



The Fourth Estate

COGNOSCO

Volume III

Issue II : Jan 2019 - June 2019

Indian Institute of Petroleum and Energy, Visakhapatnam

COGNOSCO

"Cognosco" is a Latin word that originated in 1982 meaning quintessential enlightenment. The quest to acquire, gain and achieve.

This word competently describes the ultimate aim of the establishment of IIPE. It evinces that the students will thrive to attain exemplary knowledge and learning from the institute. This COGNIZANCE shall always be carried forward to the coming batches and our institute will keep prospering.

Introducing the Second Issue of the III volume of the IIPE
Newsletter

COGNOSCO

CONTENTS



4 Director's Word

5 Events

14 Internship Reports

18 Faculty Publications

19 Literary Contributions

26 Poems

28 Photo Gallery

29 Art Gallery

30 Library Updates

31 Newsletter Team

From the Director's Desk

Dr. VSRK Prasad

M.Tech, Ph.D, PGDES, M.I.I.Ch.E, FIE, MISTE



I am very happy to know that the newsletter committee is bringing up Vol. 3 Issue II of the “Fourth Estate” that covers the period from January 2019 – June 2019. The Institute is completing its 3rd year and in spite of several constraints due to various reasons beyond control, thanks to the Ministry of Petroleum and Natural Gas, thanks to academic support of IIT Kharagpur, thanks to Andhra University for its timely support, thanks to IIM, Visakhapatnam for its readiness to provide its premises for a high emergency need due to general elections, IIPE is progressing with every passing year even in the face of challenges. IIPE could successfully run all the classes of the academic program without any compromise and without any sacrifice of the quality despite limited strength of faculty. I appreciate the faculty, staff and above all the students who had cooperated to the fullest extent in fulfilling the academic requirements in spite of the fact that the temporary premises in which IIPE is located had to be vacated for more than 10 weeks on the orders of returning officer of general elections.

We are also very happy that all the Public sector oil companies have readily come forward to accommodate our first batch students for summer internship as part of academic curriculum at the end of the 6th semester. I specially acknowledge their help with gratefulness to the oil companies like IOCL, HPCL, GAIL, ONGC, IOL and other organisations like ISRO, Reliance and IITs who have provided internship for our students.

I congratulate the faculty members of the newsletter committee and the team of student members for such a good newsletter carrying a lot of information regarding the institute.

I wish everyone all the best

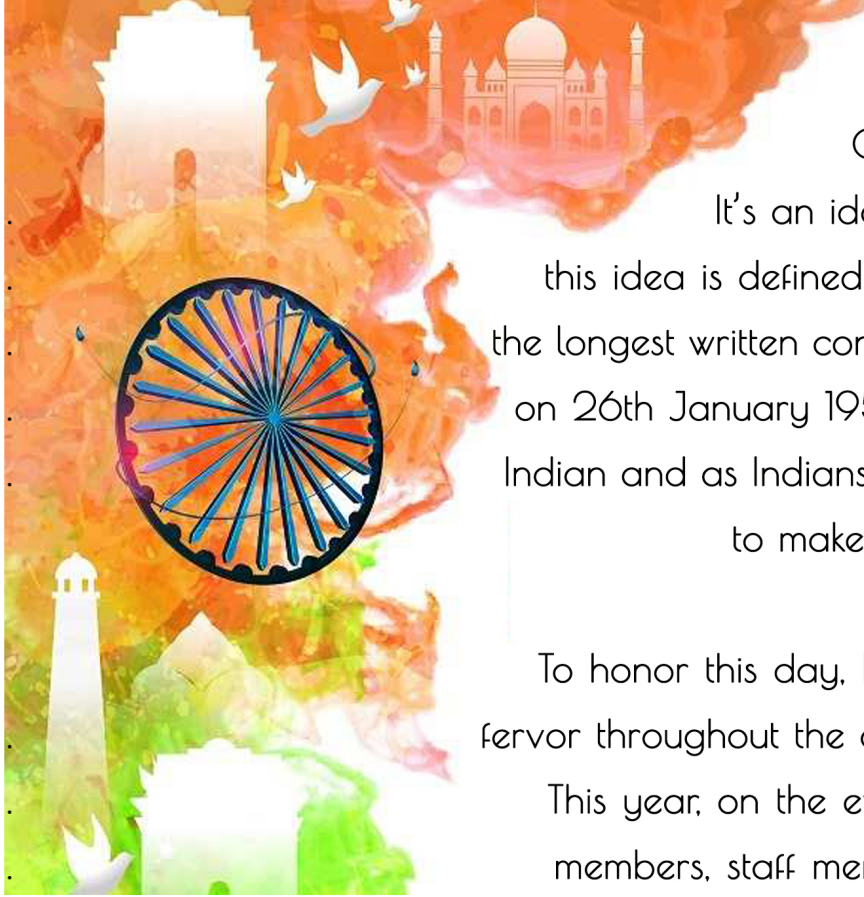
Date: 17th October, 2019.

A handwritten signature in green ink, which appears to read 'VSRK Prasad'.

(Dr.VSRK Prasad)
Director

Republic Day

January 26th, 2019



Our Nation is not just a piece of land. It's an idea that we all have in our minds and this idea is defined by our Constitution. Our Constitution the longest written constitution in the world, came into effect on 26th January 1950. It gave us the idea of being an Indian and as Indians, our rights, duties, and responsibilities to make India a true nation in real meanings.

To honor this day, Republic Day is celebrated with great fervor throughout the country every year on 26th January.

This year, on the eve of 70th Republic Day, all faculty members, staff members and students assembled at the Basketball court of AU North campus to celebrate the occasion. There, our director, Dr. VSRK Prasad hoisted the National flag and all of us sang the National anthem in unison and that moment gave us goose bumps.

