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IDEA

DATA

RESEARCH

EXPERIMENT

IPR

INNOVATION

R&D NEWSLETTER

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MESSAGE FROM DIRECTOR

As we step into 2026, I extend my warm greetings to all members of the IIT Roorkee fraternity—students, faculty, staff, alumni, and our valued partners across the globe.

IIT Roorkee continues to stand at the confluence of tradition and transformation. With over a century and a half of academic excellence, our Institute remains deeply committed to advancing knowledge, fostering innovation, and nurturing leaders who contribute meaningfully to society. The past year has witnessed notable progress in cutting-edge research, interdisciplinary collaborations, startup and innovation ecosystems, and impactful outreach aligned with national and global priorities.

In 2026, our focus will be on strengthening academic rigor, promoting translational research, enhancing international engagement, and reinforcing ethical and sustainable practices across all domains. We aim to further empower our students with future-ready skills, encourage faculty-led innovations, and deepen industry and societal partnerships that translate ideas into real-world solutions.

This newsletter captures the collective efforts, achievements, and aspirations of our vibrant community. I congratulate all those who have contributed to the Institute's continued growth and reputation, and I encourage every member of IIT Roorkee to actively participate in shaping its future.

Together, let us continue to uphold the values of excellence, integrity, and service that define IIT Roorkee, and march forward with confidence, purpose, and innovation in the year ahead.
With best wishes,

Prof. K K Pant
Director
Indian Institute of Technology Roorkee

MESSAGE FROM DEAN, SRIC

It is my pleasure to extend warm New Year greetings to all members of the IIT Roorkee community and our esteemed industry, government, and research partners.

The Office of Sponsored Research and Industrial Consultancy (SRIC) plays a pivotal role in advancing the Institute's mission by promoting sponsored research, innovation-led development, and strong industry engagement. Over the past year, IIT Roorkee has seen notable growth in funded research, industry collaborations, and technology initiatives addressing key national and global challenges.

Our faculty and researchers continue to demonstrate exemplary leadership in securing competitive grants, translating fundamental research into practical solutions, and contributing to policy, standards, and societal impact. Equally encouraging is the growing participation of industry partners in joint research, consultancy, testing, and technology transfer activities, reinforcing IIT Roorkee's position as a trusted partner for innovation and problem-solving.

As we move forward, SRIC remains committed to strengthening support systems for researchers, streamlining processes, promoting interdisciplinary and translational research, and enhancing mechanisms for intellectual property creation, commercialization, and startup engagement. We also aim to further expand international collaborations and industry-academia partnerships that accelerate innovation and economic growth.

I take this opportunity to thank our faculty, students, staff, funding agencies, and industry collaborators for their continued trust and cooperation. I invite all stakeholders to actively engage with SRIC and contribute to shaping a vibrant, impactful, and globally connected research ecosystem at IIT Roorkee.

With best wishes,

Prof. Vivek Kumar Malik
Dean Sponsored Research & Industrial Consultancy
Indian Institute of Technology Roorkee

Title :

Development of biosensor for non-invasive and early-stage detection of bladder cancer using urine samples

PI :

Prof. Gopinath Packirisamy
Department of Biosciences & Bioengineering

Co PI :
Prof. Devesh Bhimsaria,
Prof. Rajesh Kumar,
Prof. Krishna Mohan Poluri

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Sponsor : Sree Padmavathi Venkateswara Foundation.

