

## Editorial Message

Dear Readers,  
Greetings & a Warm Welcome to our first issue of E-PLASTIZINE Magazine!  
We are proud enough to put our honest efforts to explore various fields of technology along with some fun articles for boosting your mind and feel energetic. Our main emphasis is to promote technical articles and we extend our boundaries to different fields of science. With clear intentions we welcome you to post comments related to our magazine by sparing your valuable time and request you to send articles on [appesped@gmail.com](mailto:appesped@gmail.com)  
Finally I thank my editorial team, technical team, authors and well wishers, who are promoting this magazine and making it informative.

-Ms. Aarti Mulay

## Message from HOD's Desk

I am delighted to learn that our Department of Plastics and Polymer Engineering is releasing a magazine “E-PLASTIZINE, Vol.1, Issue 1” for this academic year to showcase the creative activities of our students. It is an active platform for both staff and students to share information, latest technical knowledge and imaginations in all dimensions. This magazine would not have been possible without the enthusiastic and hard work of all student participants, editorial board members and all faculty members. I sincerely appreciate and congratulate all of them for their untiring efforts in assembling this wonderful magazine and also hope that everyone would continue to give their best efforts to keep the momentum and continue to enrich the standards of the magazine. I wish all the staff members and students for success in their future endeavours.

-Dr. Aniruddha Chatterjee

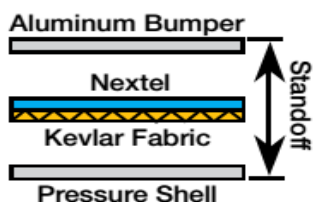
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## Essence of Education

*“To me the very essence of education is concentration of mind, not the collection of facts. If I had to do my education once again, I would not study facts at all. I would develop the power of concentration & detachment, and then with a perfect instrument, collect facts at will.”*

-Swami Vivekananda



Typical Debris Shield Design

## VISION OF THE INSTITUTE

MIT aspires to be a leader in techno-Managerial education at national level by developing students as technologically superior and ethically strong multidimensional personalities with global mindset.

## MISSION OF THE INSTITUTE

We are committed to provide wholesome education in technology and Management to enable aspiring students to utilize their fullest potential and become professionally competent and ethically strong by providing:

- Well qualified, experienced and professionally trained faculty.
- State-of-art infrastructural facilities and learning environment.
- Conductive environment for research and development.
- Delight to all stakeholders.



## How To Convert Any Smartphone into a 3D Printer

The device is called as **OLO** and is convenient to understand and operate. It is battery operating, weighing around 780 grams, and can be carried anywhere.

The OLO Device comes with three parts, reservoir for accommodating 400 cubic cm of printing volume, 100 gram bottles of colored photo-polymer resin which helps to create objects and mechanized lid (Arranger of build plate and control electronics. *OLO mobile app is available on Android, iOS and Windows.*

-Mr. M A Ansari, Asst. Prof. PPED

## International Space Station (ISS)

The ISS has an orbital speed of 7.7 km per second — if a piece of debris is approaching from the opposite direction, also at 7.7 km per second, for a combined collision energy that's probably on the order of a small nuclear bomb, and it's probably bad news for the astronauts. Spacecraft in low Earth orbit continually impact with meteoroids and with orbital debris. A small fraction of the meteoroid and debris populations, however, are larger and can cause severe damage in a collision with a spacecraft. The International Space Station (ISS) is the largest spacecraft ever built. Due to its large surface area, its long planned lifetime, There are 3 primary shielding configurations:

Stuffed Whipple shield-consists of an outer bumper usually aluminium, an underlying blanket of Nextel ceramic cloth and Kevlar fabric to further disrupt and disperse the impactor, spaced a distance from the module pressure shell.