In the latter part of the event, we assembled in Room 311 where our honorable Director threw light on the real meaning of Republic Day, its importance in the development of our nation and how getting a constitution altered the way India was, forever. At the end of the program, he distributed certificates and prizes to the winners of technical events. This event reminded us about the sacrifices made by our great leaders and freedom fighters. The democracy which we have received should be valued by everyone and each individual should contribute for the development of the nation and spread peace, love and harmony.

Gaurav Gupta
(18PE10033)

BLOOD DONATION CAMP

Feb 14th, 2019



Like previous years, this year also we had the opportunity to donate blood and save lives!!

This opportunity was given to us by our college in collaboration with Lions Club.

The ice for the blood donation camp was broken by the EAA committee of our college, which evidently was very efficient and successful in their job. It all started up with filling a form that required some of our details to ensure that we are fit for donating blood, followed by some tests including H-B and H-C tests. There were ample number of nurses and helpers available, along with several trained doctors to ensure the smooth functioning of the camp.

Everyone including the faculty members, staff members and all the eligible students actively participated in the camp and did their bit towards the good cause. Proper care for safety and sanitation was taken by the volunteers participating there. Refreshments were given to all the people who donated. Also, all of them were provided with a certificate for blood donation.

The event was a great success and adequate units of blood was collected. It was a great pleasure for our college that we got to participate in the noble act of blood donation.

It is no less than the fact that a blood donor is a real hero.

Pragati Raj
(18CH10024)



Candle March

Feb 18th, 2019

Whenever the word 'Indian Army' comes into our minds, our hearts get filled with the feeling of patriotism and sacrifice. The brave soldiers of our Army sacrifice their lives so that the entire nation can live in peace. They are the men of steel, standing tall in the harshest conditions. Even freezing cold temperatures and scorching heat can't stop their will and wish to serve our country.

On 14th February 2019, an inhuman act was carried out by terrorists, in which forty of our CRPF soldiers were killed in Jammu and Kashmir's Pulwama district. Due to this extreme incident, the entire nation was disturbed but that was also the time to offer solace to the families of our brave soldiers martyred in the attack.

**IIPE
PAYS TRIBUTE
TO THE
CRPF
MARTYRS
OF
PULWAMA**

On 18th February 2019, a Candle March event was organized by IIPE at AU premises for expressing solidarity with the families of CRPF soldiers martyred in the Pulwama attack. In the event, we marched from IIPE to YVS Murthy auditorium via Department of Instrument Technology and Gandhi Bhavan carrying lighted candles in our hands and condolences in our eyes. Everyone paid their regards and homages to our martyred soldiers at the YVS Murthy Auditorium which was the end spot for our Candle March. Patriotic slogans like "Bharat Mata Ki Jai" and "Vande Mataram" were recited on the dais. The Director and

remembered the sacrifice made by our great soldiers. This march, in which all of us came together, left us with a flame of patriotism and sacrifice for Mother India.

Gaurav Gupta
(18PE10033)

SANSKRITI

More than just memories!

Feb 23th, 2019

Having “a whale of a time” is the best metaphorical description for this indelible day. The fun. The vigor. The elation. The feeling possessed by hundreds of students is still far beyond expression. All pumped up with boundless energy, ready to make the event memorable. It was finally the day that all of us were waiting for...

slow claps getting louder

The Cultural Event for the year 2019 was held on February 23rd. It was a novel experience for everybody. The event was planned in a very distinctive way. For the first time, an outdoor event was going to be organized by the students of the college. It was a one-day program that began in the afternoon with a bunch of thrilling games and intriguing activities such as “Matka Tod Phodh” in which one had to hit a mud pot suspended at a particular height while being blindfolded, “Scavenger Hunt” and “Rangoli-making”. Students came up in huge numbers for participating in Scavenger Hunt and were thrilled to perform the time-bounded tasks and earn points and prizes.

The name “Sanskriti” takes us back to our roots pondering over the rich Indian culture – the beliefs, the art and craft, the beauty and the way of life. So, the theme chosen for the day was ethnic, duly providing justice to the event’s name.



As the time for the evening session approached, all the students, faculty and staff were welcomed in their graceful traditional attires. The stage was all decked up and shining with lights.

The evening's beginning was marked by our Honourable Director's words, who took pride in acknowledging the teamwork and zeal of the students. Then was time for the most interesting part, i.e. The Movie Quiz. The teams were very enthusiastic and the audience also participated actively in the questions. This was followed by some jaw dropping dance performances which enthused the audience to the core. One could sense joy in the air. Absolutely nothing could have been more entertaining than that one awaited event, "Paper-Dance". The moment the performing pairs were unleashed, there were applauses from every corner of the crowd. We couldn't contain ourselves for much longer and went onto invade the stage. Everybody was cheerful and dancing to the beats of the songs, enjoying the music, living an evening like never before. How beautiful a day it was! Forever to remember.

Bhavya
(18PE10040)



Workshop

on

Essential Engineering Mechanics (EEM)

Feb 17th, 2019

On February 17, 2019, the Technical Committee of IIPE, headed by professors Dr. Arun Kumar Pujari and Dr. Debarshi Sinha, introduced the famous veteran in Engineering Mechanics, Dr. Narasimha SiddhantiMalladi, who had acquired his masters from IIT Madras and Ph.D. from Oklahoma State University, USA, to the students. Dr. Malladi had also worked as a professor at IIT Madras and several academic institutions in the USA.

