Centre for Career Development,
Indian Institute of Technology Guwahati

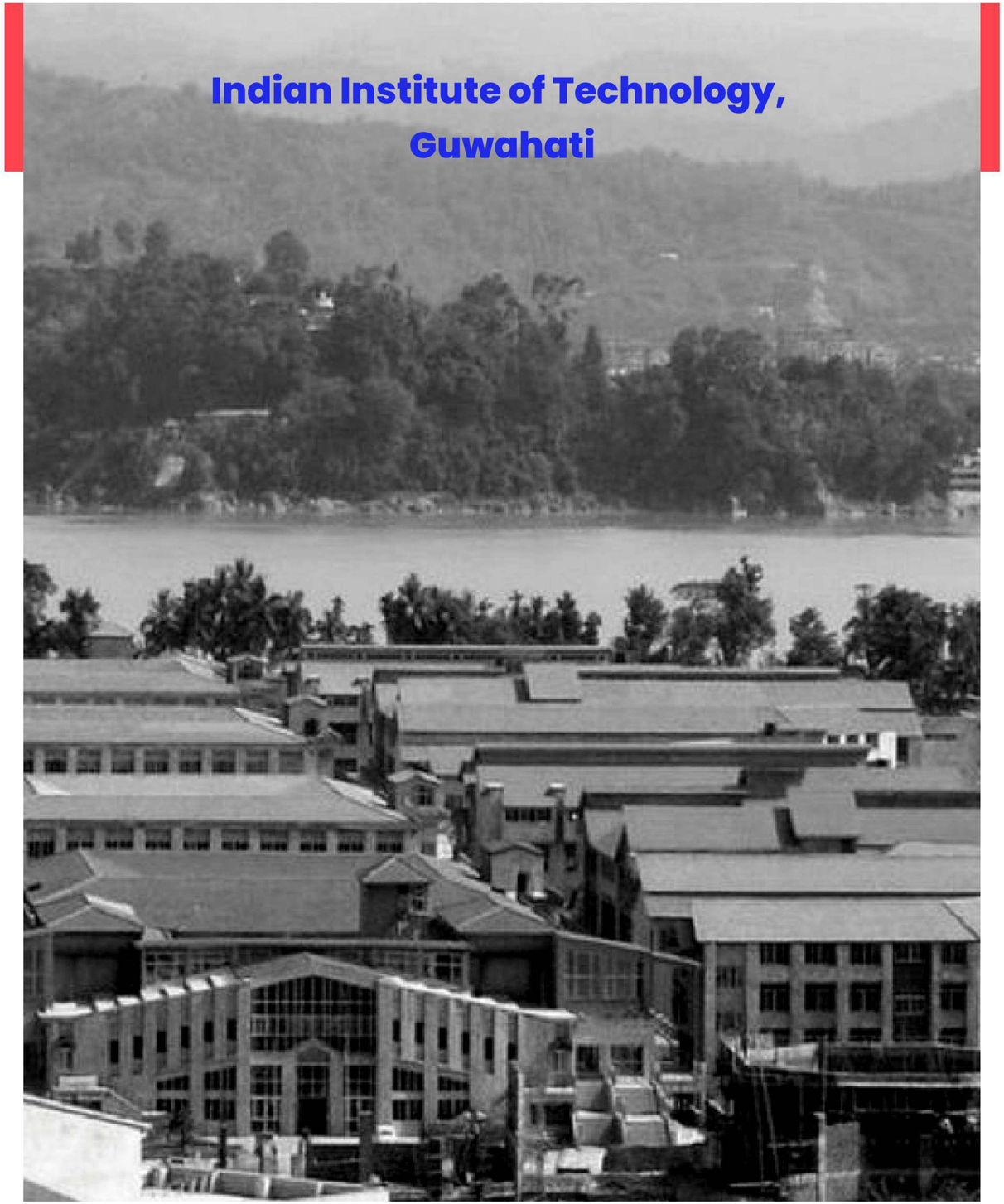
Placement Brochure

Class of 2024

Centre for Sustainable Polymers

About The Institute

Established in 1994, as an 'Institute of National Importance', IIT Guwahati has grown into being a preferred destination for people passionate about learning and innovation. IIT Guwahati has been ranked among the Top 100 Young Universities in the world by the Times Higher Education, one of the two Universities from BRICKS nations. IIT Guwahati has several factors contributing to how in a short span of time it has established itself as one of the best institutes of its kind in the country. The programmes and courses that are offered at IIT Guwahati are perpetually evolving to adapt to the ever changing global requirements and along with the diversity of the fields of study, this has helped the institute become one of the nation's nerve centers for research and development, and technical education. The faculty ensure that the students of the campus are ready to face the challenges of the professional world by providing them with a sound conceptual understanding of their respective disciplines. The institute also offers a plethora of opportunities to students for their holistic development, through the excellent facilities that it has for sports and general extracurricular activities.



About The Centre

The Centre for Sustainable Polymers aims to provide quality graduate-level education and multidisciplinary research in the field of sustainable polymers and to become an internationally recognized centre for development of innovative low-cost sustainable polymer based technologies and products for an Eco-friendly society. The centre is focusing on utilization of biopolymers such as cellulose, chitosan proteins, various protein-grafted polysaccharides for high performance product development. Further, under this umbrella, consortium of technical experts available at IIT Guwahati in the area of synthetic biodegradable polymers, biopolymers, bio-process engineering,polymer processing, degradation, migration of toxic substances from processed polymer products, nanotechnology, process optimization, nanotechnology, polymer modelling and simulation will make significant contribution to develop biodegradable polymers and their derivatives..

Mission Of Centre

➔ To foster the development of research and education in the multi-disciplinary area of Sustainable Polymers at the Indian Institute of Technology Guwahati.
➔ To create and nurture an environment conducive to collaborative research and teaching by providing appropriate facilities and expertise.