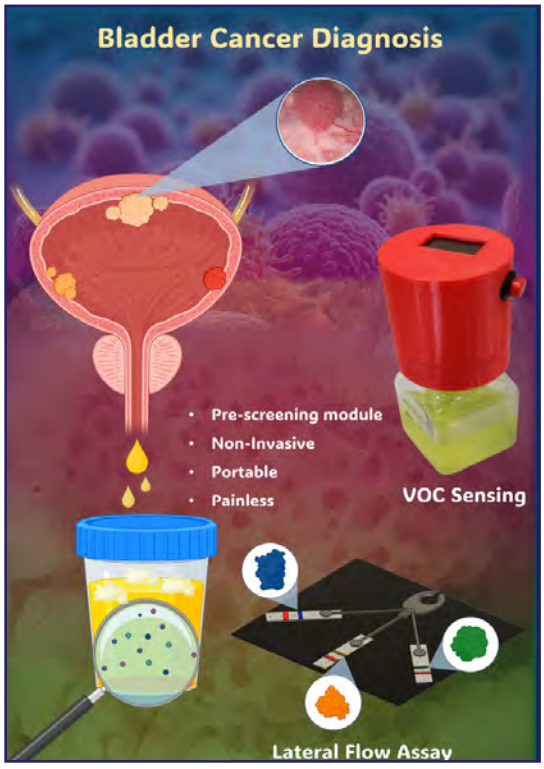
Abstract :
Bladder cancer is becoming more common and is now one of the top 11 cancers worldwide, according to the World Health Organization Cancer report. People who work with certain chemicals like those used in the dye and paint industries are at a higher risk, especially if they also smoke or have improper uro-hygiene.

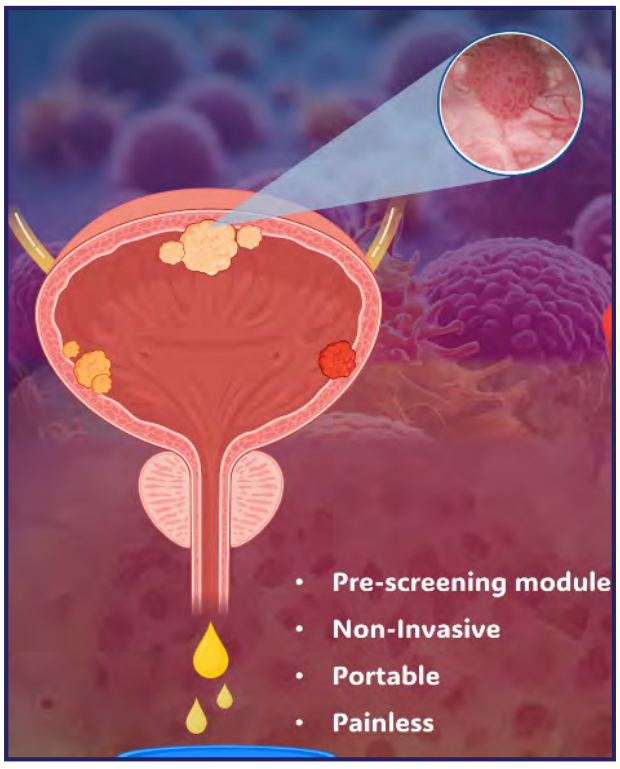
Scientists have discovered that urine from patients with bladder cancer contains specific substances, known as biomarkers, that may help to detect the disease in its preliminary stages.

This project focuses on the promising biomarkers found in urine: one is a protein-based biomarker, and the other is a group of chemicals known as Volatile Organic Compounds (VOCs). The goal of this project is to develop a simple and accurate sensing unit that can detect these substances in urine.

One will use a method similar to a home pregnancy test by the clinician, and the other will use a small sensing platform to detect the VOC chemicals.

These tools could help doctors find bladder cancer earlier, making treatment more effective and saving lives.





Title :

Development of Specifications for use of waste plastic in asphalt mixtures a major step towards building sustainable road infrastructure

PI :

Prof. Nikhil Saboo
Department of Civil Engineering

Co PI :
Prof. Praveen Kumar

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Sponsor : National Rural Infrastructure Development Agency (NRIDA)

Abstract :

This study evaluated recycled waste plastics (RWPs) for improving asphalt binders and mixtures using wet and dry modification.

Fourteen RWPs were tested in the wet process and eighteen in the dry process, covering low density polyethylene (LDPE), high density polyethylene (HDPE), polypropylene (PP), and polyethylene terephthalate (PET). LDPE, HDPE, and PP are suitable for wet modification, while all RWPs work in dry modification. A 2% dosage is recommended for wet and 8% for dry (as per IRC SP 98:2020).

Wet modification showed more uniform performance, whereas dry modification showed greater variability but similar gains in stiffness and rutting resistance.