We know that Engineering Mechanics is one of the toughest courses in science, which is particularly concerned with forces and motion. It deals with the analysis of force interaction in bodies at equilibrium, mainly comprising study of structures. In this course, we used to solve problems by the basic step of drawing a free body diagram. Further, we used to equate forces along the directions of the axes. But, the veteran of the course, Dr. Malladi introduced some new methods to solve these problems, which reduced steps and time very effectively. It was fortunate for the students of IIPE to be taught by Dr. Malladi about solving problems related to free body diagrams and system vector diagrams using Polar Vector Equations. Dr. Malladi introduced his new and simple notations for polar vector equations to describe system vector diagrams and free body diagrams. He solved some problems by forming simple scalar equations, each with only one unknown. These Simplified Integrated Methods of Solution (SIMS) lessened the computing steps and time drastically. His abstract named "Five SIMS to Solve the Ten Types of Basic Planar Vector Systems in Engineering Mechanics" had been approved by the American Society for Engineering Education (ASEE) 2019 Conference, Tampa, Florida.

The day went completely great. We enthusiastically learned easy methods of solving problems through his lessons. Everyone enjoyed his way of teaching because he cracked many jokes in between, which lessened the mental burden that came after knowing new methods of solving problems.

Dr. Malladi had also done a lot of research in this course. He wrote "Essential Engineering Mechanics" in 2017, applying and extending a new concept that he developed for Kinematics in the USA. Dr. Malladi is developing a new and improved edition of his book with his unique 'Integrated Instructions, Learning and Assessment' (IILA) method, which will be available this year.

Chidurala Hruthik
(18CH10037)

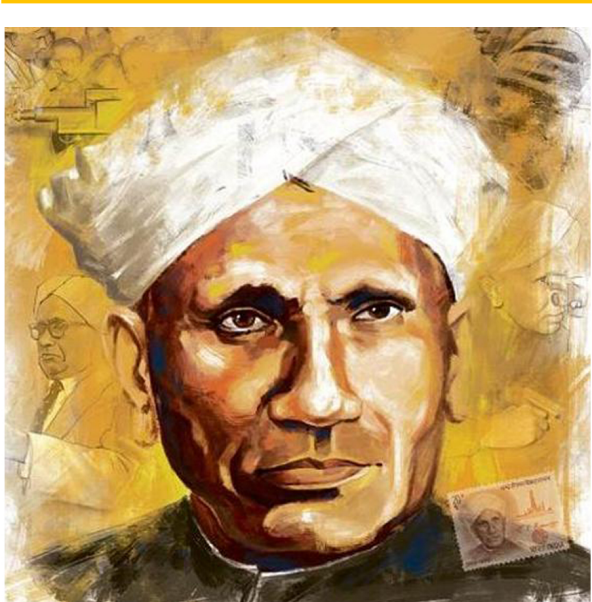
National Science Day Celebration in IIPE

Feb 28th, 2019

On 28 February 1928, one of the greatest scientists of our country, Sir CV Raman, discovered the Raman Effect, which won him a Nobel Prize in the year 1930. As a remembrance of CV Raman's contribution to science and the scientific community, National Science Day is celebrated across the country on 28th of February each year. This year, the theme was 'Science for People and People for science'.

IIPE, being one of the premier institutes of energy studies in the country, observed the day with great energy and enthusiasm. Dr. Jayant Sahasrabuddhe, National Organizing Secretary of Vijnana Bharti, addressed the students and faculty members on the auspicious occasion.

"A single email can have a carbon footprint of 50g carbon dioxide" his words echoed in the hall as he emphasized the importance of reducing individual ecological footprint. Dr. Sahasrabuddhe explained the effects of carbon footprint increment and what it means for a developing country like India. He explained how science has helped improve the lifestyle of people, and at the same time how we have exploited mother nature through our scientific and technological advancements. He also explained the major problem of climate change and how we could tackle this urgent and serious problem through innovations in science and technology.



Finally, he talked about the role, we IIPEians, can play in dealing with the problem of climate change and global warming. His insights inspired our young minds to work more towards innovations in this field and ignited research spirit in our minds.

Gaurav Singh
(18CH10039)

INDUSTRY- ACADEMY INTERACTION 2019

For

The Improvement of the Quality of Academics

June 2nd & 3rd , 2019

There have been reasonable efforts in India to promote cooperation between Academia and Industry in the last 30 Years. Numerous talks have been held over the value of adopting new methodologies in academics so that the quality of academia will improve, which will successively boost employability in youth. However, only minimal success has been accomplished. To address this issue, IIPE took the lead role in organizing IAI 2019 along with IIM Visakhapatnam, Andhra University, AP Pollution Control Board, Confederation of Indian Industry, National Research Development Corporation, and AP Chambers.

This prodigious two-day interaction started off in Dr. YVS Murthy Auditorium with a glorious inauguration by Honourable Vice-President of India, Shri. M. Venkaiah Naidu. Proceeding further, the gathering was addressed by the Director of IIPE.

Several industry stalwarts and eminent academicians from premier institutions came up on a common platform to discuss various issues related to corporate expectations from academic institutions and vice-versa. The event was graced by Prof. B.V. Babu, Former VC, Graphic Era University & Galgotias University, Prof. M. Chandrashekar, Director, IIM-Visakhapatnam, Mr. Vinod Shenoy, Director, HPCL, Dr. Purushotham, CMD, NRDC, Prof. G. Srinivasan, Professor of IIT Madras and Dr. G. Sambasiva Rao, the President of AP Chambers. They shared their thoughtful viewpoints and recommended ways to improve the current situation.

The panel chaired by Prof. V.S.R.K. Prasad, the Director of IIPE, discussed and resolved to make the following recommendations to be put forward in the education draft placed by MHRD, Govt. of India.



1. Industry executives from management and philanthropists have to train the faculty of elementary and high schools to ready them in order to prepare the students towards better ethics.
2. Industrial sabbatical training to be provided for faculty.
3. Project works to be taken-up in the academic institutions to suit the needs of local industry.
4. Subjects like 'Professional and Moral Ethics' to be introduced for all and 'Management Economics' to be introduced to Engineering Students to mould them as self-entrepreneurs.
5. Curriculum to be framed to suit the needs of the industry.