# “E-PLASTIZINE”

## Top 10 Plastic Product Manufacturing Industries in India

1. Supreme Industries
2. Jain Irrigation System Limited
3. Responsive industries
4. Nilkamal
5. Astral Poly Technik Limited
6. VIP Industries Limited
7. WIM Plast Limited(cello)
8. Plastiblends India
9. Safari Industries
10. Cosmo Films

## Top 10 Paint Industries in India

1. Asian Paints
2. Berger Paints India Limited
3. Kansai Nerolac Paints Ltd
4. Jenson & Nicholson (I) Ltd
5. Shalimar Paints
6. British Paints
7. Snowcem Paints
8. Dulux Paints (AkzoNobel)
9. Sheenlac
10. Nippon Paints

## Top 10 Tyre Industries in India

1. MRF Limited Ltd
2. Apollo Tyres Ltd
3. JK Tyre & Industries Ltd
4. CEAT Ltd
5. Balkrishna Industries Ltd
6. TVS Srichakra Ltd
7. Goodyear
8. Falcon Tyres Ltd
9. Govind Rubber Ltd
10. PTL Enterprises Ltd



## Top 10 Automotive Industries in India

1. Tata Motors Ltd
2. Mahindra & Mahindra Ltd
3. Maruti Suzuki India Ltd
4. Hero MotoCorp Ltd
5. Bajaj Auto Ltd
6. Ashok Leyland Ltd
7. Sundaram Clayton Ltd
8. TVS Motor Company Ltd
9. Eicher Motors Ltd
10. Force Motors Ltd



## Top 5 Polymer Industries in India

1. Finolex Industries Ltd
2. GAIL India Ltd
3. Haldia Petrochemicals Ltd
4. Reliance Industries Ltd
5. LG Polymers India Pvt Ltd

## Nitro Cellulose

In the multifarious growth of polymers, there have been some useful ‘accidents’. For instance, Christain Schonbein, a Swiss scientist broke a beaker which contained a mixture of nitric acid and sulfuric acid. He must have obviously got panicky, for the picked up his wife’s apron to mop up the mess. What a thing to do! But then, the poor man did promptly wash the apron and left it for drying near a fire-place. The cotton apron, however, soon caught fire and vanished into thin air. His wife must have admonished him, but in the midst of all that, all a sudden, Schonbein realized what had happened: cotton, the textile material of which the apron was made, got converted into combustible ‘gun cotton’, a nitro derivative of naturally occurring polymer cellulose.

-Mr. Nitin Kokate (TY)

## Vision Of The Department

Department of plastic and polymer engineering aspires to achieve excellence by imparting education and training to develop young technocrats as multidimensional personalities for the service of mankind.

## Mission Of The Department

To improve quality education to the aspiring students for fulfilling technological and societal needs by providing

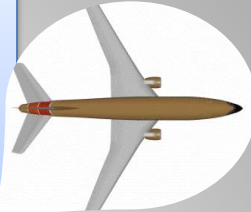
- State-of-art infrastructural facilities and competent faculties.
- Practical training to face challenges of modern plastic and polymer industries.

## Resist

Imagine a tiny robot—a micromachine—the size of a red blood cell, swimming through the arteries of stroke victim until it reaches the blood clot in the victim's brain. The micromachine drills through the clot, restoring blood flow. The parts for such robots might one day be built using the same polymers that are used to stencil the incredibly complex pattern of an integrated circuit onto a silicon chip. These polymers, called resists, react chemically when exposed to ultraviolet light, X-ray, or other energetic electromagnetic radiation. One polymer commonly used as a resist, poly(methyl methacrylate), is better known to most people as Plexiglas.

## Carbon Composite Fuselage

Graphite Epoxy, or carbon-fiber-reinforced (CFR) polymer, has become a popular choice for today's state-of-the-art commercial aircraft. Made from resilient carbon fibers embedded in an epoxy resin, carbon composite materials can be stacked in a number of ways to meet the various demand of maintaining integrity during high speed flight. These carbon-fiber materials are about as strong as aluminium, yet half the weight. Boeing's 787 dreamliner was the first major plane to use the materials in over half of its fuselage. Boeing lists its materials by weight as 50% composite, 20% aluminum, 15% titanium, 10% steel, and 5% other. The longest-range 787 variant can fly 14800-15700 km/hr. Its cruising airspeed is 903 km/hr.



## Protective Apparel

Polybenzimidazole (PBI) fiber is a synthetic fiber with a very high melting point. It has exceptional thermal and chemical stability and does not readily ignite. It was first discovered by American polymer chemist Carl Shipp Marvel. Due to its high stability, polybenzimidazole is used to fabricate high-performance protective apparel such as firefighter's gear, astronaut space suits, high temperature protective gloves, welders' apparel and aircraft wall fabrics. In the 1970s, NASA continued to use PBI as part of the astronauts' clothing on Apollo, Skylab and numerous space shuttle flights. Polybenzimidazole and its aromatic derivatives can withstand temperatures in excess of about 500 degree without softening and degrading. The characters lead to one of the most important applications of PBI is for protective apparel.