Overall, RWP use is recommended for India's tropical conditions.

Title :

Quantification and attribution of the climate induced and human-derived variability in the past and future terrestrial water storage of the Tehri Reservoir catchment area.

PI :

Prof. Brijesh Kumar Yadav
Department of Hydrology

Co PI :
Prof. Abhishek
(Department of Civil Engineering)

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Link : https://www.iitr.ac.in/~HY/DrBrijeshYadav

Sponsor : THDCIL

Abstract :

Anthropogenic pressures and natural climate variability are reshaping hydrological systems worldwide, yet their individual impacts remain insufficiently understood.

This study examines long-term hydrological dynamics in the Tehri reservoir catchment using terrestrial water storage (TWS) as a key indicator. We assess trends, seasonal to monthly variability, and shifts in reconstructed TWS and related fluxes including precipitation, evaporation, and runoff during 1990–2020 and evaluate future projections to 2099.

Leveraging high-resolution observational, remote-sensing, reanalysis, and climate-model datasets, alongside advanced statistical techniques and a global hydrological model, we partition natural and human influences.

The findings will guide stakeholders in strengthening water-resource planning and climate-resilient management.

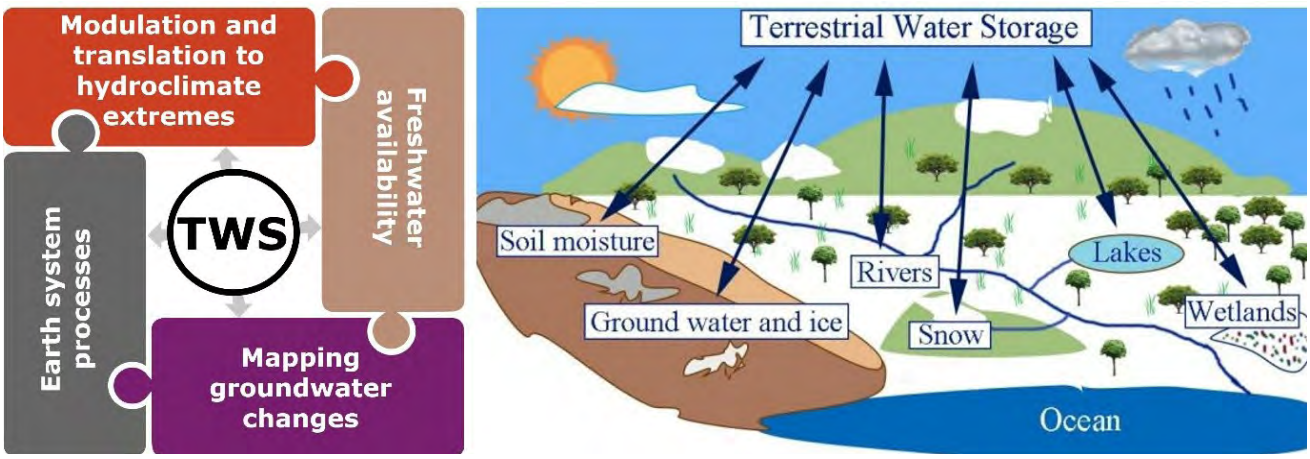

Figure 1. Schematic of the multi-sectoral role of TWS and its constituent components.

Title :

Accelerating the Acceptance of LC^3

PI :

Prof. Anjaneya Dixit
Department of Civil Engineering

Abstract :

While producing a ton of traditional ordinary Portland cement (OPC) produces one ton of CO_2, Limestone Calcined Clay Cement (LC^3) produces 40% lower CO_2 while maintaining most of the engineering properties of concrete.

The overarching aim of this project is to enhance the penetration of LC^3 in the construction sector and demonstrate it as a sustainable alternative to OPC and a commercially viable product with robust engineering applications.

This shall be done through knowledge creation towards the fire performance of LC^3 based concrete, and developing ultra-low clinker LC^3 blends for mass concreting applications, with clinker ratio as low as 25%.

