

A photograph of laboratory glassware, including a round-bottom flask in the foreground containing an orange liquid, and several Erlenmeyer flasks in the background containing purple and blue liquids. The image is overlaid with a teal and white geometric design consisting of diagonal stripes.

# CHEMEXPLORED





## FOREWORD

“

Perhaps you are visiting us because you are curious about what chemical engineers do. Perhaps you'd like to earn a degree from a department that emphasizes a relevant and empowering education. Perhaps you dream to equip self in leading micro to macro industries. Perhaps you aspire to be a chemico-technocrat entrepreneur for grand Indo-Start Ups. Perhaps you want to conduct cutting-edge research to the world's most pressing societal problems. No matter the reason, you have come to the right place. Yes, no one can "Chemically-Engineer" like a BITian. Technocrats, Industrialists, Academicians and Recruiters - We invite you to nurture our Chemical Engineering breeds knowledge and to discover how our saplings derive solutions for a changing futuristic world. It is our pleasure to launch the newsletter for this year to reflect on our activities and accomplishments as well as set new goals for future. Past years, the chemical engineering student association has had great success in putting together a number of exciting technical events. It is my proud privilege and great pleasure in acknowledging the encouragement, support and bestowal received from our administration, faculty and technicians in shaping chemical engineering career. Thanks and Regards.

**Dr. Raghu Raja Pandiyan K.**

## RESEARCH WORKS

There are several Projects sponsored by DRDL, DST, Ministry of New and Renewable Energy, Coir Board etc. to the credit of the Department. Major research areas are: Nanotechnology, Advanced Polymer Composites, Alternative Energy, Bioresources Utilization, Pollution Control, Water Treatment Technologies, Polymer Blends and Interpenetrating Polymer Networks, Nano filtration Membrane, Recycling of Polymer Waste, Specialty Polymer, Colloids and Interfacial Science, Tissue Engineering, Sensors, Fuel Cell Membrane.

The Department also coordinates activities of "Design Development and Training Centre in Plastics Engineering", a joint venture of Department of Industries, Government of Jharkhand and BIT Mesra. The Centre conducts short and long term courses in Polymer Processing, Quality Control, CAE, etc. Apart from manpower development the Centre provides consultancy and testing facilities to the plastics industries. The Department also conducted Integrated Industrial Training Programmes in a plastics processing industry Amiantit Oman, at Muscat, Sultanate of Oman.

Dr. Raghu Raja Pandiyan received project grant of Rs. 28.95 lakhs from EMR, SERB in 2017

Dr. G T Mohonraj received project grant of Rs. 39.64 lakhs from SERB in 2017

Dr. Arup Chowdhury received project grant of Rs. 23.78 lakhs from DRDO in 2017

Dr. Akhil Sen has received a project worth 24.995 lakh from DRDO.

## NEW ADDITIONS

In this section, we will bring forth the recent developments witnessed in our Department to everyone's attention. Recognising the need for sophisticated laboratories and workshop facilities in their objective of facilitating a high standard of education in the diversified fields of Chemical Engineering, the Department of Chemical Engineering, BIT Mesra has basked itself in a spree of obtaining modern equipments for its various laboratories. With this move, the Department seeks to keep itself at the forefront of advancement all the while providing fair opportunities for its students to give them an everlasting learning as well as research experience. Once a victim of outdated equipments, these now modern laboratories reflect our overall progress that we have managed to achieve. The Department is now in possession of modern workspaces such as Chemical Engineering Unit Operation laboratory, Chemical Reaction Engineering Laboratory, Process Control Laboratory, Synthesis Laboratory, Energy Engineering Laboratory and the Polymer Characterization Laboratory. It also has excellent capabilities in Polymer Processing Workshop and Product Development Laboratory including mould design and manufacturing facility. The Laboratories boasts of equipments like Rotary Fluid bed Dryer, Multiple effect Evaporator, Flowmeters, Reynolds' Apparatus, Ball mill and Gyrotory shaker. With Batch Reactor, CSTR, PFR, Cascade Reactor in the Reaction Engineering Laboratory, Fuel cell, and equipments such as Photovoltaic Cell, Hot air Oven, Solar Photovoltaic Cell in the Energy Engineering Laboratory.

Even as the Laboratories replenish themselves, the Department is also involved in the process of replenishing the faculty. Realising the significance of Fresh energy as well as diversification within the faculty ranks, the department sought to induct new faculties so as to help fulfil its motives. With the kickstart of the new session, the department proudly introduced to BIT, Assistant Professor Dr. Chandan Das.