➔ To provide faculty, staff and students with state-of-the-art facilities for carrying out research and education in areas fundamentally important to the Centre.
➔ To cater to the training and research needs of the Indian polymer sector giving a special emphasis on creating a pollution-free environment using sustainable polymers.
➔ To provide scientific expertise on sustainable polymers to various research institutions and industrial partners on one platform.
➔ To train the industrial workforce and create awareness on the benefits of sustainable polymers in society.
➔ To emerge as a leading international research centre in Sustainable Polymers.

Message from Head of the Centre

Assoc. Prof. Amit Kumar

- The Centre for Sustainable Polymers at IIT Guwahati provides quality graduate-level education and exposure to multidisciplinary research in the field of sustainable polymers. In addition to a PhD program, the Centre offers a Master of Science by Research [MS(R)] program in Polymer Science and Technology. These programs are designed to provide a rigorous background in the theoretical and practical aspects of polymers. The students enrolled in the MS(R) program of the Centre develop strong foundational knowledge in polymer chemistry, polymer characterization techniques, polymer processing and rheology, polymer physics and sustainable polymer technologies by studying several courses on core polymer science and technology subjects during their first semester. They also gain hands-on experience in polymer synthesis, characterization, processing and rheology through laboratory sessions. The laboratories of the Centre house state-of-the-art instruments and facilities for the students to learn from during their practical classes and to conduct research. The students of the Centre are therefore well equipped with the theoretical knowledge and hands-on training in key areas of polymer science and technology. The Centre's students are also engaged in cutting-edge research work in various polymer-related areas such as polymer synthesis, polymer composites, polymer processing and rheology, polymer degradation, polymer-soil interactions etc. Some students have also been selected for prestigious international student-exchange programs to work in reputed foreign institutes for short duration. Overall, our students possess the necessary knowledge, skills and training in polymer science and technology to be able to add considerable value to the organization that they will join after graduating. On behalf of the Centre for Sustainable Polymers, I invite the prospective recruiters to visit IIT Guwahati and participate in the on-campus placement process for the students of the Centre.