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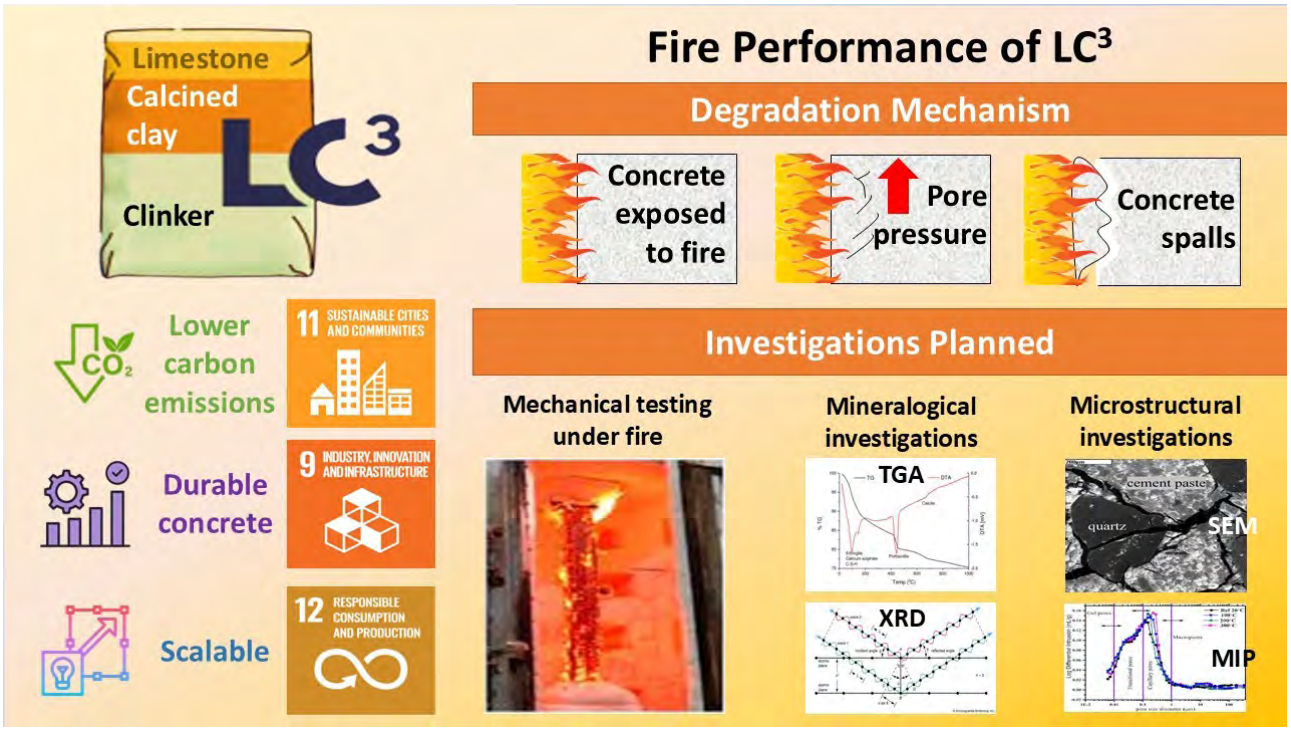
Sponsor : New Ventures Fund



Title :

Development and characterization of Nipah Virus - specific neutralizing antibodies /nanobodies and their potential therapeutic utility

PI :

Prof. Rajesh Kumar
Department of Bioscience & Bioengineering

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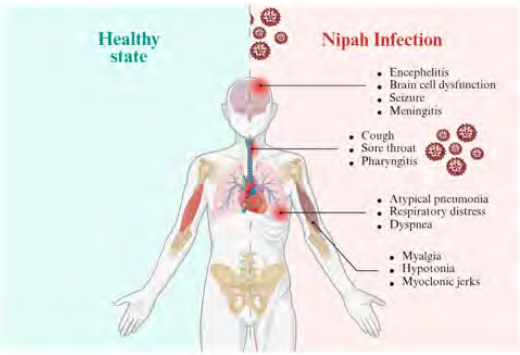
Sponsor : Ignite Life Science Foundation

Abstract :

