

*Kandala Viswakanth*

*Petroleum Engineering*

*AIR-15, GATE (PE)-2020*

*IIPe Class of 2020*





*"Not having high gpa can be very detrimental for campus placements and i faced this problem. Having just above 7.5 gpa and being rejected by HPCL my hopes for job were shattered. As 4 out of 5 selected were top rankers i cant emphasize enough on the importance of gpa. But for me that ship had sailed and the only option left was to prepare for GATE exam. I only had 45-50 days of time with me before the exam so time management was very important. My target was to complete a reading of the subject within 2-3 days and focus more on solving problems. The GATE exam for chemical engg is very straightforward and questions are very similar to previous year questions. The Arihant's GATE Tutor has previous year questions till 2000 and is a must for everyone. After some time I realized that the type of questions is very different from what is asked in college exams and the syllabus is also a bit different with more focus on numerical problem solving. So even if you are not confident due to your GPA worry not as just a basic understanding of syllabus is prerequisite. After completing the syllabus best way to revise is to give mock tests and maintain a formula sheet."*

Sarthak Rautela  
Chemical Engineering  
AIR - 258, GATE (CE)-2020  
IPE Class of 2020



## Team CHEM MADX: RATHAM

*INNOVISION 19, was a technical event organized by NIT ROURKELA for three days starting from 1<sup>st</sup> November to 3<sup>rd</sup> November 2019 . One of the events in the fest was Chem e-car 2.0. Teams from all corners of India took part in the event. The team CHEM MADX represented IPE at the event.*

*The team consisted of B Ashish, S Smaritha, B Khyathirmayee, S Sampath, N Swabhaav, from the third-year chemical engineering department. Their innovative chemical car model was named RATHAM. The car works on a simple yet effective chemical reaction. The car was given the "best car reaction model" among all models. The team enjoyed and learned many things at the fest. It was the culmination of the efforts put in by each team member that made CHEM MADX the Winner.*



The team CHEM MADX represented IPE at the event.





# Team IIPE at MUD-O-GEE contest

*" The IIPE team comprising of YYS Akhila, Prabhat Kumar and Pavan Kumar secured the first position in the MUD-O-GEE contest held at the Pandit Deendayal Petroleum University (PDPU) SPE fest, October 2019. The director of IIPE, Dr VSRK Prasad also appreciated the trio for this special achievement."*



# Bhagavad Gita Quiz

*IIPE Director and Faculty members conveyed compliments to Mr G Rahul Surya (18PE10044) and Mr Gaurav Gupta (18PE10033) on their outstanding achievement on winning 1st & 3rd prizes respectively in Inter-College Competition on " Bhagavad Gita Quiz" conducted by the Hare Krishna Movement on 2nd and 3rd Feb 2020.*



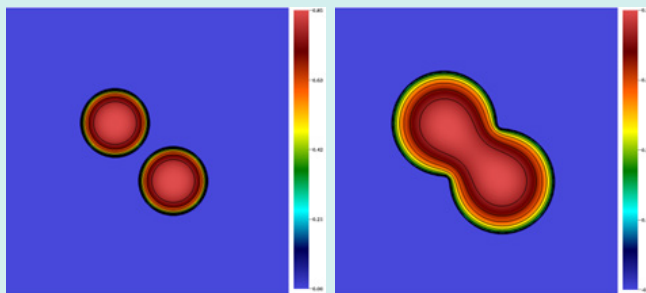
# Faculty Publications

## Dr. Samala Rathan

1. Rathan, R. Kumar, and A. D. Jagtap, *Applied Mathematics and Computation.*, 2020, 375, 125112.  $L^1$ -type smoothness indicators based WENO scheme for nonlinear degenerate parabolic equations.