PROGRAMMES OFFERED

Postgraduate Programme

The Master of Science by Research (MS(R)) degree course with specialization in "Polymer Science and Technology",which is a inter-disciplinary Programme which was started in 2022. Candidates were selected through GATE (Graduate Aptitude Test in Engineering) from various Engineering Fields. The masters degree courses follow a four-semester system. In the first semester, the postgraduate students are exposed to advanced common courses of Polymer Science and Technology as well as specialization related courses. In the second Semester, students are exposed to different electives ,audit courses & Thesis work. The curriculum involves one and half year of thesis work (semesters II, III and IV) which includes fundamental and applied research.

LINKS : https://www.iitg.ac.in/acad/academic_prog.php#Master , https://www.cfsuspol.com/academics/msr/ , https://drive.google.com/file/d/1MdHshk8MOs7_gd4EbC5PUfyAriryGLhR/view

Doctoral Degree Programme

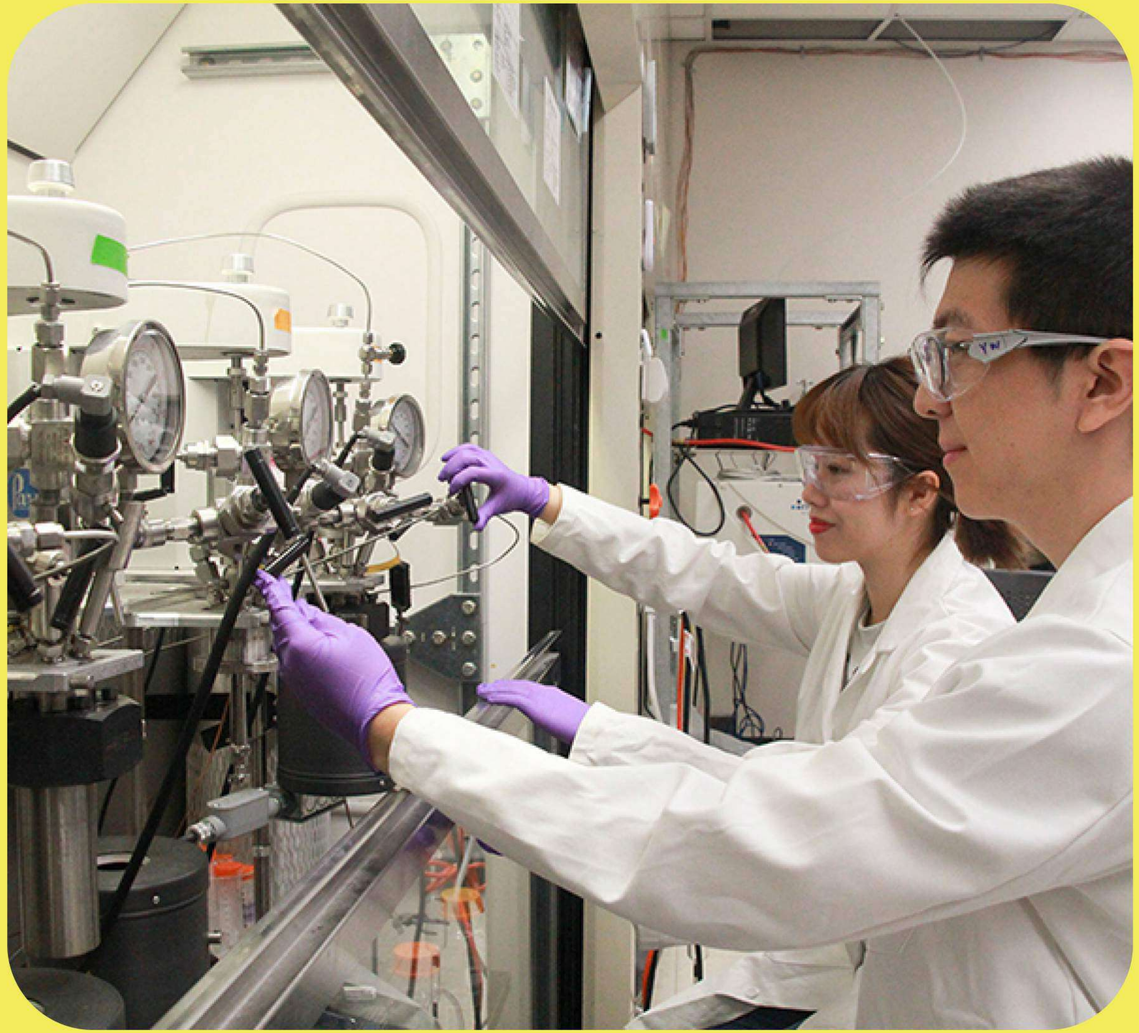
The doctoral Programme requires a minimum necessity of taking four course work in the first two semesters. After the completion of course work, the doctoral students have to appear for the Ph.D. comprehensive examination. The research scholar is further allowed to carry out his/ her research work after successful completion of the Ph.D. comprehensive examination. The maximum duration for the doctoral Programme is about five years.