In our study, we plan to develop antibody-based therapeutics against Niaph Virus by two independent approaches:
1) isolating human monoclonal recombinant antibodies (mAbs) using naïve human phage display antibody libraries. 2) screening of Shark and Camel nanobodies. The Fab region of mAbs binds to the virus antigens, while the Fc domain activates a range of receptors on immune cells, initiating viral clearance. However, as the infection progresses, NiV spreads systemically, affecting endothelial cells in the lungs and bloodstream, and eventually reaches the brain, kidneys, and other organs. The high molecular weight of full-length human mAbs (IgG) limits their tissue penetration. For effective tissue distribution, we are simultaneously exploring the potential of Shark and Camel nanobodies. Due to their significantly smaller (~12 kDa) size and globular shape, nanobodies rapidly infiltrate tissue cores.
The compact size of nanobodies also enables them to access buried epitopes distinctly in comparison to human mAbs.

Symptoms of Nipah Virus infection

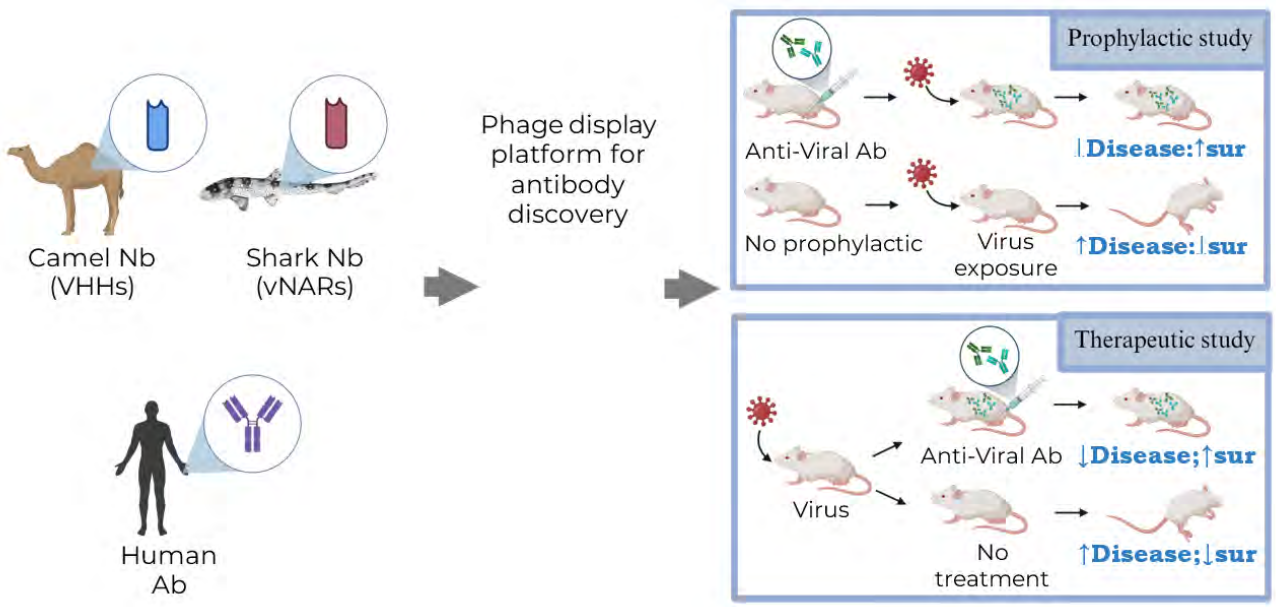


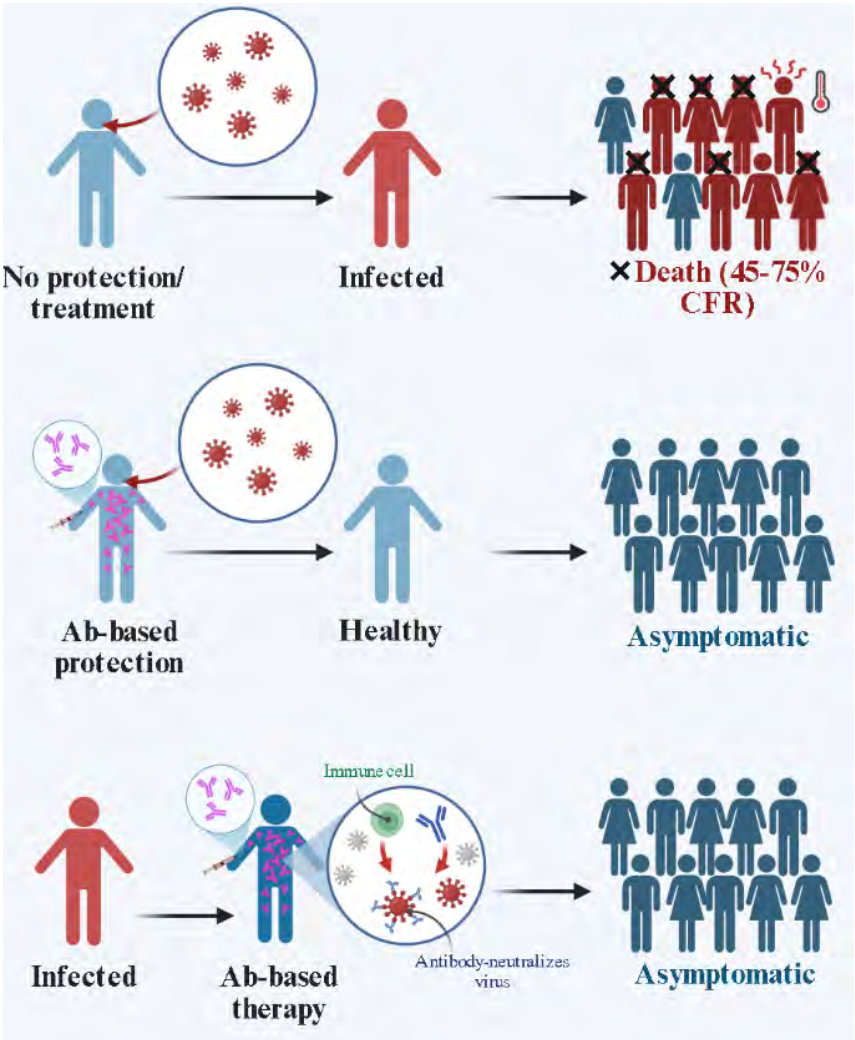
As of 2025, 437 deaths out of 758 human Nipah virus cases have been recorded.

High Case-Fatality Rate (CFR)

Ranges from **40% to 75%**

The Global mortality rate of the Nipah virus in the 2014-2023 decade was about **80%** (CI: 68.7-88.1%)


Camel Nb
(VHHs)
Shark Nb
(vNARs)
Human
Ab
Phage display
platform for
antibody
discovery
Prophylactic study
Anti-Viral Ab
↓Disease:↑sur
No prophylactic
Virus
exposure
↑Disease:↓sur
Therapeutic study
Anti-Viral Ab
↓Disease;↑sur
Virus
No
treatment
↑Disease;↓sur


No protection/
treatment
Infected
✕Death (45-75%
CFR)
Ab-based
protection
Healthy
Asymptomatic
Immune cell
Infected
Ab-based
therapy
Antibody-neutralizes
virus
Asymptomatic

Title :

Development of cost-effective and low-carbon footprint sustainable paper for producing paper-based mailers as an alternative packaging material.

PI :