### Highlights:

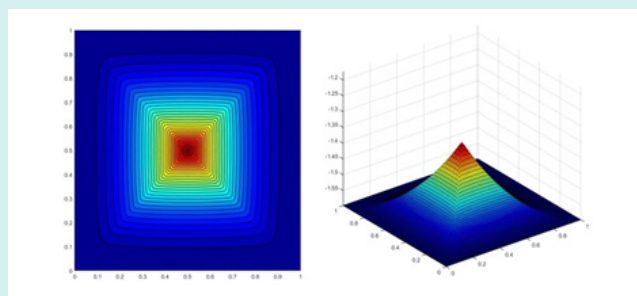
- An efficient sixth-order finite difference weighted essentially non-oscillatory scheme is developed to solve nonlinear degenerate parabolic equations.
- Global and local smoothness indicators are measured with the help of generalized undivided differences in  $L^1$ -norm.
- The derivatives involved in each smoothness indicator is of higher order accurate.
- Strong stability preserving third-order Runge-Kutta (SSP-RK) scheme is used to evaluate time derivative.
- Numerical tests are conducted in one and two dimensions to demonstrate the performance enhancement, resolution power and numerical accuracy of the scheme.



2. S. Rathan, *International Journal for Numerical Methods in Fluids*, 2020, DOI: 10.1002/fld.4855.  $L^1$ -type smoothness indicators based WENO scheme for Hamilton-Jacobi equations.

### Highlights:

- An improved fifth-order WENO scheme is developed by devising a new reference smoothness indicator for solving Hamilton-Jacobi equations.
- The new reference smoothness indicator is measured in terms of  $L^1$ -norm on each stencil.
- A higher order global smoothness indicator is constructed by a nonlinear combination of local stencil smoothness indicators.
- Numerical results show the improved performance over classical fifth-order WENO scheme.

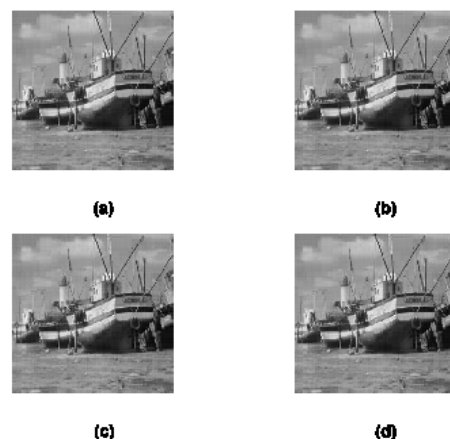


## Dr. R. Ramu Naidu

R. Ramu Naidu, Chandra R. Murthy, *Signal Processing (Elsevier Journal)*, 2020, "Construction of Uni-modular tight frames using majorization-minimization for compressed sensing,"

### Highlights:

- In this paper, we propose a method to construct uni-modular tight frames (UMTFs), which are tight frames with the additional constraint that every entry of the matrix has the same magnitude
- Since normalized UMTFs are unit norm tight frames (UNTFs), and since a UNTF is a minimizer of the frame potential, we propose an algorithm to find UMTFs by minimizing





the frame potential

- We use the majorization-minimization approach to propose a low complexity, iterative, fast-converging algorithm for minimizing the frame potential
- We also extend our algorithm to the cases where the phase angles of the sensing matrix are required to belong to a given finite set of feasible angles, and to the case where the signal being sampled is sparse in an arbitrary, possibly non-canonical basis.
- We illustrate the utility of our proposed construction in the context of sparse signal recovery and image reconstruction applications.