Dr. Chandan Das obtained his Bachelor's degree in Engineering as well as his Master's from the distinguished Jadavpur University. With his Graduation done, he set his sights on Post-Graduation, having inculcated within him the desire to research and continue further studies in the field of Chemical Engineering. IIT Kanpur, the hallowed institute became his destination for his Post Graduate studies. Having completed his Post-Graduation, he worked as a Research Scientist following which he joined NIT Agartala serving as an Assistant Professor, but his tenure over there was short-lived as he joined our esteemed Institution. His fields of interests primarily are Molecular Modelling, Phase Transition and Crystal Structure Analysis though Molecular simulation serves to be his field of Research. With a calm and sound personality, he is dedicated towards fulfilling the objectives of our college while maintaining a healthy relationship with the students as well as the administration. He wishes the very best for the students, urging them to work hard with the utmost sincerity and pursue their ambitions.



# SUCCESS STORIES



**KAYENAT KHAN  
NIHARIKA SINGH**

**How did you prepare for the contest? What was your chosen topic? How much time each day did you devote during the initial phase of MoM?**

The competition requires no such prior preparation. Our topic was Flotation of Ultrafine Coal. During February, we devoted a lot of our free time to go through the research papers. Even a week before the midsems, we were focussed solely on this and just managed to scrape through the exams.

**What was your experience during the two months project internship? How was the environment?**

The internship taught us how important it is to be able to think on our feet. Things that work on paper do not necessarily work out practically and that's when you have to use your spontaneity. Everybody at Tata Steel was extremely helpful. They never got tired of answering our long list of queries.

**How did the teachers of your department help you and contributed in your success?**

Our teachers especially Raghu Raj Sir and Mandira Ma'am helped us through their constant encouragement. They even advised us regarding the better presentation of our idea so that, even a layman could understand it. Without the guidance of our department, this wouldn't have been possible.

**What all did you learn during the course of internship and how important is this success to you?**

The main thing that we learnt is not to stop believing in ourselves and our ideas. Initially, everything that we tried gave us bizarre results. At one point, we became highly discouraged, but our mentor helped us restore our faith in ourselves.

This success has given us a foundation stone. We will try to build further on that.

**Any guidelines or tips based on your experience to your juniors who aim for success in MoM?**

From the time the first phase of the competition starts, be in constant touch with your mentor. He/She knows a lot about that topic so, take as much help as possible. Also, maintain contact with your seniors who participated before you. We ourselves received a lot of guidance from the seniors. When the topic is out, go through numerous research papers, something within them will spark the idea.



**KISLAY JHA  
SANKALP SACHDEV**

**How did you prepare for the contest? What was your chosen topic? How much time each day did you devote during the initial phase of MoM?**

We dedicated 1-2 days on analyzing the topics initially, searching keywords and reading material on them. This gave us clarity with respect to each topic and helped us decide which one we would like to pursue. We dedicated about 2 hours each day to decipher the intricacies in the project. In this phase we also mailed out mentors and discussed our solution with them.

**What was your experience during the two months project internship? How was the environment?**

MoM is unique because we get to work in the best RnD facilities in the country. The researchers take us very seriously and work with us on our solutions till after office hours. The environment is very friendly and there is no discrimination based on age which makes the experience very enriching.

**How did the teachers of your department help you and contributed in your success?**

The professors in our department helped in framing the main structural body of our project. A special mention is to be given to our Professor Mr. Pulak Dutta who pointed out the mistakes and finally approved our project after rectification.

**What all did you learn during the course of internship and how important is this success to you?**

This internship gave us the first authentic taste of research. We learned the value of reading papers and how to analyze them, stay organized, make presentations and to try new things without the fear of failure. Basically the internship was a mixed bag of failures, success, stress, learning, tough stay in hostels, ac labs in the RnD and an overall enriching experience.

**Any guidelines or tips based on your experience to your juniors who aim for success in MoM?**

Well for the juniors - devote time and effort on the topics and once you have a decent idea about the topics roughly suggest them to the mentors and take their suggestions. Last year there were 400+ entries out of which 12 were chosen. The solution has to be unique and not just a repetition of the content in papers. There is a lot more to be suggested but we would like our juniors to take more interest, interact with us and once the competition topics are out we will definitely give more elaborate suggestions.

