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, IIChE 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. IIChE 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, IIChE 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 afield 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 sulphanolitication 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 IICChE:

- **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