Prof. Vibhore Kumar Rastogi
Department of Paper & Packaging Technology

Co PI :
Dr. Anurag Kulshreshtha

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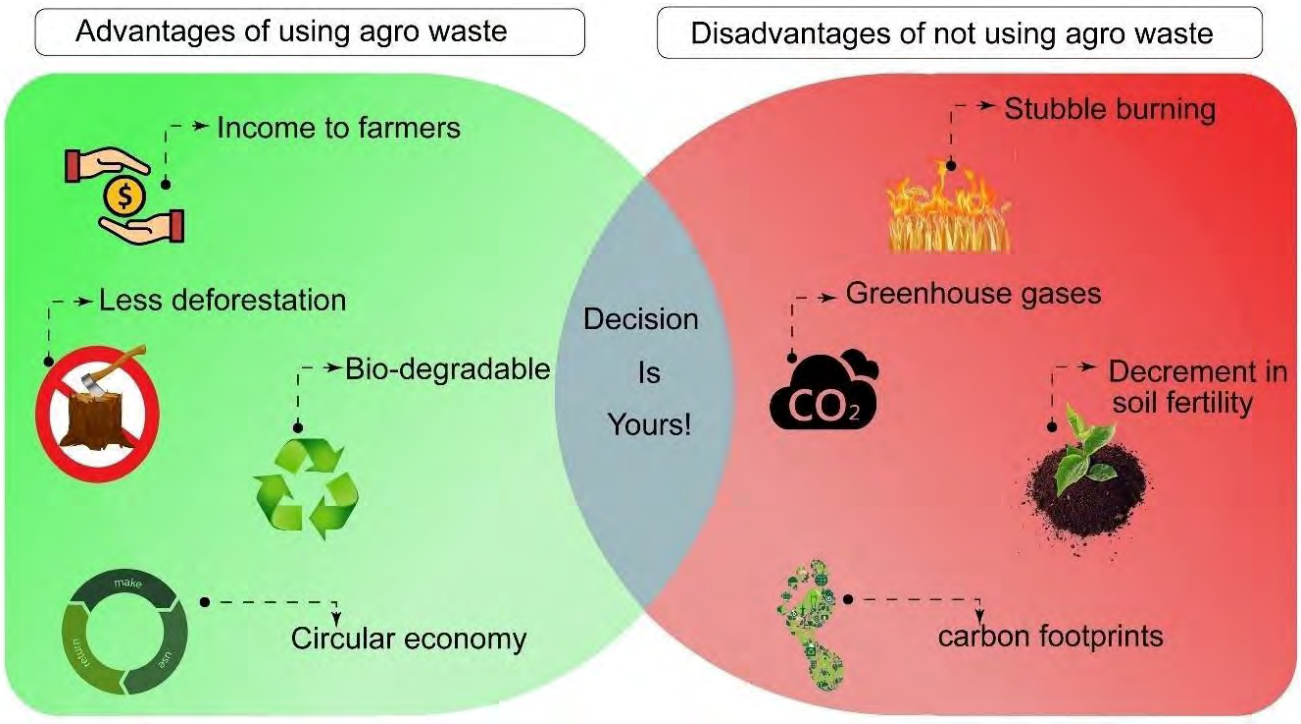
Sponsor : Amazon India Pvt. Ltd.

Abstract :

This project focuses on developing low-carbon-footprint, low-cost paper from locally available non-wood fibrous raw materials for use in Amazon's paper mailers.

The focus of the work is to identify suitable agro-waste fibers, optimise environmentally friendly pulping processes, and develop strategies to achieve mechanical and functional properties comparable to commercial kraft paper. Based on systematic pulping, handsheet formation, testing, carbon-footprint evaluation, and cost-performance analysis, this project targets pathways to scalable, sustainable, and economical paper production.

The result of this work will be a validated proof-of-concept to provide Amazon with a practical recipe to transition toward greener, biodegradable, and circular economy aligned packaging materials.



Title :

A Post-Quantum Secure ZKP-based Authentication Protocol for Connected and Autonomous Vehicles