LINK : https://www.iitg.ac.in/acad/academic_prog.php#Doctoral

POLYMER SCIENCE AND TECHNOLOGY (PG & PHD)

KEY COURSES

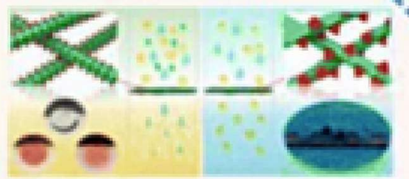
- Introduction to Sustainable Polymers
- Polymer Processing and Rheology
- Polymer Synthesis and Characterization
- Polymer Processing and Rheology Laboratory
- Polymer Synthesis and Characterization Laboratory
- Smart Materials
- Water Resources Management
- Colloid and Interface Science
- Molecular Simulation
- Multi-scale Modelling and Simulation
- Solid Waste Management
- Solid and Hazardous Waste
- Material Science and Technology
- Research Methodology & Scientific Writing
- Characterization of Materials
- Polymer Science & Technology



Applications of Biodegradable Polymers

Fresh-keeping membrane

Oil-water separation



Nanogenerator

Packaging

Agricultural Mulch

a Electronics

b Environmental protection

c Tissue engineering

d Drug delivery

Aliphatic polyesters

Natural macromolecules

e Cellulose

f Chitin

g Lignin

Others

- **Biomass transformation**
- **Functional materials**

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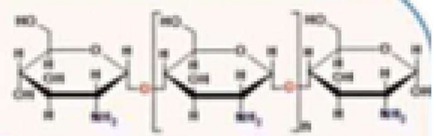
Lithium Metal Batteries