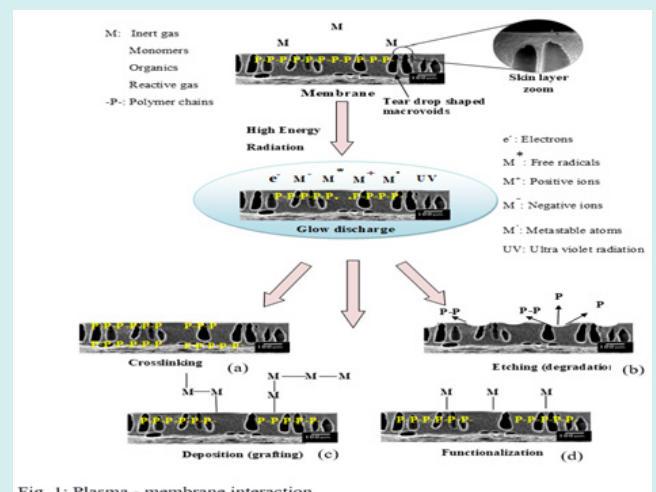
For the original image (a) of size  $256 \times 256$ , the image in (b) is reconstructed via the matrix constructed from our method; (c) and (d) were obtained via the corresponding complex Gaussian and partial DFT matrices, respectively. The associated reconstruction accuracy in terms of SNR are 14.77, 19.34 and 19.55-dB for the complex Gaussian, partial DFT and our construction, respectively.

## Dr. Dipankar Pal

1. N. V. Subrahmanyam, M. Jayadeekshitha, Karthik Raj, and D. Pal, *International Journal of Polymer Science & Engineering*, 2020, 6, 1-19. *Low Temperature Plasma Treatment of Polymeric Membranes: A Comparative Review*,

### Highlights:

- This paper of study is based on comparison of various polymeric membranes undergoing various surface modifications either plasma modification (majorly) or polymerization.
- Nearly fifty modifications are tabulated which describes discharge parameters, effects and properties of the modified polymer surface, and their potent applications.
- Properties of modified membranes like wettability, etching, permeability, hydrophilicity and pore size are majorly discussed.
- Most of the surface plasma modifications using  $\text{CO}_2$ ,  $\text{O}_2$ , Air,  $\text{NH}_3$ ,  $\text{N}_2$  plasmas showed enhanced hydrophilic behavior due to surface functionalization.
- The drop in contact angle and the surge in etching effect was comparatively higher for Oxygen containing plasmas.



2. Karthik Raj, N. V. Subrahmanyam, M. Jayadeekshitha, and D. Pal, *Journal of Polymer & Composites*, 2020, 8, 91-100. (ESCI, WoS). *Surface modification of polymeric membranes using plasma treatment: A comprehensive review*,

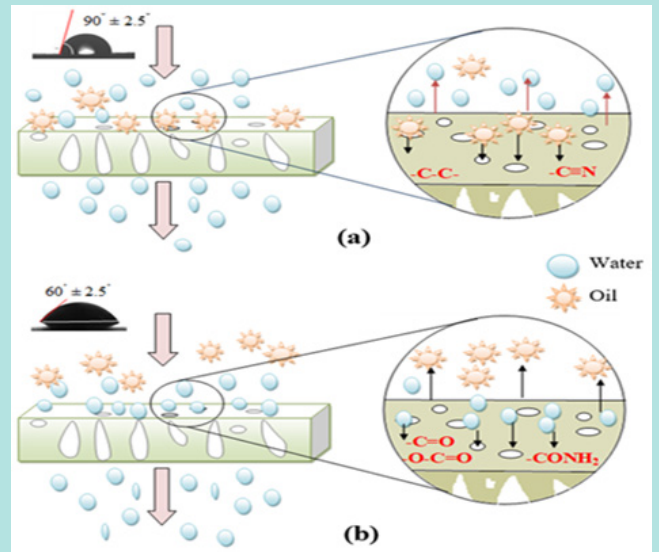
### Highlights:

- The idea of surface modification done to various polymeric membranes has been reviewed highlighting surface functionalization.
- Membrane fouling mechanism (Fig:1) for pre and post treatment has been discussed.
- Methods has been suggested to develop an antifouling membrane such as nanoparticle additives to the plasma modified membrane.

