Placement Brochure' 15-16

# Chemical Science & Technology

Indian Institute OfTechnology
Guwahati

# Message from HOD

It gives me immense pleasure to introduce you to the 5th Batch of students graduating in B.Tech from our department Chemical Science and Technology. This young branch which provides a perfect blend of Research in Chemistry and Engineering courses is one of a kind. With an aim of producing industry ready engineers, it imparts knowledge in all domains of theoretical and practical chemistry.

Our research labs are fully equipped and the department takes full care to keep it up to date with the latest state-of the art equipment and facilities.

The freedom and liberty imparted by the institution allows students to take up minor courses in various other departments like Computer Science and Engineering, Chemical Engineering & Electrical & Electronics, helping them to acquire diverse competencies.

Further I take the honor to state that many of our students have completed their internships in research universities, industries, financial and IT institutions both in India and abroad.

The rich culture of Indian Institute of Technology, Guwahati equips its students with excellent drive & managerial skills by allowing them to take part and be the hosts of various sport, cultural and technical activities.

On behalf of the department, I take great pleasure in inviting you to participate in the placement process at the campus. I am sure our rigorous training and constant efforts by our students has prepared them to meet the professional requirements of their potential employers. With your continued efforts, I look forward to their bright future.

# The Department

Founded in 1995, the Department of Chemistry has emerg as a globally recognized leading department in basic scienc and technology, engaged in research covering all major are of Chemistry viz. Organic, Inorganic, Physical and Theoretic Chemistry.

The program of Bachelor of Technology (B.Tech.) in Chemical Science and Technology (CST) has been opened and is being pursued with the intention of creating exceptional undergraduate students trained with the knowledge in general areas of engineering and chemistr The unique knowledge of basic science coupled with technological knowledge and technical expertise in BTech CST students is especially conductive for industries.

## Faculty

The department boasts of an expert and dedicated faculty of Professors, Associates and Assistant Professors involved in varied research areas like in organic chemistry investigations related to bioorganic and organometal, lisceselective catalytic transformation, chemistry of heterocycles, polymers, computational chemistry, natural products ,chemistry of carbohydrtaes, chemistry of nanomaterials and nanotechnology and spectroscopy.

The department also collaborates with corporate institutions pursued with intention of creating exceptional undergraduate students trained with theoreticalknowledge in general areas of engineering and chemistry . The unique knowledge of basic science coupled with technological knowledge and technical expertise in BTech CST students is especially conductive for industries.

# Programs Offered

## B.tech in Chemical Science & Technology

- The program is first of its kind
- Strong background in engineering disciplines
- Extensive courses in theoretical and applied chemistry
- Intensive training in laboratory work and skills
- Targeted industry tailored interdisciplinary courses

## Ph. D in Chemistry

The doctoral program in chemisrty focuses on extensive training in research that is wholly relevant to the advances being made in science and technology. All PhD students publish results related to their thesis work in International Journals and Conferences.

# Courses Offered

## Theoretical Chemistry & Chemical Engg.

- Organic Chemistry
- Inorganic Chemistry
- Physical Chemistry
- Quantum Chemistry
- Chemical Processes and Calculations
- Fluid Mechanics
- Heat & Mass Transfer
- Spectroscopic Techniques in Chemistry
- Chemical Kinetics & Electrochemistry
- Thermodynamics & Phase Equilibrium

## Offered Elective Courses

- Colloids and Interfacial Engineering
- Medicinal Chemistry
- Drug Design and Development
- Group Theory and Spectroscopy
- Nanoscale Science and Technology
- Statistical Mechanics
- Organometallic Chemistry
- Biological Chemistry of Metal Ions

## Laboratory Courses

- Chemical Technology lab on Organic Synthesis
  - Identification Of Organic Compounds
  - Preparation & Estimation
  - Separation Technique
  - Characterization Of Compounds
- Chemical Technology lab on Inorganic Materials
  - Electro- Inorganic Synthesis
  - Photo Synthesis
  - Nano Material Synthesis
- Chemical Technology lab on Analytical Chemistry and instrumentation
  - Kinetics & Thermodynamics
  - Physical properties like Surface Tension, CMC, EMF
- Others
  - Micro Fluids, Surface & Interfacial Chemistry
  - Solubility Product

# Courses Offered

## Interdisciplinary Courses

- Applied Organic Chemistry
- Petroleum and Petrochemicals
- Polymer Chemistry
- Industrial Chemistry
- Environmental Chemistry

## Mathematics & Computation Courses

- Computational Chemistry & Quantum Simulations
- Computational Physics
- Programming in C & FORTRAN
- DiVerential and Integral Calculus
- Real & Complex Analysis

## Chemical Engineering Minor Courses

- Introduction to Transport Phenomena
- Thermodynamics and Heat Transfer
- Mass Transfer Operations
- Chemical Reaction Engineering
- Process Engineering

# Research

The Department of Chemistry is involved in cutting edge research in various fields of chemistry such as inorganic chemistry, newer reagents and methodologies, investigations related to bioinorganic and organometallics, synthetic and mechanistic aspects of inorganic and organic transformations, selective catalytic transformations, structure and property novel polymers, synthesis of natural products, chemistry of heterocyclic, carbohydrates, peptides, nucleic acids. Some of the ongoing projects Ph.D. students are involved in are:

- "Coordination and supramolecular chemistry of aromatic N-oxides"
- "Newer Synthetic Methodologies in Carbohydrate Chemistry and Facile Access to N-Heterocyclic Using Multicomponent Reactions"
- "Study of Intramolecular C-N, C-O and C-S Cross-Coupling Reactions and Application of Self-Assembled Chiral Copper(II) Complexes for Asymmetric Acylation Reaction"

## Sponsored Projects:

With over 30 ongoing projects sponsored by major organizations, institutions and agencies like CSIR, DST, BRNS, DRDO, SERB, DAE, CDRI and Alexander von Hemboldt Foundation Germany, the department has churned out over 130 publications last year alone in almost all major journals of the world. Some of our ongoing projects include:

- Development of Antimalarial and Anti-Tuberculosis Drugs
- Synthesis and Characterization of Efficient Molecular Materials for Organic Light Emitting Diodes
- Total Syntheses of Three Potential Anticancer Natural Products and Their Unnatural Derivatives
- Synthesis of Sensitizers for Dye Sensitized Solar Cell
- Design and synthesis of PDLCs for the Application in Organic Electronics

# Projects & Internships

The students both from B.Tech CST and MSc Chemistry usually undergo a summer internship of 10-12 weeks in their penultimate year in reputed industries and academic institutions in India and abroad. These projects help the students to gain exposure and give them the perfect platform to enter the professional world.

## Projects

"Designing pressure relief devices working AFT Fathom, HTRI, Microstation"- DuPoint
"Study the properties of P3HT polymer "-University of South Carolina
"Study of synthesis and application of Perylene analogues in Organic Optoelectronic devices"-University Of Texas
"Synthesis, Characterization & Extrusion of Zinc -Ferrite based Spinels"-Reliance
"Diesel Hydrogenation De Sulphuration "-HPCL
"Study analyze and suggest the design specification and parameters for central distillation unit"-ONGC
"Soap-Aluminium Induced Modulation of Fluorescence Response to Pyrene"-HUL
"New pharma API intermediate products for drugs reaching patent cliVs" - Sigma Aldrich Corp.
"Separation and qualitative and quantitative analysis of Hot-Melt adhesives"- Pidilite Industries

## Industrial Internships

- ONGC
- Asian Paints
- Dr.Reddy's
- Cipla
- IOCL
- Symbiotech Pharmacy
- DuPONT
- Unibiotech Formulation
- SHELL
- GE Health Care
- TATA Chemicals
- I-TEN Corporation
- ITC Ltd.
- Pidilite Industries
- Hindustan Unilever
- HPCl
- BPCL
- Cumulogic Inc.
- Tata Advinus
- Reliance Industries
- SAIL
- Coulourtex
- Sigma-Aldrich Corp.

# Sophisticated Instrument Facility

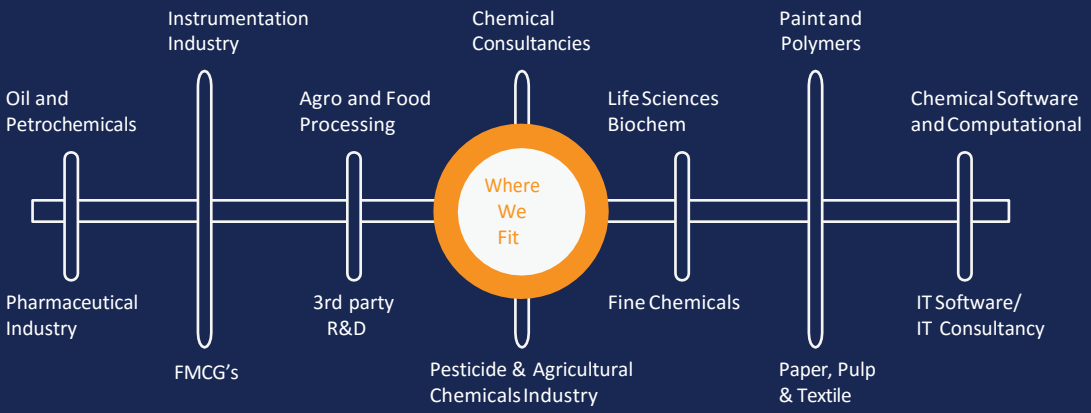
- Single Crystal X-Ray
- Differential Scanning Calorimeter (DSC)
- Thermo gravimetric Analyzer (TGA)
- Electrochemical Analyzer
- Elemental Analyzer
Gas Chromatograph
GC-Mass
- High Pressure Liquid Chromatograph
- Med. Pressure Liquid Chromatograph
Polarimeter
- X-Ray / Crystallograph

- FT-IR UV-Vis
Multinuclear NMR
- Fluorimeter
- Fluorocuve
- SEM
- TEM
- TOF Mass Analyzer
- FTIR Spectrophotometer
- Microwave Reactor
- High Speed temperature controlled centrifuge
- Steady State Fluorescence Spectrophotometer
- Nano particle Size, Zeta Potential, Molecular weight and the measurement facility of zeta-potential of solid surface

# Job profiles

Contrary to the contemporary engineering disciplines, CST takes a step ahead with emphasis being laid industry. The curriculum is designed keeping in mind the latest technological developments and the requirements of modern chemical industries. The graduates are well equipped to foray into various challenging opportunities and perform divergent roles in various sectors such as:

- Quality Control and Production Units
- Process Control
- Industrial Consultancy
- Research and Development
- Supply Chain Management



# Contacts

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