Department of Chemical Engineering
IIT Madras

www.che.iitm.ac.in
chhead@iitm.ac.in
91-44-22574151
**Department Profile**

- **30** Faculty Members
- **~170** Graduate Students
- **~10** Post-Graduates/Doctorates
- **~ ₹25 Crores** Research Funding
- **2** INAE Fellows
- **6** Editor/Editorial Board
- **51-100** QS World Ranking

**Total No. of Degrees awarded from 2012-2017**

<table>
<thead>
<tr>
<th>Year</th>
<th>M.Tech</th>
<th>Dual Degree</th>
<th>MS</th>
<th>Ph.D</th>
<th>Total</th>
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<td><strong>43</strong></td>
<td><strong>56</strong></td>
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**Number of Publications**

*Based on Web of Science*

**Areas of Expertise**

- Energy & Fuel Research
- Molecular Engineering of Materials
- Computational Research
- Environment Science and Engineering
- Reaction Engineering
- Process Intensification
- Systems Engineering and Data Sciences
- Process Systems Engineering

**Department Core Activities**

- Fundamental / Applied Research
- Industrial Collaboration
- Technology Development
- Incubate Companies
- NPTEL
- National Committees
- International Collaborations
- Service to Profession – Editorship, Review of Articles

**Department Outreach**

- National Committees
- International Collaborations
- Incubate Companies
- NPTEL
- Service to Profession – Editorship, Review of Articles
Research in the Department

Broad areas
- Energy, Environment, Materials, and Systems

Major paradigms
- Nano-, Bio-, and Big data

Scale
- From quantum to ecological systems

Interdisciplinary research
- Combustion, Biological systems engineering, Catalysis, and Soft matter

Future Growth Areas

Energy
- Thermochemical processing; Unconventional energy sources; Carbon capture and sequestration; Electrochemical energy systems; Process intensification; Process Safety; Computational Catalysis.

Environment
- Aerosol fate and transport; Modeling and remediation/restoration of environmental and ecological systems; Environmental sensors.

Materials
- Synthesis and characterization of functional materials; fabrication and testing of energy and display devices; non-equilibrium statistical mechanics; multi-scale modeling.

Systems Biology
- Bioinformatics; Modeling of disease inception, growth and treatment; Biological network analysis.

Research Publications & Patents

- Total No. of Publications: 585
- Patents Filed / Granted: 16
- Conference Presentation: India 207, Abroad 123
- Books: 10

Recent Industrial Tie-ups

- BASF India
- Dr. Reddy’s
- JSW Steel
- SAIL
- Aditya Birla
- Ashok Leyland
- Vizag Steel
- BHEL
- Nissan
- HUL
- GE
- Applied Materials
- ABB
- Shell
- GAIL
- BARC

Current International Collaborations

- UK
  - University of Hull

- Germany
  - Jülich Research Centre, Max Planck Institutes, Ruhr University Bochum, Freie University Berlin

- Luxembourg
  - University of Luxembourg

- Italy
  - Politecnico di Milano

- Korea
  - Korea Advanced Institute of Science Technology

- US
  - Clarkson University, University of Rhode Island, Michigan State University*, Illinois Institute of Technology

- Ireland
  - Dublin City University

- Egypt
  - National Research Centre

* IITM recently signed a joint doctorate programme with MSU

Process Control book written by Prof. M. Chidambaram translated to Chinese.
Hands-on experience for learning

Working together

Communicating ideas

State-of-the-art facilities

Electron microscopy

Indian Institute of Technology Madras
Chennai-600036, Tamil Nadu, India

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