HINDUSTAN
INSTITUTE OF TECHNOLOGY & SCIENCE
(DEEMED TO BE UNIVERSITY)

ENCON

Clean Energy and Nano Convergence

About CENCON

The Centre for Clean Energy and Nano Convergence Centre (CENCON) was established in collaboration with Quantum – Functional Semiconductor Research Centre (QSRC) of Dongguk University with an objective to promote basic and applied research in Nanotechnology. The centre was inaugurated by **His Excellency, Dr. A. P. J. Abdul Kalam, Former President of India on 6th January 2011.** The centre aims to work towards clean energy solutions incorporating the quintessence of Nanotechnology. CENCON also has collaboration with KTH Royal Institute of Technology, Sweden and Uppsala University, Sweden. CENCON offers Post Graduate (M.Tech.) Programme and Doctoral Programme (Ph.D) in Nanotechnology.

Objectives

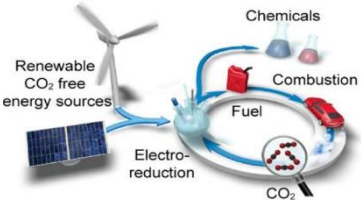
- Strengthen the Nanotechnology infrastructure and research activities at CENCON with state of art facilities for research in the area of Nano-science.
- To place the Centre as regional research hub to carry out basic & applied research.
- To attract nanotechnology expertise from India and abroad.
- To improve the quality of life through development of products.
- Facilitate staff and student exchanges and overseas visitors and scholars.

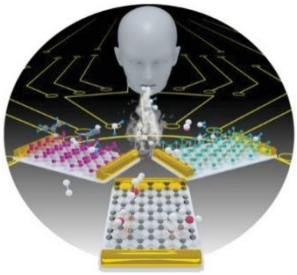
Highlights

- Research Focus – Energy harvesting and Storage materials, Computational simulations on Graphene Oxide for heavy metal removal and Photo catalysis.
- Paper publication highlighted in Nature India and reputed International journals.
- Students have the benefit of working with leading scientists from Dongguk University, Uppsala University, KTH Royal Institute of Technology, Sweden.
- Central Instrumentation Facility and Services.

Research Activities

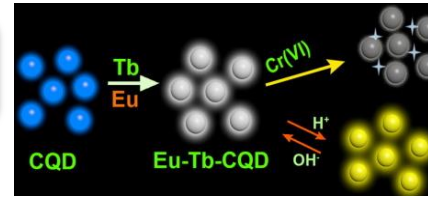
Computational simulations on photo-reduction of CO_2 for clean fuels

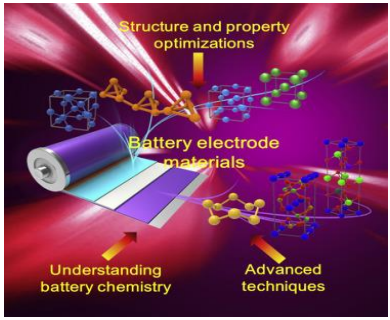




Designing Modulated Functionalized 2D nano sheets for toxic gas sensing

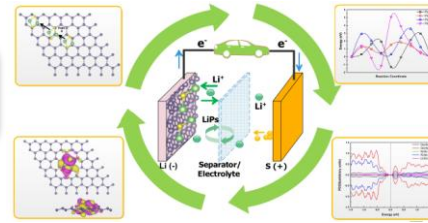
Carbon based quantum dots for heavy metal ion detection

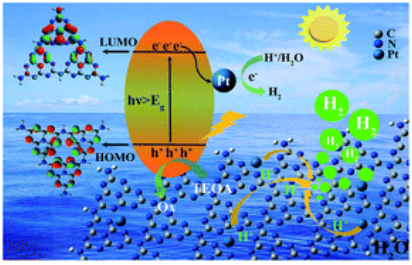




High Capacity electrode material for next generation Li- ion and Na-ion Batteries

GeM an Ideal Anchoring Material for High Performance Li-S Batteries





Graphitic Carbon Nitride for photocatalytic water splitting application

Courses Offered

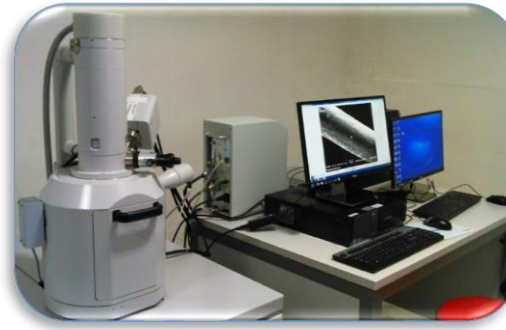
MSc. Nanoscience and Technology

Ph.D. Nanotechnology

Central Instrumentation Facility (CIF)

CIF has sophisticated equipments such as:

- Scanning Electron Microscopy (SEM) with EDS
- High Performance Computing facility (HPC)
- Battery Tester
- Electrochemical workstation
- Hall Effect Measurements
- UV – Visible Spectrophotometer
- UV – Vis – NIR Spectrofluorometer
- Thermal Vacuum Coating unit
- Chemical Vapour Deposition
- Freeze Drier
- Hydraulic Press
- Nabertherm Furnace (upto 1200 ^{o}C)
- Spin coater



SEM with EDS

Funded Projects

- **Carbon-Based Materials with High Antibacterial Activity for Face Mask Application to combat COVID 19** - TARE, SERB – Dr. K. Srimathi - Rs.18,30,000 (2021-2024).