## Lamborghini Aventador Chassis

The Aventador LP 7004 has a top speed Of 350 km/h and 0100 km/h acceleration of 2.9 seconds. The Aventador's CFRP monocoque reduces the car's overall weight and leads to improved performance and safety. Lamborghini reports that the Aventador is the only production car with a full CFRP monocoque (comprising the base section known as the 'tub' and the roof), and that it is the only company to manufacture a CFRP monocoque for a production vehicle in-house. Lamborghini's 'RTMLambo' resin transfer moulding (RTM) process is specially adopted process for Chassis. The finished monocoque weighs only 147.5 kg, It is connected at the front and rear with rigid aluminium subframes, on which the suspension, engine and transmission are mounted. The entire bodyinwhite (chassis) of the car weighs only 229.5 kg. Reduced car weight and tailpipe emissions by 40 percent. Based on aerospace best practices, its monocoques are made to tolerances of  $\pm 0.1$  mm/ $\pm 0.004$  inch.



## Puncture Resistance Tire

In other words, it justifies the saying : " **Prevention is better than cure !...**"

The tire's internal structure features twin steel belts and is Goodyear's tire to incorporate Dupont Kevlar, an innovative material that's, pound for pound, five times stronger than steel. The use of Kevlar sidewall reinforcement brings enhanced cut and puncture resistance to an area of the tire that demands extra toughness when driving off-road (increasing sidewall cut and puncture resistance by about 35% compared to the conventional tire).

Finally it must also be mentioned that most of the self-sealing liquid punctures repair may be able to "eventually" repair holes having a limited size (maximum 5/6 mm). Nevertheless, they never allow the punctured tire to recover completely and definitely its original air tightness...Again it must be mentioned the tires which include an attached internal flexible layer made of low viscosity polymers which are supposed to fill up the holes in case of punctures. It can only work for those holes of small dimensions, for instance limited to a maximum of 5 mm.

Michelin first announced the tweel in 2005. The name is combination of the words tire and wheel. The tweel is an airless tire design concept developed by the French tire company Michelin. Its significance advantage over pneumatic tires is that the tweel does not use a bladder full of compressed air, and therefore it cannot burst, leak pressure, or become flat. The tweel consists of a band of conventional tire rubber with molded tread, a shear beam just below the tread that creates a complaint contact patch, a series of energy-absorbing polyurethane spokes, and an integral inner rim structure. Michelin expects the tread to last two to three times as long as a conventional tire.





Workshop on “Fourier Transform Infrared Spectroscopy”  
1<sup>st</sup> Feb-6<sup>th</sup> Feb 2016



Workshop on “Plastic product design & modeling using CAD”  
1<sup>st</sup> March -5<sup>th</sup> March 2016



Industrial visit in “Cosmo Films Pvt Ltd, Aurangabad” on 26<sup>th</sup> April 2016

## Departmental Achievements

- ❑ Workshop 1- Workshop on “Fourier Transform Infrared Spectroscopy” at 1 Feb-6 Feb 2016
- ❑ Workshop 2- Workshop on “Plastic product design & modeling using CAD” at 1 March – 5 March 2016
- ❑ Students selected in “Goodyear Southasia Tyres Pvt Ltd” are-
  - Akshay Shete (BTech PPE)
  - Amol Deshpande (BTech PPE)
  - Sujeet Patil (BTech PPE)



## Student Achievement

### SY Toppers

1. Vaibhav Jaiswal
2. Singh Princekumar
3. Akshay Ghadge

### TY Toppers

1. Satish Chopade
2. Alka Harak
3. Geetanjali Tiwari

### B.Tech. Toppers

1. Vivek Damani
2. Vikramsingh Thakur
3. Parth Sheth

## वेडीपरी....

रोज मन सांगे वेड्यापरी,  
एक तरी शोधनारे वेडीपरी,  
स्वप्न तूझे पाहणारी,  
राज तूझाचसाठी जाणणारी||  
शब्दांतून कोरे काहीपण नजरेने काही सांगणारी,  
अधीरभाव हे अंतरीचे,  
क्षणात असे जाणणारी,  
जसे सप्तरंग उधळ्यावे तशी बावरी ती बिलगणारी||  
जशी अल्लडनदी,  
जशी उधाणलेली लाट खरी कधी,  
कैफातल्या एकांती जशा याव्या पावसाच्या सरी||  
कौतुकाचे शब्द व्हावे पण असावी ती ऐकणारी,  
कधी ओघळले थेंब नयनांतुनी तरी,  
मुक्यानेच ती सारे जाणणारी,  
कोणी आहे काहो अशी वेड्या कवीला समजणारी||  
शब्द जुळविले मी जरी-तरी,  
ती माझी कविता होऊन येणारी....!!!