## HALL OF FAME

Prashant Kumar (VII Semester, BE Chemical Engg.) and President of NSS, BIT, Mesra, was selected by the Govt. of India, Ministry of Youth Affairs & Sports for Indira Gandhi NSS Award for the year 2015-16. Hon'ble President of India conferred the awards in the award presentation ceremony at Rashtrapati Bhawan on 19th November 2016. Prashant had secured 5th position in the list of awardee".



## PLACEMENT STATS

DIC	Amit Kumar Choubey, Rohan Kumar Choudhary
FORTITUDE	Anmol Agarwal
HIL	Vikas Kumar, Anveksha Malani
HINDALCO	Rishabh Aditya, Deblina De, Nishant Bharadwaj
KPMG	Anushka Jain
MU SIGMA	Debayan Ghosh Dastidar, Ekta Moorjani
OPENDOOR EDUCATION	Aayushi Kashyap, Aditya Anandkar
RELIANCE INDUSTRIES LIMITED	Poonam Gupta, Aarushi Shah, Chandana Kuruganty, Avinash Kumar, Kushagra Gangwar, Prakriti Jaiswal
TATA STEEL	Sourav Agarwal, Manish Chandan
THINK & LEARN	Manish Kumar
VEDANTA	Sparsh Nigam, Richa Kashyap, Prashant Kumar, Tanmay Sahu, Harshit Gupta, Ankit Kumar
VIKRAM SOLAR	Prerna
YOUR OWN ROOM	Roshini Baid
ZS ASSOCIATES	Lakshyadev

## ICCEAPM 2016

The International Conference on Chemical Engineering and Advanced Polymeric Materials (ICCEAPM 2016) aimed to bring together expertise on every sector of Chemical Engineering and Allied branches for a congregation where they can make each and every one aware of the recent advancements in their respective fields of study. The conference was attended over by approximately 75-80 delegates from across the country and beyond.

The contribution of the Chapter towards the effective execution of the Conference, right from scratch to the polishing end, was beyond compliments, as was evident from the closing ceremony speech by Dr. Gautam Sarkhel, Convener of the Conference and Head of Department, Department of Chemical Engineering and Technology, BIT Mesra, along with Prof. K. Raghu raj Pandiyan, the co-convener of the Conference. Papers were presented on each and every sector of advancement and modernization in Chemical Engineering as well as problems regarding the functioning of the Chemical industry were also discussed. Solutions of these problems were resorted to on a large scale from the enthusiastic audience of the Department students, who had brushed themselves up with the knowledge of the whereabouts of their scope in the near future.

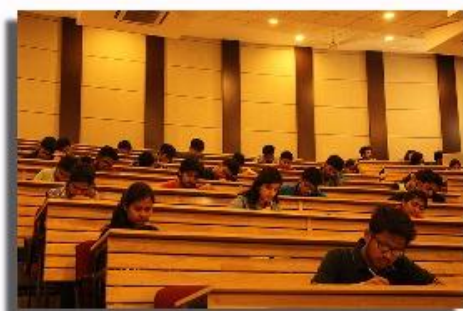
The Conference was scheduled from 18th August, 2016 to 20th August 2016 mid-day. Presentations were held in two halves, each half comprising two parallel sessions. The sessions were categorized on the basis of the field of discussion, namely Rheology, Biochemical Technology, Modelling and Simulation, Environment and Safety, Mass Transfer, Polymer Composites, Surface Coatings, Food Technology, Synthesis & Characterization and Energy. Apart from these technical sessions, plenary lectures were also organized and were hosted by eminent dignitaries from Research Centers in India as well as abroad.



# COALESCENCE 2017

Coalescence, the annual technical symposium organized by the Department of Chemical engineering, BIT Mesra, is a three-day extravaganza promising a wide range of communicative workshops and high-spirited competitions in the field of Chemical Engineering. The latest edition of Coalescence was held from 31 st March, 2017 to 2 nd April, 2017. The theme of the symposium was 'Industrial Safety' and its events aimed to develop innovative methods to tackle problems in the modern world industry and help make the world a better place to live in. The faculty envisaged the event to be a huge platform for inculcation of innovative ideas in the students of varied branches, thereby widening their vision. The organizers of the fest assured that Coalescence'17 was in accordance with the industry standards and aimed at creating future ready individuals. Mr. Rajeev Kumar Singh, the recipient of Young Metallurgist of the Year Award(2001), was the guest lecturer for the event on its opening day.