- **Sn integrated 3D, porous carbon based scaffolds as high capacity anode for Sodium-ion batteries** – Dr. R. Veena, TARE, SERB – Rs.18,30,000 (2018-2022)

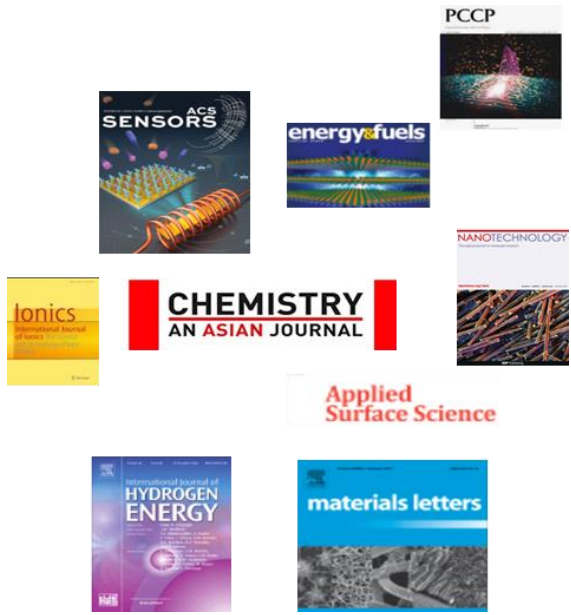
- **Edge Saturated Si_2BN Nano-ribbon as High –Capacity Anode Materials For Next Generation Mg-ion Batteries** - Dr. Puspamitra Panigrahi, TARE, SERB – Rs.18,30,000 (2018-2022)

- **Development of a Photoelectrochemical Cell (PEC) using Si based (In)GaN Nanowires for Hydrogen production by Splitting of Water under Visible Light –**NPDF, SERB – Dr. R. Loganathan - Rs. 18,70,000 (2016 - 18)

- **Enhancement of Photovoltaic efficiency by down conversion phosphors for underwater solar panels towards naval applications** – Navel Research Board (NRB), DRDO - Dr. Puspamitra - Rs. 24,46,280 (2013 – 18)

Journal Publications

Paper published in International Journals like Scientific Reports, Nanoscale, Physical Chemistry and Chemical Physics, IOP- Nanotechnology, Euro physics Letters, Journal of physics: Condensed Matter, Journal of Material Science.



International Collaboration

Dongguk University
South Korea

Royal Institute of Technology (KTH)
Sweden

Uppsala University
Sweden

Michigan Technological University USA

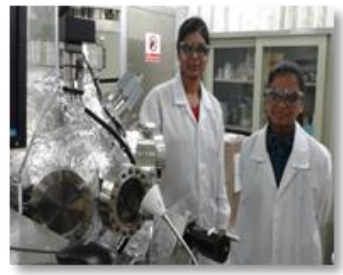
The University of Queensland Australia

Konkuk University SouthKorea

University of New England Australia

Staff Exchange Programme

Under National Research Fellowship (NRF) - South Korea, Dr. Puspamitra Panigrahi, Dr. R. Veena, Dr. K. Srimathi, Ms. D. Padma Sheeba had visited to QSRC, Dongguk University, South Korea.



Advisory Committee Members

Dr. Anand Jacob Verghese
Chancellor, HITS

Dr. S.N. Sridhara
Vice Chancellor, HITS

Mr. Ashok Verghese
Pro Chancellor, HITS

Prof. Borje Johansson
Royal Institute of Tech
Sweden

Prof. Tae Won Kang
Director – QSRC
Dongguk University, Korea

Prof. Rajeev Ahuja
Director, IIT Ropar

Dr. John V Kennedy
Principal Scientist
Adv. Materials & Nano
GNS Science
New Zealand

Prof. Ajayan Vinu
Global Innovation Chair for
Nanomaterials & Director
New castle University
Australia

Prof. Ravi Pandey
Professor & Chair
Michigan Tech University
USA

Dr. Ajit Kulkarni
Institute Chair Professor
Metallurgy Engineering
IIT Bombay

Dr. N. Ganapathi Subramaniam
Research Advisor
CENCON, HITS

Dr. S. Senthilkumaar
Prof, Dept. of Chemistry
PSG College of Technology
Coimbatore

International Conference / Workshop /Seminar

- Simulation, Synthesis and Characterization of Nanomaterials for Energy and Safety Applications, 23 November 2022
- Ethical and legal challenges of Nanotechnology approaches to fight against COVID-19, 12 November 2021
- Computing in Science & Engineering: A New Paradigm, 7th Feb 2019
- International Symposium on Smart Materials, 30 – 31, October 2018
- NRB sponsored Workshop on Synthesis and Characterization of materials for Solar cell applications, 9th April 2018
- Short term course on Computation design for energy applications, 9-11, August, 2017
- International Symposium on "Recent Advances in Nanomaterials" - 20th February 2017
- HITS – Dongguk University Joint Symposium on "Technologies for Clean Energy and Environment" - 21st March 2016
- Indo-Sweden Symposium on Clean Energy (ISCES-2015), 21– 22, July 2015
- International Conference on Materials for Energy and Nano Convergence (ICMENC-2013), 4 – 6, July 2013.

SESA- 2022

ISCES- 2015

Hands on workshop

ICMENC- 2013

Workshop on Energy Nano convergence

Contact Us

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CENCON

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