

Department of Centre For Research and Development

1. About the Department:

Centre for research and development is a centralized department formed with various department faculties focuses on advancing knowledge, developing new technologies, products, and solutions, and improving existing ones. CFRD is crucial hubs of innovation that enable organizations to stay at the forefront of technological and scientific advancements, ensuring long-term sustainability, economic growth, and societal benefits.

Industry Collaboration: The department signed MoU with leading Institutions and Industries; such as, University of Johannesburg, South Africa, M. G University, Kottayam, Pushpagiri Research Centre, Kerala, Green collar Agritech Solutions Private Limited, Coimbatore, Havnoz Biomoluxe Private Limited, Kerala.

Thrust Areas: Wireless Sensor Network, IoT, Nanomaterials and its Applications, Chromo Fluorogenic Sensors, Carbon-based Nanostructures, smart wearable technology devices, piezoelectric sensors, Additive Manufacturing, Composite Materials, Photocatalyst, Electrocatalyst, Fuel Cells & Thermoelectric. Molecular Quantum Mechanics, Computational Biophysics, Bioinformatics, Computer Aided Drug Design, Computer Vision, Artificial Intelligence, Wireless Sensor Networks, Fixture Design, Friction Stir Welding, Marine Biomaterials, Bio-ceramics, metal oxide thin films, transparent electrode, oxide thin film transistor, Dye/semiconductor-sensitized solar cells, photo/electrochemical water splitting.

2. Facilities Available for Industry Collaboration

Centre for Advanced Material Characterization: XRD (X- Ray Diffractometer), UV - Vis Spectroscopy, Centrifuge, Sonicator.

Nanomaterials Synthesis and Simulation Lab: Electrochemical workstation, Fluorescence spectroscopy, Fourier transform Infrared Spectroscopy (FTIR), Workstation.

3. Consultancy Services

Consultancy Areas: The Centre provide the consultancy services in the areas of Materials Science, Nano Science, Wireless sensor network, Chromo Fluorogenic Sensors, Carbon-based Nanostructures etc.

- **Department of Physics:**

- Areas: Photocatalyst, Electrocatalyst, Fuel Cells & Thermoelectrics, metal oxide thin films, transparent electrode, oxide thin film transistor, Semiconductor, Computer Aided Drug Design.

- **Department of Chemistry:**

- Areas: Nanomaterials and its Applications, Chromo Fluorogenic Sensors, Carbon-based Nanostructures, Marine Biomaterials, Bio-ceramics.

- **Department of Mechanical Engineering:**

- Areas: Smart wearable technology devices, piezoelectric sensors, Additive Manufacturing, Composite Materials

Industry Institute Partnership Cell

KPR Institute of Engineering and Technology



- **Department of EEE and ECE:**

- Areas: Wireless Sensor Network, IoT, Computer Vision, Artificial Intelligence, Machine Learning.

4. Testing Services

Description: The Centre provides various testing facilities.

Department of Mechanical Engineering:

- 3D-Printing,

Department of Chemistry:

- FTIR, Electrochemical workstation, Centrifuge.

Department of Physics:

- XRD, UV- Visible Spectrometer, Workstation

5. Executive Development Programs

CFRD organized a one-day Executive Development Program for Students, Faculty and Industrial Professionals.

Programs Offered: Hands-on Experience in System Modeling and Simulation for Performance Evaluation of Networks

Duration: 1-day **Topics:** IoT

6. Research and Development Collaborations

Research Focus Areas: Photocatalyst, Electrocatalyst, Fuel Cells & Thermoelectrics, metal oxide thin films, transparent electrode, oxide thin film transistor, Semiconductor, Chromo Fluorogenic Sensors, Carbon-based Nanostructures, Marine Biomaterials, Bio-ceramics, Smart wearable technology devices, piezoelectric sensors, Additive Manufacturing, Composite Materials

Collaboration Opportunities: Collaboration between academic institutions and industry has become increasingly important in driving innovation, addressing real-world challenges, and bridging the gap between theoretical research and practical application. The Centre ready to collaborate with industries in various way; such as, Joint Research Projects, Technology Transfer and Commercialization, Internships and Work Placement Programs, Industry-Sponsored Fellowships and Scholarships, Curriculum Development and Industry-Specific Training, Joint Publications and Knowledge Dissemination, Joint Workshops, Conferences, and Symposia, Access to Research Infrastructure and Facilities Etc.

7. Achievements and Success Stories

- We obtained one industry project from Green collar Agritech Solutions Private limited entitled on "Pesticide Detection and Quantification in Agri-produce for 100 pesticide molecules" - Total cost - 14,42,222.