-Mr. Sahil P. Kardekar,(SY)

## It's the Women's era

Women are believed to be the most beautiful and most important of God's creations. A world without them is hardly imaginable. Like the two sides of the same coin God has created women complementary to men, created to be equals in every aspect of life. She, being the epitome of hard work and sacrifices makes a house a home and aptly fulfills the role of a mother, a daughter, a wife, a sister and a lover. But it has been seen that the notion of considering women equal to the men is only in theory because in the practical world the women are still considered as someone who would need the protection and support of a man. In our country, India, women are worshipped on pedestals and it is in the same country that women are not allowed out of their homes after midnight and female child are aborted right in the womb because they would become a burden in future. The want for empowerment of women arises from this very fact that they have been rendered dependent position in the society for a very long time now. This also plays a prime role in developing our society because we all know that no society can evolve if the women, a major component of it, are lagging behind. Today, in the age of globalization the world has come a long way from the past and so has the women. Gone are the days when a girl had to stay back at home cooking while her brother went to school, gone are the days when a woman had to solely depend on her husband for everything. Some of them do it in order to provide for their families while some others have adopted it as a profession because of their interest and passion in this field. In the past she was a mother, a sister, a wife and a daughter. But now she is a CEO, director, chairperson, owner and as well as an entrepreneur. With the vast change in the corporate environment over the past few decades we have seen women move from homes to the boardrooms, cabins and factories with their God given natural intellect and elegance. They balance between their filial roles at home and business demands with equal self-confidence. Many have succeeded in the field of business without losing an ounce of passion for their home lives.

## Quotes

➤ Education is the most powerful weapon which you can use to change the world. -Nelson Mandela

➤ Talk to yourself once in a day .....otherwise you may miss meeting an excellent person in the world. -Vivekananda

➤ Without a struggle, there can be no progress. -Frederick Douglass

➤ Creativity is intelligence having fun -Albert Einstein

➤ You need power only when you want to do something harmful, otherwise love is enough to get everything done. -Charlie Chaplin

## Invention of Water bottle

Nathaniel wyeth (1911-1990), a U.S. engineer, work on the invention for almost a decade. Wyeth took nearly 10,000 attempts to solve that what he termed the “pop bottle problem”. He finally replaced the nylon and polypropylene material he had been using with polyethylene-terphthalate (PET).

- Mr. Bhagyesh Chavan (SY)

## Yeh Pal... Dedicated To Final Year B-Tech

कूच सालो बाद पल ये बहोत याद आयेंगे,  
जब हम सब दोस्त अपनी अपनी मंझील पर पहुँच जायेंगे  
अकेले जब भी होंगे साथ गुजारे हुये लम्हे याद आयेंगे,  
पैसे तो बहोत होंगे पर.....  
शायद खर्च करणे के लिये लम्हे कम पड जायेंगे,  
आज ज्यादा msgआणे पार गुस्सा करते हे,  
कल एक एक msgको तरस जायेंगे.....  
एक कप चाय याद दोस्तो कि दिलायेगी ,  
यही सोचते सोचते फिर से आंखे नम हो जायेगी.....  
दिल खोल कर इन लमहो को जी लो यारो,  
जिंदगी अपना इतिहास फिरसे नही दोहरायेगी।.....

-Mr. Ketan Tavhare (SY)

## Editorial Staff Team

Ms. Aarti Mulay  
Editor-in-chief

Mr. Nilesh Padar  
Associate Editor

## Editorial Student Team

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Rushikesh Ambekar(TYPPE)

Associate Editor-  
Prashant Tambe(TYPPE)  
Ashish Jadhav(TYPPE)  
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Shreyas Gurav(SYPPE)  
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