3. M. Jayadeekshitha, N. V. Subrahmanyam, K. Raj, and D. Pal, *Journal of Polymer & Composites*, accepted for Volume 8 Issue 3, 2020. (ESCI, WoS). *Antibacterial Surfaces: A Comprehensive Review*,

**Highlights:**

- The aim of doing this review paper is to show how the antibacterial surface coatings extends the applications for polymers.
- A clear description about the bacteria-material interactions and biofilm formation on the surface including the stages of film formation.
- Biomimicking has been a revolutionary idea which helped many authors to mimic the natural surface artificially using polymers without changing its bulk properties.
- A table consisting of 15 modified polymers with the observation (post treatment) along with the application has been tabulated.

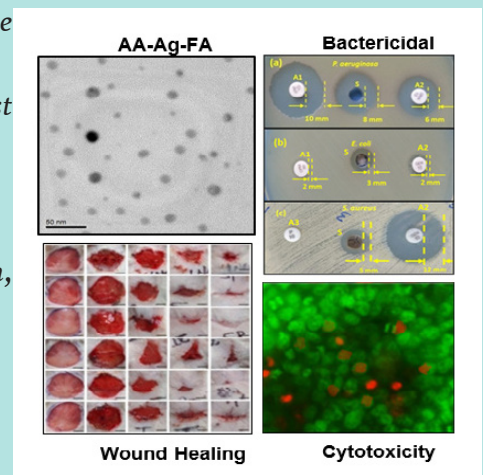


**Dr. Somnath Ghosh**

S. I. Basha, S. Ghosh\*, K Vinothkumar, B Ramesh, KVM Mohan, and E Sukumar\*, *Mater. Sci. and Engg. C* 2020, 111, 110743. *Fumaric acid incorporated Ag/agar-agar hybrid hydrogel: A multifunctional avenue to tackle wound healing*

**Highlights:**

- AA-Ag-FA hydrogel, a multifunctional approach to tackle wound healing is developed.
- The sample shows synergistic antibacterial effects against microbes.
- The hydrogel shows a faster rate of wound healing.
- The formulation shows minimum to no cytotoxicity effect
- The formulation shows enhanced collagen deposition, angiogenesis etc.



**Dr. P. Venkata Reddy**

Cheah Huei Yoong, Venkata Reddy Palleti, Arlindo Silva, and Christopher M. Poskitt “Towards Systematically Deriving Defence Mechanisms from Functional Requirements of Cyber-Physical Systems”, *Proceedings of the 6th ACM on Cyber-Physical System Security Workshop, CPSS’20*.



# First Registrar of IIPE



Prof. B. Sridhar Reddy  
(Registrar)

*We are delighted to announce that Prof. B. Sridhar Reddy joined our institute as Registrar in February 2020. He completed Master of Technology in Chemical Engineering from Osmania University. He went on to do his Ph.D. in Chemical Engineering (An Environment for Heterogeneous Model Management in Chemical Process Engineering) from Aligarh Muslim University.*

*Prior to joining IIPE, Prof. B. Sridhar Reddy who comes with around 24 years of experience handling various positions like Director (Academics & Administration), Principal, I/C Dean, Vice Principal, HoD, Professor of Chemical Engineering, Officer I/C Examinations, Examination Controller, Entrepreneurship Development Coordinator, Training and Placement Officer & Soft Skills Trainer, Engineer (Projects) and Public Relations Officer (PRO). He was a BOS member in JNTUA, Technical committee member in DELL Soft Technologies Pvt Ltd., and published 19 papers, which include international and national papers and book chapters. He also prepared a draft copy for New Educational Policy.*

*He visited several universities/institutions as a motivational /guest speaker and addressed on topics such as Employability Skills enhancement, and Industry expectations; been part of several programs aired on various TV channels as Panel expert to debate on social and technological issues; wrote for Print Media on engineering education and coordinated several Entrepreneurship Development activities.*

*He is the recipient of "Best Teacher Award for Academic excellence, Administrative skills and organizational initiatives" and also received Dr. A. P. J. Abdul Kalam Life Time Achievement National Award for remarkable achievements in the field of Teaching, Research & Publications.*

# NEWSLETTER TEAM

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