Biomass transformation e.g. Chitosan



Cardiac surgery

Water treatment

Bone tissue

Blood vessel

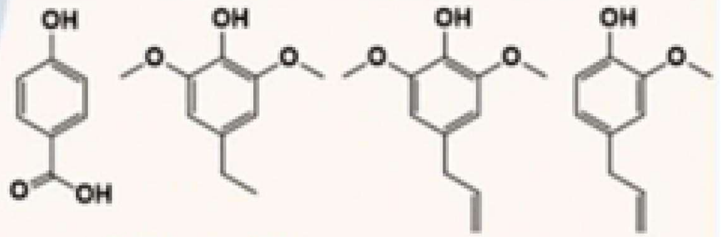
Stent-covering

Cartilage regeneration

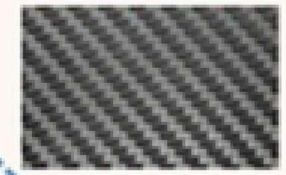
Drug loading

Surgical suture

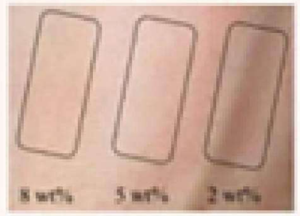
Biomass transformation



Carbon fiber



Sunscreen



- **Biomedical application**
- **Bio-based flame retardant**

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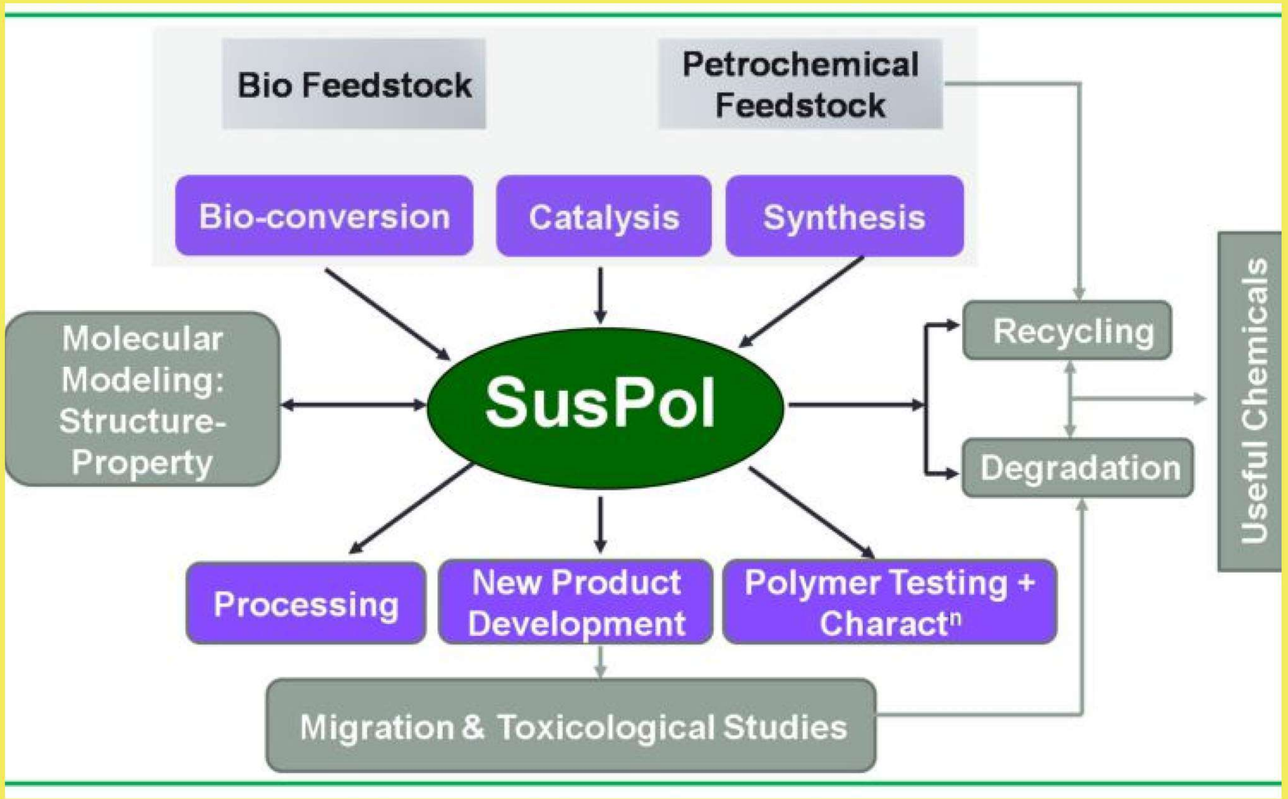
CURRENT DEVELOPMENTS

- Biodegradable Polymer Development
- Catalyst Development
- Biomass Conversion to useful Chemicals
- Biopolymer Processing
- Biopolymer Nanocomposites
- Biopolymer Degradation
- Polymer Recycling
- Toxicological Studies
- Process Control
- Process Intensification
- Process Optimization
- IPR & Coordination
- Recycling Studies on Petrochemical and bio-based Polymers
- Scale-up Process Development for Industries



NEWS PUBLICATIONS ABOUT CENTRE

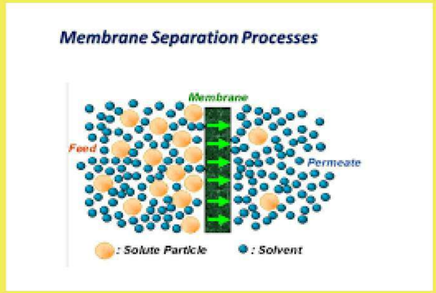
IIT Guwahati To Set-Up Centre Of Excellence For Sustainable Materials

IIT Guwahati researchers develop edible coating to extend fruits and vegetables' shelf life