This extensive interaction not only focused on the corporate and industry expectations from the academic sector, but also provided academic institutions a platform to discuss their requirements and problems being faced during industrial training, R&D, and so on.

Our college was an earnest participant in the program. Many students and Faculty members came to be a part of this interaction. The two-day workshop ended with certificate distribution for the academic and industry participants.

Bhavya
(18PE10040)

Internship Reports

RELIANCE KG-D6 EXPERIENCE



“Nothing is more expensive than a missed opportunity”

One such opportunity I am glad I didn't miss was choosing Reliance KG-D6 for my Final Year Internship, in April 2019. Reliance has so much to give to a person who is really willing to learn and enhance his/her knowledge, by guiding them and providing with all the facilities to explore more about upstream industry.

Reliance provided me all the information about KG-D6, which in itself is one of the most challenging offshore projects in India. I learnt a lot about subsea structures, offshore production and its challenges in detail. It has been using many latest technologies, which is one of its kind in India, and I am really lucky to know about its details.

I have always admired offshore production and Reliance provided me an opportunity to converse with professionals who shared their experience with FPSO (Dhirubhai-1) and also Control Riser Platform (CRP). Also, I visited the onshore terminal and their Drilling and completion yard, where they stored their latest equipments.

The best part of my internship was that, I got to do project there. My first project was about Well Deliverability, in which I got the real time well data of 'Channel A' gas well from KG-D6 and I calculated the operating point for the well. The second was about Gas Hydrates, in which I calculated the rate of inhibitor (MEG) injection for their upcoming R-series & Satellite Cluster field.

Apart from all these technical things, I enjoyed the world class facility of Reliance and its beautiful campus, especially the delicious lunch, complimentary CCD coffee, their incampus electric cabs and the high speed wifi.

At last, I am really thankful to The TNP Cell, IIPe for enabling me to get an internship in Reliance.

RIYA DHAN
(16PE10004)

NUS, Singapore

Summer of 2019 has the most memorable experience of my life, living in the island city of Singapore, following stringent rules of their country, getting a huge exposure to research practices and an opportunity to explore the country with some awesome people.

The idea to do a research internship started when I decided to pursue higher studies during my junior year. The thought was that a research internship will give me a better insight into highs and lows that I will be facing when I enter grad school. The process to get an internship started back in December 2018 when I started sending copies of mails to many professors across the globe in search of a research internship. Fortunately, I managed to get a couple of approvals by the end of 2018 which put me in a better place to plan all the prerequisites comfortably. I have taken a lot of guidance from friends & family and decided to pursue an internship that was approved at the National University of Singapore.

The internship:

The internship that I applied was in a material science laboratory of the department of chemistry where my project was to study the antibacterial properties of cellulose-copper complexes. With no prior experience in research practices, it has been a tough initial week to catch the pace and style of work culture. The best part of my internship is the freedom to do alter and try new approaches to achieve better results. There were no fixed timings or schedule that must be followed in the lab, people were allowed to have their own working hours given that they produce sufficient progress that must present on Monday mornings. I usually used to work from 9 am to 7 pm and six days a week so as to get my work completed.

Life in Singapore:

There was no big cultural shock that I was anticipating given its development and dynamism. Singaporeans are slightly reserved and like many oriental countries, you will find them always into their smartphones mostly playing games or watching shows. Food was never an issue as 10% of the population are Indians, so you can manage to get Indian food in every food court or mall. Even though it might seem insignificant on the global map, Singapore has a lot to offer for people who want to discover it

Besides all the fun, it has been a great learning experience both academically and culturally because of working with different people from all over the globe. Overall, I am thankful for the internship as it has given me the opportunity to understand the field of research and even explore this great country simultaneously.

Sai Vivek Alla

(16CH10040)

Experience at ADRACEPE

I'm D. Sree Karthik pursuing Petroleum Engineering in IIPE. Having completed 3 semesters and entering into the 4th semester of this course I was at my initial stages of being exposed to the core segments in petroleum engineering. Things started to get interesting and I started to correlate the theoretical concepts with my cognitive approximations of the practical industrial applications. After I had finished my 4th semester, I finally got an opportunity to do a 2 month research internship on Fracturing Fluids in Asoka Deysarkar and Ruma Acharya Centre of Excellence in Petroleum Engineering (ADRACEPE), an Academic cum Research Centre established in IIT Kharagpur. I was guided by Dr. Sandeep Kulkarni, an Associate Professor at ADRACEPE.

Introduction:

Fracturing, a crucial segment in the completion process of several oil producing wells, is a process where we try to fracture the producing formation with fluids so as to enhance the production. To carry out this process, fluids with specific properties will be used known as the Fracturing Fluids. One of the important properties is the viscosity of these fluids. My internship dealt with the variation of viscosity due to the Hydration of Friction Reducers, a chemical component of Slick Water Fluids (a type of Fracturing Fluids).

Work Experience:

As a part of the internship, I studied some research papers which were written by various people. I came to know about how a research paper must be written and how should we proceed further so as to validate our works. I worked with different lab instruments and different industrial grade products, which helped me to know about the working conditions of research labs and how they operate and go along with the industries. This internship was my first exposure to practical segment of my course and I gained adequate experience to carry out basic work flow in any industrial or research labs.

This internship provided me with an experience and exposure which was massive. It was also an escape from the continuous theoretical way of learning and to a practical way. It was quite fascinating to experience that transition between two quite opposite learning fashions. Having my very first practical academic exposure and that too in a well-established Academic cum Research Centre was phenomenal and left me quite a good memory to recall.

D. Sree Karthik

(17PE10015)

UNITED NATIONS ENVIRONMENT PROGRAMME (UNEP)

The organisation working on the motto “Environment for Development”, United Nations Environment Programme, gave me an opportunity of a lifetime to pursue my internship. I had an splendid experience interactong with the intellectual people from all over the world.