The following days were marked by a plethora of interesting events and competitions that involved the students' presence of mind and innovation skills. Events like Chem-e- Boat and Chem-e- Car made the participants put on their thinking caps for efficient innovations in car and boat designing. On the otherhand, events like Vidi Ego Locutus and Chemingo incorporated the fun element into the otherwise educative competitions. The most challenging events that tested maximum technical knowledge of the participants were Industrial Design Problem, Illuminati (Paper presentation) and Hardcore (simulated placement scenario). Besides these successful events, Workshops were conducted each day in which softwares namely, ASPEN PLUS, CFD and MATLAB were taught to the students. They were taught systematic and experimental approach to design processes and equipment in a small period of time, vary operating conditions and see how the plant is behaving without actually establishing the plant. They were also trained in dynamic simulation. At the end of the workshop the participants were able to simulate individual unit operations, as well as, an entire plant step by step. Every participant learnt something important and the winners of Coalescence'17 took away the cash prize worth Rs. 40,000.



# INTERNSHIPS

## CHEMICAL ENGINEERING

CENTRAL COALFIELDS LIMITED, Ranchi

CENRAL MINE PLANNING AND DESIGN INSTITUTE, Ranchi

EXIDE, Kolkata

HEAVY ENGINEERING CORPORATIONS, Ranchi

IIT Guwahati

IOCL

JUSCO, Jamshedpur

MOTHERSON SUMI, Gurgaon

ONGC, Mumbai

ORDANANCE FACTORY, Kanpur

SAIL, Bokaro

SAIL, Ranchi

TATA STEEL, Jamshedpur

TEAM SRIJAN, BIT Mesra

URANIUM CORPORATION OF INDIA LTD.

Roshan Kumar, Akanksha Lakra, Pragya Tiwary

Akash Ashish, Raj Arya

Vineeth Nair

Siddha Sharma, Prasoon Kumar, Aakash Ahuja

Kousumi Mukherjee, Abhipsa Anindita

Milan Basa, Kousumi Mukherjee

Niraj Agrwal

Aakash Ahuja

Bliss Sinha

Samiksha Gupta

Nitish Kumar

Shukla Surya Prakash, Nisha Kumari, Sneha Agarwal,  
Prabha Nisha Toppo, Akash Gupta, Nishant Tripathi

Anant Bhyri, Komal Banka

Sushant Sinha, Vineeth Nair

Bliss Sinha

## CHEMICAL & POLYMER

IIT Guwahati

PRAXAIR INDIA PVT. LTD.

SAIL, Bokaro

SAIL, Ranchi

TATA MOTORS, Jamshedpur

Sayantika Chakraborty, Ritika Sinha

Anamika Sinha, Rohit Mukherjee

Shreya Sinha, Upel Soren, Yash Kumar Singh, Aryanika

Syed Shabbir Ahmad, Ruchi kumari, Tarunam, Anjali Ranjan,  
Anamica Kirti Barla, Shikha Tirkey, Divya, Shivani Dasgupta

Abhinaba Chakraborty



## ALUMNI SPEAKS

The four years in BIT saw me grow from an adolescent into a working professional. The place equipped me with the right technical knowledge and helped me develop confidence to take on the toughest challenges in life. BIT Mesra provides a platform to enrich all kinds of talent one can imagine, I personally feel very blessed to have lived in one of the most beautiful campuses of the country that gave me the opportunity to meet amazing people, make great friends and provided experiences that shaped me into the person I'm today. Working in TRIDENT has been a journey related to real chemical engineering world. It has given me first hand experience of plant operation and let me apply theoretical concepts in solving practical problems. As a process engineer you are the link between product design and production whose role is to ensure effective manufacturing from both a technical and financial standpoint. Working in a manufacturing sector is about combination of technical skills, attention to detail and creativity because the ultimate goal is exploring ways to implement engineering principles in order to manufacture product as quickly as possible, as inexpensively as possible and in the necessary quantities. One must develop the skills to troubleshoot designs that don't work as planned, ask the right questions and then find answers that work. My advice to all the chemical engineering juniors would be to take out some time and ask themselves whether the process of creating something, working of machinery intrigues them. If the answer is yes then only the core sector job is right for you. The most important thing in life is keeping yourself inquisitive and keep learning. Whatever you choose to pursue in your life, the only thing that drives you is your zeal to excel. I would wish everyone all the best for their future endeavors. Thank you!



