

The R&D Vision

Global warming is a threat to human prosperity and has been intensively discussed worldwide. Regulations are needed to prevent problems, as well as drastic social change to create a low-carbon sustainable society that balances environmental protection with economic growth. Further technological innovation is essential for solving the issues and building a sustainable society. By analyzing societal impacts, IChE defined the following short and long-term R&D visions to be achieved by 2030:

The development of technologies for a low-carbon society

- 1) With sustainable growth – the creation of technologies for societal needs
- 2) Revolution in product development

To counter the depletion of resources and global warming, new energies and environmental conservation systems are being developed. IChE will help to build a low-carbon society through the technology innovation for environmental preservation, energy conservation and optimizing plant operation.

Focused R&D strategy

To realize our R&D vision by 2030, IChE defined core R&D domains for strategic technologies. The fusion of technological fields beyond borders and the strategic utilization of those fields are essential to create higher value-added products and solutions. We have selected the following fields: -

- Nanotechnology
- Micro-reactor
- Bio-refinery
- CO₂ capture and sequestration
- Conversion of CO₂ to useful chemicals
- Artificial intelligence in chemical processes

Any other relevant/innovative field recommended by the R&D committee and approved by council.

The Institute is recognized by the Department of Science and Technology, Government of India as a Scientific and Industrial Research Organization (SIRO). Some of the major R&D projects sponsored by the Institute completed in recent times include:

- Supercritical fluid extraction of natural products from various plant residues.
- Studies in the Problems and Prospects of Indian Fertilizer Industry.
- Parametric optimization and control of semi batch reactor for sulphonation process.
- Hydrodynamics of tapered bubble column.

- Green route synthesis of cadmium sulfide quantum dots.
- Treatment of coke oven waste water using hybrid technology.
- Removal of Toluene by isolated Microbes from Municipal Sewage Water using Nanoparticles Coated Membrane Reactor.
- Production of Biodiesel from Municipal Sewage Sludge By Transesterification Process.
- Modelling and Experimental Studies on Microwave and Ultrasound Assisted Extraction of Shikimic Acid from Arjuna Seeds.
- Microwave Assisted Polymerization of Lactic Acid and Poly Lactic Acid Nanocomposites.

List of on-going Sponsored Research Project by IChE:

- **Development of economically viable peeling and dissolution process for active cathode of the lithium-iron batteries.**
PI: Dr Ravi Methekar, Visvesvaraya National Institute of Technology, Nagpur
- **Development of an Economic Appliance for household Waste Disposal.**
PI: Dr Madhusree Kundu, National Institute of Technology, Rourkela
- **Design and Development of MnO₂- Nitrogen Doped Biomass based Graphene- PEDOT electrode materials for electrochemical energy storage Application.**
PI: Dr R Saravaanathamizhan. Anna University, Chennai