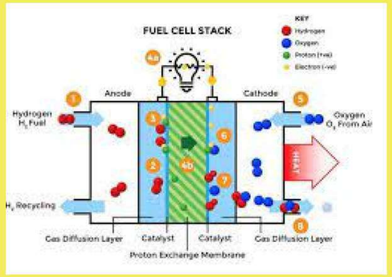
IIT Guwahati builds facility to make biodegradable plastic utensils

KEY RESEARCH AREAS

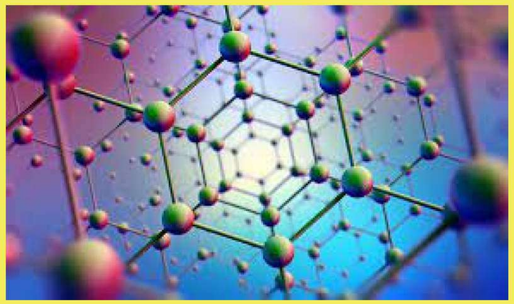
BIODEGRADATION KINETICS
STUDY OF BIOPOLYMERS



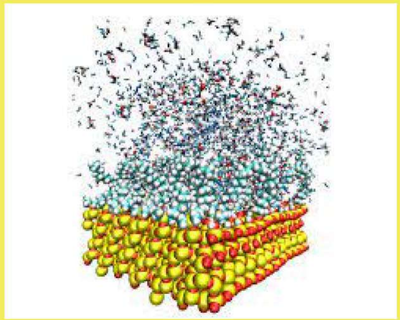
MEMBRANE AND SEPARATION PROCES



FUEL AND SOLAR CELLS

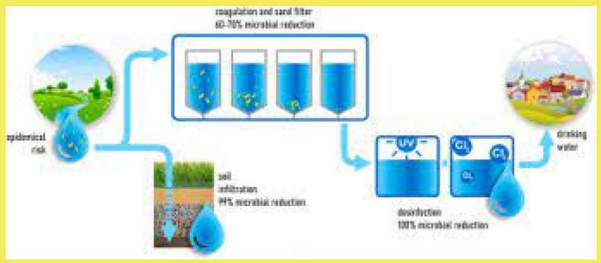


NANOMATERIALS