**RAMAN MOHAN**



**POONAM GUPTA**

I was always interested in core chemical engineering and for me Reliance was always a dream company. Hence, I prepared accordingly and brushed up my concepts before the interview. The interview was very grilling and for the manufacturing sector only I was interviewed twice (Total time was around 1.5 hours). All the questions asked were technical. Coming to Reliance, it's been a month since I joined the company. My business allocation is Special Task Force in Jamnagar Manufacturing Division. My job is related to design ratings of equipment, modelling, simulation and optimization of plants. A lot of coding is involved in it and I am supposed to work with all the known chemical engineering software. I don't really have to go to the plants (apart from mandatory field training) like the operation and maintenance people. So far things have gone smoothly for me. I have not yet been assigned any project so I really cannot tell the pros and cons of my business allocation. People who are really interested in core should definitely give it a try. All the chemical concepts are in application at the Jamnagar complex. Be thorough with your concepts before facing the interview. Don't panic. Take your time to answer and don't just say anything because the interviewer is mostly highly experienced and can't be fooled.

I don't know for sure whether I was born a leader or made through perseverance and hard work, but for as long as I remember, I've always filled the shoes of a leader; though I did not take it as seriously until my first vision conspired. My third tryst with entrepreneurship happened last year where I envisioned an idea of creating a hyperlocal market for real-time deals. It was a very big opportunity and that inspired me to work much harder this time. My failures from the past made me much stronger as I had a better market understanding. Being a tech enthusiast, my tech skills paid off well in building my venture. BigDeal is a first-of-its-kind mobile app that offers deals and discounts exclusively for the student community; thus enabling them to save more money and cut-down their expenditure. As a student, it was always difficult to find deals online or offline, relevant to our pockets. We as students have limited spending power, however, no platform curates discounts and deals exclusively for students. So, don't let technology stop you from living your dreams, instead use it to your advantage and make your way to success. Spread your wings and start living your entrepreneurial dream.



**AASHISH SINGH**

Our most significant opportunities will be found in times of greatest difficulty. We need to work hard, apply ourselves and be ready to grab the opportunity when it comes. In today's world we ought to be on our toe to fly high and should do every work voraciously which will push us towards our destiny. During the last 4-5 years I went through many life changing events and surely there have been a paradigm shift in my thinking. We must be thankful to our God that we are BITians. We get so many amenities and chance to explore ourselves in our golden days. But some thinking is still deep embedded in our "engineering" minds like studying one night before exam or wasting too much time in enjoying TV series which made us forget that how interesting really engineering is if studied from right standard books and by being a protege of an adept teachers. I explored my Chemical engineering knowledge when I started preparing for GATE 2017. It was late because same thinking affected me in college. The reason for preparation was very simple that I didn't get the job which I dreamt of. I began my journey from mid July 2016 after leaving college. I took the help of a coaching institute of Delhi. At that time I was just thinking to get a coaching not anything else. When I got admission in institute, I tried to keep things simple at first by doing which was told but then I realized to do better extra work should be done by ourselves. I made a routine and tried my best to maintain that. During preparation a lot of uneven ideas popped in my mind but I had to show resilience. In the beginning, it was hard to get acclimated to the situations as none of my colleagues chose this path but slowly everything started falling in place. I got chance to enjoy and study together as Gate Chemical Exam is not that tough. You don't need to isolate yourself. Intensity of pressure started to increase when my exam date approached. In last 2 months, I started my thorough revision. Talking with my friends and family helped me deal with it. One must keep those people closer who can motivate them during such situations. Just after attending convocation and receiving gold medal, results were out and by God's grace I managed to score well which made my rank quite good i.e. AIR 105. But one must realise that this is not the end of journey. Getting good rank will surely make path easier but not complete. I began my interview preparation after grand revelry with my friends. My previous experience with interviews were not at all worth mentioning. This time my knowledge about the subjects bolstered my confidence of attending interviews. To ace an interview, one must be dressed up nicely and try to keep up utmost confidence then being just a knowledgeable candidate. Implementing the same I got selected in IITB, IITD, ONGC and IOCL. My chances for ONGC were bleak so achieving this made my journey even sweeter. Everyone who starts any preparation must not stop until achieved as it will go unnoticed which is very disheartening. Life after college is hard for sure but one get to learn many things. One must assay the gravity of situation early in college life I would say. To be among right friends and achieving your goal in college itself is easier than being alone in an uncharted territory. Many juniors now try to emulate my achievement and get ideas which is very pleasing and humbling at the same time.



**ADITYA UJJWAL**