The organisation gave me an opportunity to work in the UNEP’s project of ‘Development and Promotion of non-POPs alternatives to DDT’. The project focussed on the elimination of DDT and promotion of the sustainable alternatives in the country. I got to attend the ministerial meeting of UNEP with the Ministry of Environment, Forestry and Climate Change. I got a chance to meet Ms Dia Mirza, UN Environment Goodwill Ambassador, during the launch of WCCB Campaign, gave operational and logistics support for organizing the “Launch of Agra City Action Plan for Air Pollution”, a collaboration event of UNEP and Pollution control board of Uttar Pradesh at Agra. On behalf of UNEP, I got an invitation to attend the ‘World Environment Day’ celebrations at MoEFCC, Delhi. I helped to send UNEP India strategy brochures to the Chief Secretaries of the state and Secretaries to Government of India. UNEP was organizing the Innovations Summit in the month of October. I was assigned to three-pager report on the battery recycling technologies and pilot initiatives globally.

Along with the DDT project, I was also assigned to the Un-Plastics Initiative project, project on revision of the state action plan of climate and Indo-Norway Marine Pollution Initiative project. I also prepared the due diligence report for the partnership of UNEP with Reliance Group of Industries. Under the Un-Plastics Initiative project, I compiled the major pilot initiatives taken towards the Plastic Waste Management and prepared reports on different industrial pyrolysis methodologies followed in India.

I would surely say that this internship immensely benefited me in understanding the global environmental priorities, programmes & initiatives of UNEP to deal with the challenges, besides functioning of United Nations and its operations.

Naraharasetty Swabhaav
(17CH10024)

Faculty Publications

Title: Mechanical, wear and fatigue behavior of functionalized CNTs reinforced POM/PTFE composites

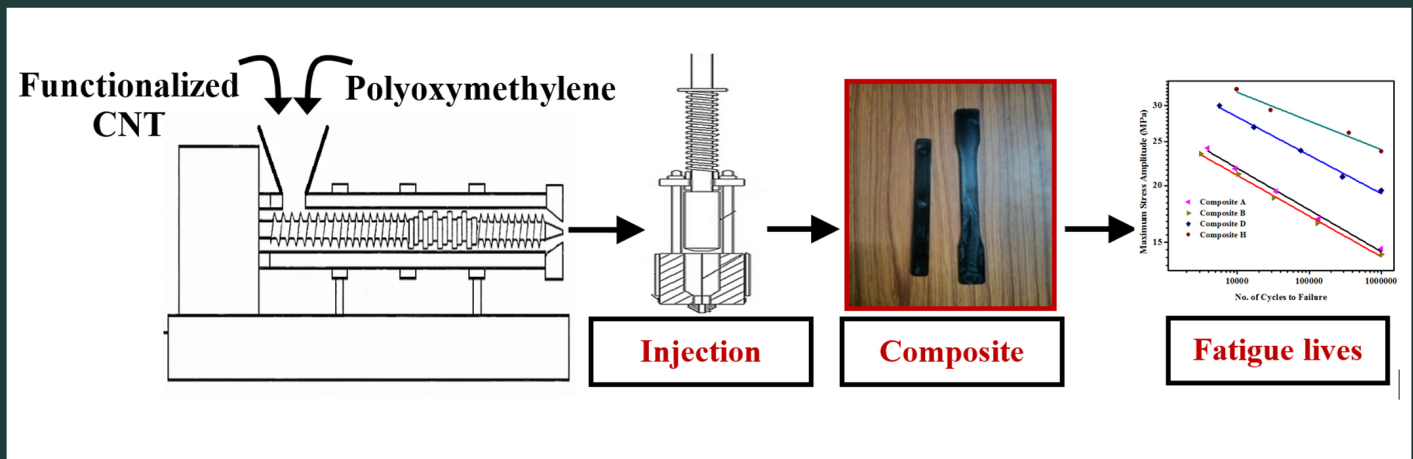
Authors: Bhanu Kiran Goriparthi, Naveen P N E, Ravi Shankar H and Somnath Ghosh*

Name of the Journal: Material Research Express

Publisher: IOP Science

Link: <https://iopscience.iop.org/article/10.1088/2053-1591/ab0f4a>

Abstract: The mechanical properties like strength, stiffness, wear resistance and fatigue strength of polyoxymethylene (POM) was improved by incorporating it with a lubricating additive polytetrafluoroethylene (PTFE) and reinforced with silanized multiwalled carbon nanotubes (CNTs) and functionalized CNTs. The material could be a promising candidate in plastic gear production.



Highlights

- CNTs are functionalized to improve its compatability with POM
- Effect of various functionalizations of CNT on mechanical, wear and fatigue behavior are studied
- Salinized CNTs were found to have higher reinforcing efficiency for POM
- Functionalization of CNTs also have profound influence on wear and fatigue behavior

Dr. Somnath Ghosh

LITERARY CONTRIBUTIONS

Mystifying Mysteries of Space

What if I say you that initially our Universe was “orange” in color? What if I say you that while you are reading this article you are emitting “Antimatter” which is a part of the cosmic rays in the space? These are just some weird but true facts of our Universe. There is more to “Space” than meets the eye. One of the great theories of all time is the Big Bang (Cosmic Inflation) theory and Steady State theory. These theories have many anomalies yet to be explained by the theorists and the researchers themselves. Scientists instead of creating new theories to explain the formation of Universe started to study Space, so that they can give a better explanation of formation of Universe. In that process, they have unraveled many bizarre mysteries of space. This article is about those mysteries.