MOLECULAR SIMULATIONS

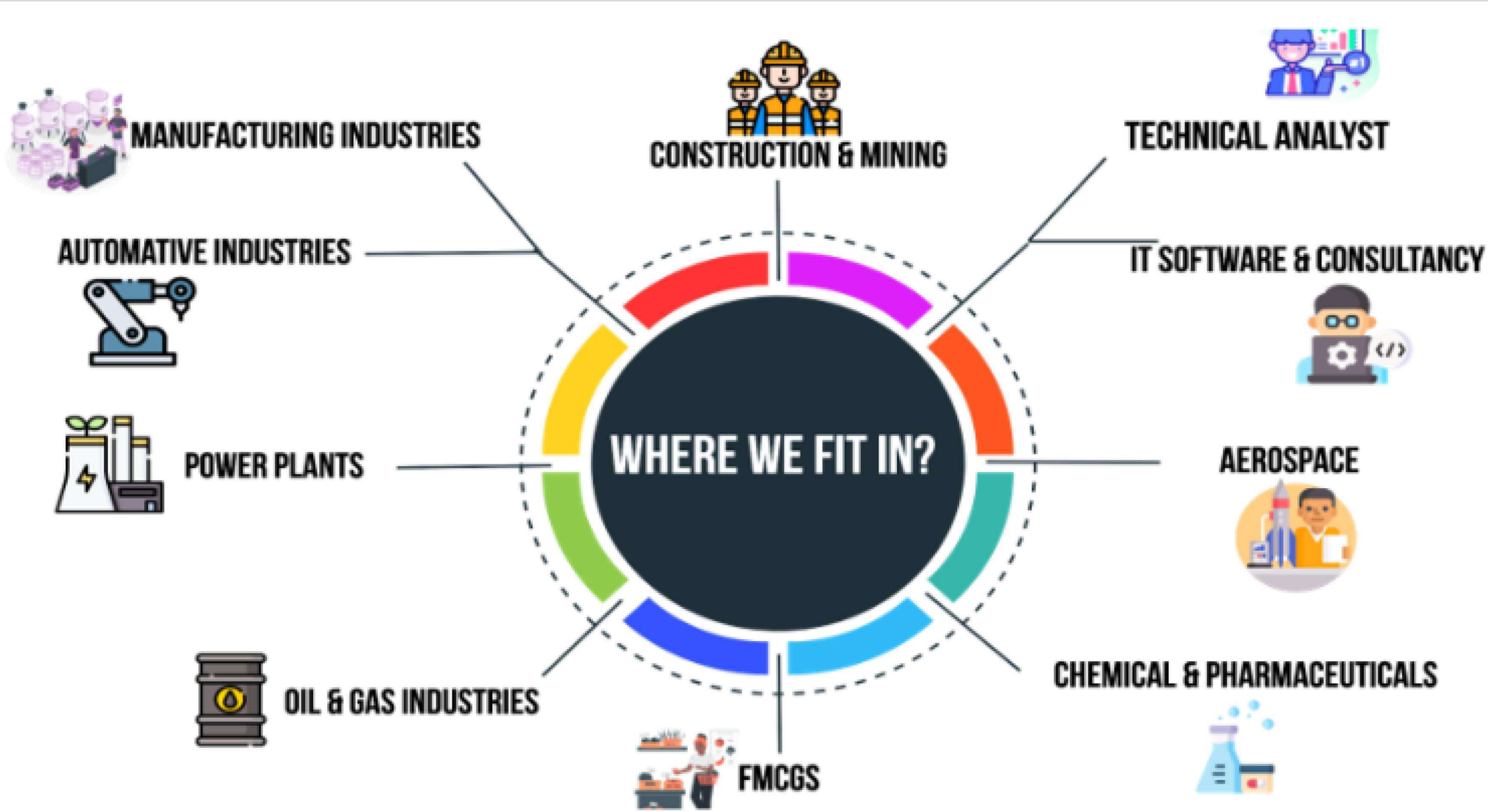
FOOD SCIENCES AND TECHNOLOGY



WATER TREATMENT

POLYMER SCIENCE AND TECHNOLOGY

WASTE MANAGEMENT


MANUFACTURING INDUSTRIES
CONSTRUCTION & MINING
TECHNICAL ANALYST
AUTOMATIVE INDUSTRIES
IT SOFTWARE & CONSULTANCY
WHERE WE FIT IN?
POWER PLANTS
AEROSPACE
OIL & GAS INDUSTRIES
CHEMICAL & PHARMACEUTICALS
FMCGS