ANTIMATTER

Every matter has opposite versions of themselves, these are called antimatter. If you take subatomic particles like electron, the antimatter of electron is positron (e^+). A positron has all the properties of electron but the charge of positron (e^+) is positive. The combination of matter and antimatter results in annihilation which transforms both of these particles into two different Gamma rays. Our body contains K-40 which emits antimatter but annihilates as soon as it encounters the matter.

ANTIMATTER IN SPACE

Antimatter is created everywhere in the Universe where high energy particle collisions take place. Antimatter and matter is believed to be created in equal amounts during the ‘Big Bang.’ High energy cosmic rays impacting earth’s atmosphere produces minute particles of antimatter which are immediately annihilated by contact with the nearby matter. Antimatter is detected by the two Gamma rays that were produced during annihilation. Satellite experiments have found evidence of positrons and a few antiprotons in primary cosmic rays amounting to less than 1% of the particles in primary cosmic rays.

COSMIC MICROWAVE BACKGROUND (Big Bang Relic)

The Cosmic Microwave Background (CMB) is well explained as radiation left over from an early stage in the development of the Universe and its discovery is considered as a landmark test of the Big Bang model of the Universe. When the Universe was young, before the formation of stars and planets, it was denser, much hotter, and filled with a uniform glow from a white-hot fog of hydrogen plasma. The photons in plasma emitted light which was initially orange in color. As the Universe expanded, both the plasma and the radiation filling it grew cooler. The plasma started thinning and the wavelength of light is red-shifted to longer wavelength and finally became infrared which is due to Stretching of Wavelength as the Universe expands. This is why CMB is also called the first light of Universe. The radiation emitted by the photons which are from the plasma is the source of CMB radiation. The CMB was discovered by scientist, Robert Wilson when he was studying about faint microwave signals from the Milky Way galaxy. At first, the noise was thought to be coming from pigeon droppings but this noise continued even after evacuating the pigeons. Then he discovered that this noise was actually a signal.

DARK MATTER AND DARK ENERGY (Quintessence)

The gravitational forces of visible matters are not strong enough to form galaxies and complex structures, so the stars and planets would more likely be scattered all over the place and there will be no galaxies. But we know that galaxies exist and this tells us that there must be some other thing existing in between them which does not emit or reflect light. There is something which is dark that is holding the stars together to form galaxies and we call this thing as Dark Matter.

The rate of expansion of Universe has been varying since the Big Bang. Initially Universe was expanding slowly due to the gravitational forces pulling the objects, but recently scientists have discovered that the rate of expansion is accelerating due to some mysterious force. Celestial objects are experiencing a force which is causing them to move apart from each other. This mysterious force is called Dark Energy (Quintessence). This force is recognized as the fifth fundamental force along with gravity, electromagnetism, strong, as well as weak nuclear forces.

GRAVITATIONAL WAVES

According to Einstein's theory of relativity, Space –Time is a sheet. Gravity is a curve or depression developed when a mass is placed on the sheet. Due to the depression caused on the sheet by the mass, the other masses near it would get attracted, which is called as gravitational force. When these masses start to move towards each other due to the gravitational force, ripples are formed on the Space-Time sheet. These ripples are similar to the waves caused when we throw a stone in the pond. These waves are known as Gravitational Waves. LIGO (Laser Interferometer Gravitational-Wave Observatory) has detected gravitational waves caused due to collision of two black holes. These two black holes were revolving around each other but in a span of time due to gravitational force they moved towards each other to form a bigger black hole. The movement of these black holes towards each other caused the gravitational waves. That gravitational wave lasted only a fifth of a second but researchers were able to detect the source of the gravitational waves.

As we explore the Space, we understand the Universe we live in, much better. These discoveries change the perception of how we look at the world we live in. Whatever we know about the Universe is just a fraction of the whole, but as we keep on exploring, more mysteries get unraveled and our understanding becomes much better. Thanks to the contribution of each and every researcher and the scientist all over the world who share their knowledge to the young minds like us.

BALAJI. A
(18PE10039)

A Talk to Remember.....

In the midst of a starry night mingled with the intriguing sounds of the nature, I was lying on the grass contemplating on the infinite things happening in my life. A part of me separated itself and lay next to me, perhaps I was introspecting my own self for a pretty while. And after a profound silence, some questions intervened the reverie.

“How are you?” a familiar voice whispered.

I thought for a while and then answered, “I am fine.”

And that’s where I lied to my own self. But the part of me that lay beside me knew it all. He said, “You are unsatisfied, unhappy, apprehensive, anxious, all of it but fine.

You are unsatisfied because you are unhappy, you constantly crave for the things that you don’t have, rather than appreciating the much you do. You are unhappy because you are apprehensive. You are in a constant hurry, in a rush to make things work according to your own suitability. Why can’t you just let things be? For a while, why can’t you digest the fact that Hogwarts Express arrives at platform nine and three quarters and there’s no such platform that actually existed for others?”. The real me smiled at this paradigm.

Suddenly the winter wind blew past sending chills to my arms and feet.

The voice continued, “You are anxious because you lack patience. You usually spoil things in an attempt to make it happen all at once. Everything demands time, Every soul demands space, there’s a fixed time for everything. You’ll surely not get things before they are meant to be. Everything is so much in order that you’ve got absolutely no say in it. Why can’t you enjoy the chase, for even chaos has it’s own room for silence ?

Feel the pain, embrace the haste , value the situations that’s there for it won’t be the same always.

“I am scared”, my voice cracked as tears rolled down my cheeks.

“Scared of what?”, the voice echoed.

“Scared of losing people? , whom apparently you don’t own. Or scared of losing, where you probably just lose a battle, that’s perhaps not even worth winning for, or scared of falling, where you’ll only land up on a ground that’s probably more concrete than the harness that’s helping you fly, or scared of your own self, your own feelings, a myriad heap of emotions that hold you back so tightly. The turmoil that chain you is the best thing that you can ever feel. Don’t be harsh on yourself, let it out. Feel free to cry, feel free to not always feel good , feel free to not accept everything and fight for better things in life. You are meant to express. You are meant to FEEL !

None of us are meant to be chained! You are a beautiful creation. Don’t mislead yourself. Don’t get used to things. Bring a change, be the CHANGE...

You have survived and you will continue to do so, believe in yourself. Don’t lock yourself in a coffin before actually dying, for ‘Dust thou art to dust thou returnest wasn’t spoken of the Soul’.”

The last part to this conversation was a general conclusion.

“Happiness should be subjective. Yes that’s where I differ from others. That’s where YOU differ from others.

The excitement before getting dressed for a special day is happiness, the sight of a dog is happiness, the smell of wet mud is happiness, a simple text from a beloved is happiness, the satisfaction after completing something difficult is happiness , a good night’s sleep is happiness , getting a seat to sit in a public transport is happiness, a day out with friends is happiness, a compliment from someone special is happiness. In a nutshell, it’s all around you, you don’t need to run behind it, just close your eyes and let it all sink in.”

There was a long silence for quite a while until I regained my senses. That part of me was no longer there. However, the aura had changed and it felt quite different, much better I guess. I was still lying on the frosty grass with an ardent gaze at the infinity. But this time, it was Different!!

Shaksham
(18PE10009)

ENERGY SECURITY IN INDIA:

CHALLENGES AND OPPORTUNITIES

Energy security is a term associated with the availability of natural resources for energy consumption and national security. The per capita energy consumption in India is estimated across 615 units (kilogram of oil equivalent), making India hold the fourth place in the list of largest energy-consuming countries after China, U.S and Russia. The total energy consumption by different sources is 44% by coal (third-largest in world), 22% by petroleum and similar percentage by biomass and waste, 7% by natural gas, 3% by hydropower, 1% by nuclear and remaining by other renewable resources. Petroleum, coal and natural gas are the main points of concern, as these are non-renewable sources of energy and our country doesn't have them in abundant amount and are the main causes of pollution too. In India, coal is the primary source of energy, with the fifth largest coal reserves in the world, which will long-last more than the petroleum and natural gas. Hence, the highlighted concern among the list is petroleum and natural gas. Our 80-83% of petroleum and natural gas requirements are satisfied by importing oil from countries like Saudi Arabia, Iran and Iraq, because of huge difference in consumption rate in country and production rate from domestic oil reserves. Considering these points, it is required to find alternative sources of renewable energy for securing petroleum reserves for our future requirements.

For energy security purpose, Indian government in 2008 had passed National Action Plan on Climate Change (NAPCC), which had 8 missions till 2015, and 4 more were inducted further. These missions include National Solar Mission for development of solar energy in India, National Mission for a Green India to reduce pollution by making use of alternative sources of energy, Wind Energy Mission to enhance the energy consumption by wind power system and Waste-to-Energy Mission for sanitation and solid waste management. Again, the Indian government in 2015 came with a new planned mission to reduce 10% of non-renewable energy consumption by 2024, which is to be accomplished by looking into the different opportunities and resolving the particular challenges arising in their implementation.

Solar energy, the most favourable renewable source of energy, is considered as the biggest opportunity for our country since it utilizes the energy of sunlight to convert it into the electrical energy. India is in the list of countries with high annual sunshine. So, we need to make use of this opportunity. It can help us in dealing with the problem of global warming since no greenhouse gases are emitted by its utilization. There are several challenges in its implementation, like its economic viability (since solar panels are very expensive) and its efficiency.

Sun rays are diffused in vast area, which requires more numbers of solar panels for their collection. The third challenge is inconsistency in weather conditions. Government of India is fighting against these challenges and resolving these issues. Recently, India has launched the world's largest solar park in Karnataka, named as "Shakti Sthala" (2000 MW) and has inaugurated a solar power plant in Mirzapur, Uttar Pradesh in presence of the President of France.

Hydrogen, as a fuel, is also an opportunity which is still under development to utilize it as a fuel in place of petroleum products. It has several advantages like zero pollution, because it doesn't emit Carbon Dioxide as a byproduct of combustion, and it is economically viable. But challenges arise due to its high combustibility and its storage in the liquid form (from the gaseous state).

Gas hydrates, also known as clathrate compounds, have hydrocarbon gas trapped or caged inside the lattice of ice structure of water. India has one of the highest gas hydrate reserves in the world, which are confirmed to be present in KG basin. NGHP i.e. National Gas Hydrate Programme by Govt of India, aims to study and extract the gas hydrates. ONGC, along with foreign experts from Japan like JAMSTEC, is trying to extract these gas hydrates. No country, till date, has been able to extract gas hydrates commercially. Gas-hydrates are stable at low temperature and high pressure. So, extraction of the gas hydrates safely from beneath the sea is a major problem because if the trapped hydrocarbon gas like methane is escaped to the environment, it will increase the amount of greenhouse gases.

Tidal energy is also an emerging source of energy in India. The main principle of tidal energy plant is to convert the energy of ocean tides into useful forms of energy, mainly electricity. It may open a new frontier in meeting India's energy needs. According to a study conducted by IIT Madras, India has an estimated tidal potential of around 8000 Megawatts (MW) with 7,517 km coastal line. However, commercial projects are still some time away because of the cost factor.

Waste-to-energy projects are aimed to generate clean, reliable energy from renewable sources, thus reducing dependence on fossil fuels. With the growing public awareness about sanitation, the Indian waste to energy sector is poised to grow at a rapid pace in the years to come. Depending on the technology used for energy recovery, eco-friendly and "green" co-products, such as charcoal, compost, nutrient-rich digestate (a fertilizer) or bio-oil, can be obtained from sewage and industrial waste. The combustible gases evolved from the waste storage can also contribute to the waste-to-energy projects.