RESEARCH LABORATORIES

1. Polymer Processing Laboratory

Twin Screw Extruder

Injection Moulding Machine

Mini Twin Screw Extruder

2. Wet Laboratory ,Composting & Fermentation Laboratory

Multi - Channel Reactor

Compost Simulation Setup

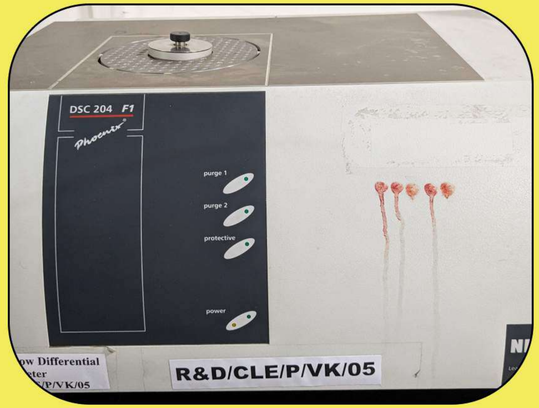
Fermentation Lab

3. Analytical Laboratory

Gel Permeation Chromatography

Magneto Rheometer

ICPMS



Differential Scanning Calorimetry

UV Visible Spectrophotometer

Nanofiber Spinning Unit

HPLC

4. NRL-COE SUSMAT Translation Facility

Biodegradable Glass Production Facility

Biodegradable Carry Bag Production Facility

Biodegradable Film Production Facility

Biodegradable Polymer Synthesis and Production Facility

Injection Moulding Facility

NIKHIL PATRO

BACHELOR : CIVIL ENGINEERING

AREA OF RESEARCH : DEGRADATION & STRENGTH CHARACTERISTICS STUDY OF SOIL-BIOPOLYMER COMPOSITE

ABHINAV BORAH

BACHELOR: BIOTECHNOLOGY ENGINEERING

AREA OF RESEARCH: DEGRADATION STUDY OF PLA IN SOIL AND COMPOSTING CONDITIONS WITH SPECIAL EMPHASIS ON MICROBIAL DEGRADATION AND DEGRADATION KINETICS

ARJUN SATEESH

BACHELOR: RUBBER AND PLASTICS TECHNOLOGY

AREA OF RESEARCH: POLYMER PROCESSING, STRAIN SENSORS FOR ENERGY APPLICATIONS

GUNJAN KUMAR

BACHELOR: ELECTRONICS AND COMMUNICATION ENGINEERING

AREA OF RESEARCH: MOSFET BASED SENSOR USING PANI/PVA BASED HYDROGEL

PUJA KUMARI

BACHELOR: CHEMICAL ENGINEERING

AREA OF RESEARCH: SYNTHESIS, CHARACTERIZATION AND POLYMERIZATION OF 2, 5-FURANDICARBOXYLIC ACID INTO POLYETHYLENE FURANOATE (PEF)

RAM PRASANTH S

BACHELOR: RUBBER AND PLASTICS TECHNOLOGY

AREA OF RESEARCH: SYNTHESIS, MODIFICATION AND CHARACTERIZATION OF RUBBER ELECTROLYTES

SIDDHANTA BISHI

BACHELOR : CIVIL ENGINEERING

AREA OF RESEARCH : MICROPLASTIC IDENTIFICATION AND REMOVAL ON RIVER BHARALU IN GUWAHATI CITY

VIRAJ NAGARIYA

BACHELOR: BIOTECHNOLOGY ENGINEERING

AREA OF RESEARCH: STUDIES OF COLOR MIGRATION OF DIFFERENT COLORED POLYMERS IN FOOD STIMULANT FOR THE FINAL MARKETABLE PRODUCTS

ACTIVITIES

Indo-Japan Bilateral Symposium

- The Centre for Sustainable Polymers & Dept. of Biosciences & Bioengineering at IIT Guwahati organized Indo-Japan Bilateral Symposium on Technologies for Bio Economic Development of NER.
- Academic sessions were focused on biomass utilization in particular bamboo resources of NER. Japanese delegation, Gifu University, companies and government agencies participated in this symposium.
- As a part of this, several distinguished eminent speakers shared their research and wisdom. It gave a brilliant opportunity for our students to listen to such luminaries and learn from them.

Taiwan-India 2022 Exchange Workshop & Symposium

- The Centre for Sustainable Polymers at IIT Guwahati organized Taiwan-India 2022 Exchange workshop & symposium on Intensifying the connection of Sustainable Technology.
- Several Keynote speakers shared their research & wisdom on Sustainable Technology.
- "Biopolymer based cultivation of Mushroom, Shelf-Life Enhancement of Vegetables(Tomato, Capsicum,Cucumber), fruits(Strawberry, Khashi Mandarin) & Residual utilization as biofertilizer & green Compost was one of the projects from the centre entitled in the Training Program.

Inauguration of Translation Facility on Bioplastics

- Numaligarh Refinery Limited (NRL) Centre of Excellence for Sustainable Materials Translation Facility on Bioplastics was inaugurated by Shri. Gulab Chand Kataria , The honorable Governor of Assam ,India in presence of Prof.P.K.Iyer , Officiating Director , IIT Guwahati on 20 May 2023.
- The newly established translational facility houses the first biodegradable plastic production pilot plant along with several processing facilities for various biodegradable plastic products like compostable cutlery, carry bags, plastic containers, and glasses, among others, using customised film packaging line, injection molding, cast sheet line and Thermoforming products line.

CONTACT US

We are looking forward to have you on our Campus.

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