Uttam Gupta
(17PE10040)

POEMS

LoveLamp

To love is to know that incompleteness can never be a reason to love

For love knows your very breath that ignites your flame.

To love is not just to complete the painting with spilled colors and brushes,
but it's the art that begins.

To love is to know that sometimes life is so blue, that you don't remain you

But this blue makes you lovable, caring and sensible which is far better than
the greens that makes you arrogant, selfish and ungenerous.

To love is to know that silence should never be the reason of
misunderstanding.

For love knows how to read eyes.

If you can't understand the language in which a smile hugs and a tear
speaks, then you are in the crowd of people who thinks silence is a
conversation stopper.

Silence speaks in a million ways for those who comprehend.

Words left unsaid come out as purest emotions from the eyes and lips and
souls.

Shaksham
(18PE10009)

Adieu to my gentle stream.....

As I stand near the channel stream,
Which now seems like a forgotten dream.
The place where I once learnt to swim,
Now seems like a distant kin.
Those sunny and joyous days,
When we planned to have a swimming race;
Now flowing with Mother Nature's tears,
Sprinkled with dirt and all her fears.
A marvellous stream with many a story,
With century and a half year old of amazing glory.
The smell of first rain, crickets buzzing,
Birds chirping and the clear water flowing.
These things disappearing day-by-day
And I just have an adieu to say.

S F Chant Adorat
(18CH10007)



Akhil



Akhil



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PHOTO GALLERY



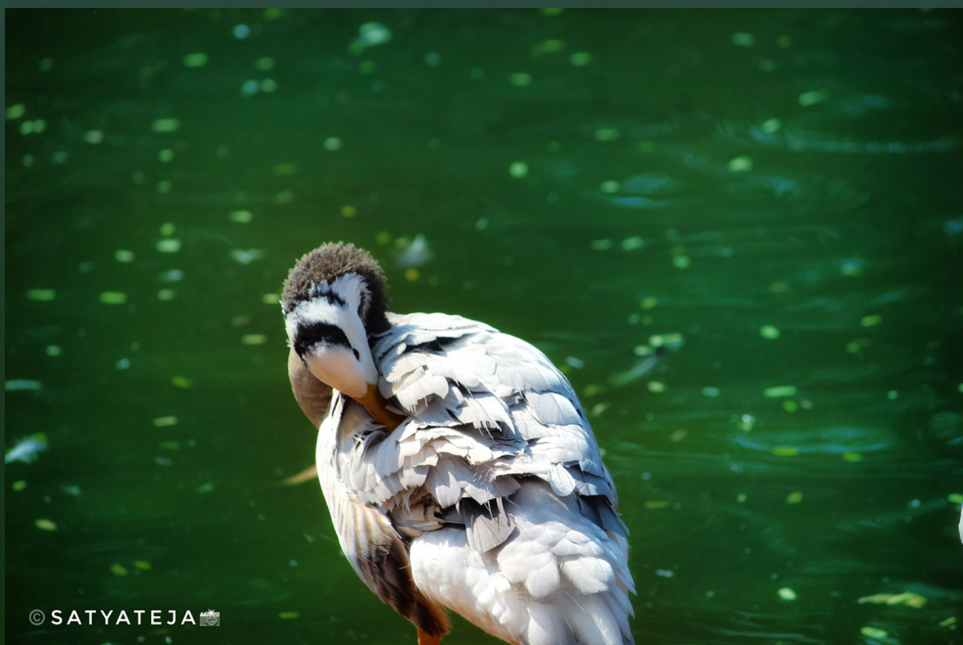
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Akhil



Akhil



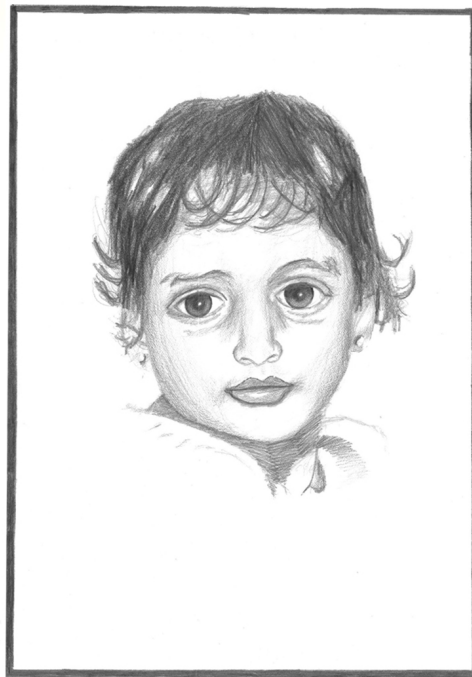
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Art Gallery



By:-
Sai Harsha
Deekshitha

Library Updates

Indian Institute of Petroleum and Energy's Library is named after Padmasri, Dr.S. R. Ranganathan, a World renowned Research Professor in Library & Information Science.

The Library is equipped with 2074 books, 3.64 Crores+ e-resources from National Digital Library of India, IIT Kharagpur and 7000 Scholarly journals. A digital library which initially began with 10 systems has been increased to 25 systems now with a LAN Connectivity. We also have perpetual access to e-books from Wiley publications.

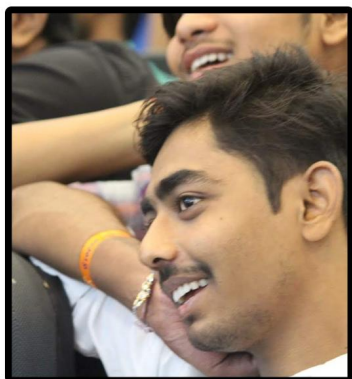
Librarian's Day is celebrated on August 12th every year, on the eve of Dr. S. R. Ranganathan's Birthday.



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