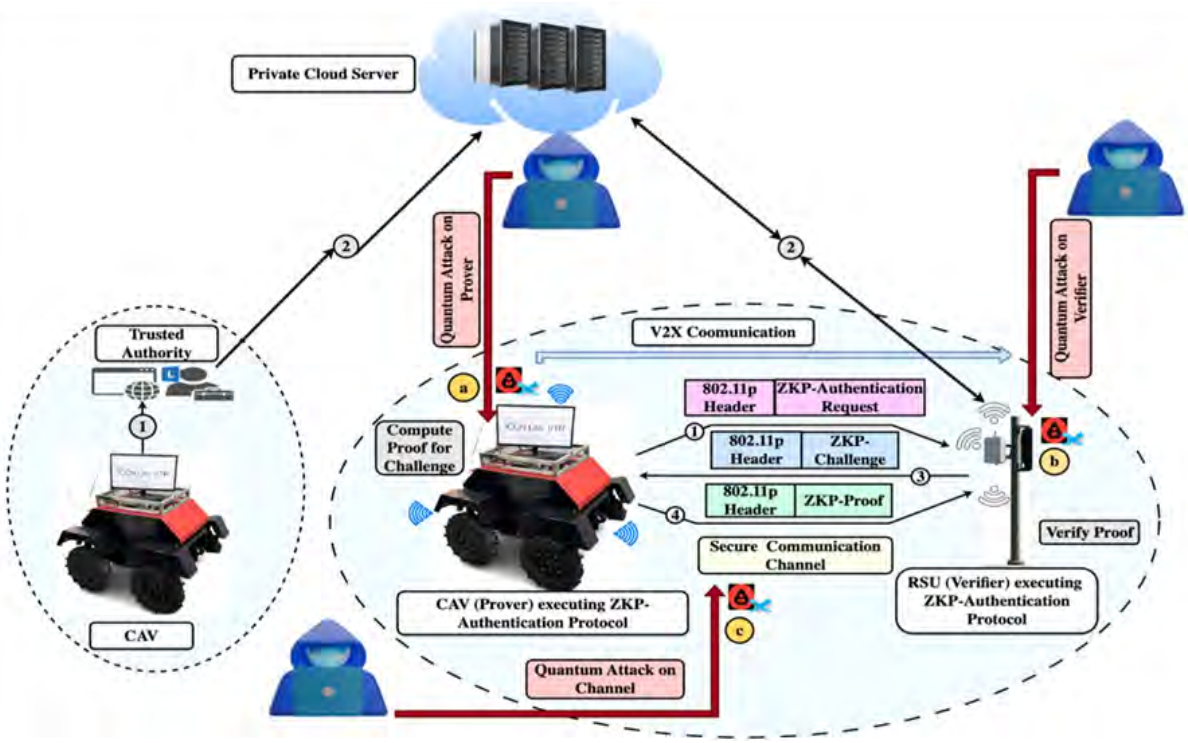
PI :

Prof. Neetesh Kumar
Department of Computer Science & Engineering

Email ID : neetesh@cs.iitr.ac.in
Link : https://www.iitr.ac.in/~CSE/Neetesh_Kumar

Sponsor : MeitY

Abstract :
The Internet of Vehicles (IoV) enables seamless Vehicle-to-Everything (V2X) communication to support services such as traffic management, data exchange, and route scheduling. However, the presence of malicious Connected and Autonomous Vehicles (CAVs) introduces serious security and privacy risks. To address these challenges, a novel privacy-preserving and lightweight Zero-Knowledge Proof (ZKP)–based authentication protocol is proposed. In the protocol, Autonomous Vehicles (AVs) are first registered with a Trusted Authority (TA) and subsequently authenticated by Road-Side Units (RSUs) within their broadcast domains using a ZKP-based challenge–response mechanism. Unlike existing ZKP-based schemes that rely on a single challenge, the proposed approach introduces two distinct challenges to strengthen security. After successful authentication, neighboring RSUs securely exchange polynomial commitments and refreshed pseudonym identities to preserve privacy. The protocol employs post-quantum cryptographic primitives to ensure resistance against both classical and quantum attacks. Formal security analysis and performance evaluation demonstrate improved robustness, efficiency, and suitability for V2X environments.



Title :

H_2 Separation and Co_2 Capture from PSA off Gas: Technology Development and Demonstration for NRL Refinery

PI :

Prof. Hari Prakash Veluswamy
Department of Chemical Engineering

Abstract :

This project aims at developing a cutting-edge method for the separation of hydrogen (H_2) and the capture of carbon dioxide (CO_2) from Pressure Swing Adsorption (PSA) off gas at the NRL refinery.

The project is designed to enhance H_2 recovery, minimize CO_2 emissions, and optimize operational efficiency through innovative techniques including liquid piston technology, gas hydrate formation, and membrane separation.

The project will be executed over a span of three years and will involve comprehensive phases such as literature review, design and fabrication, installation and commissioning, experimental studies, modeling and optimization, and commercialization.

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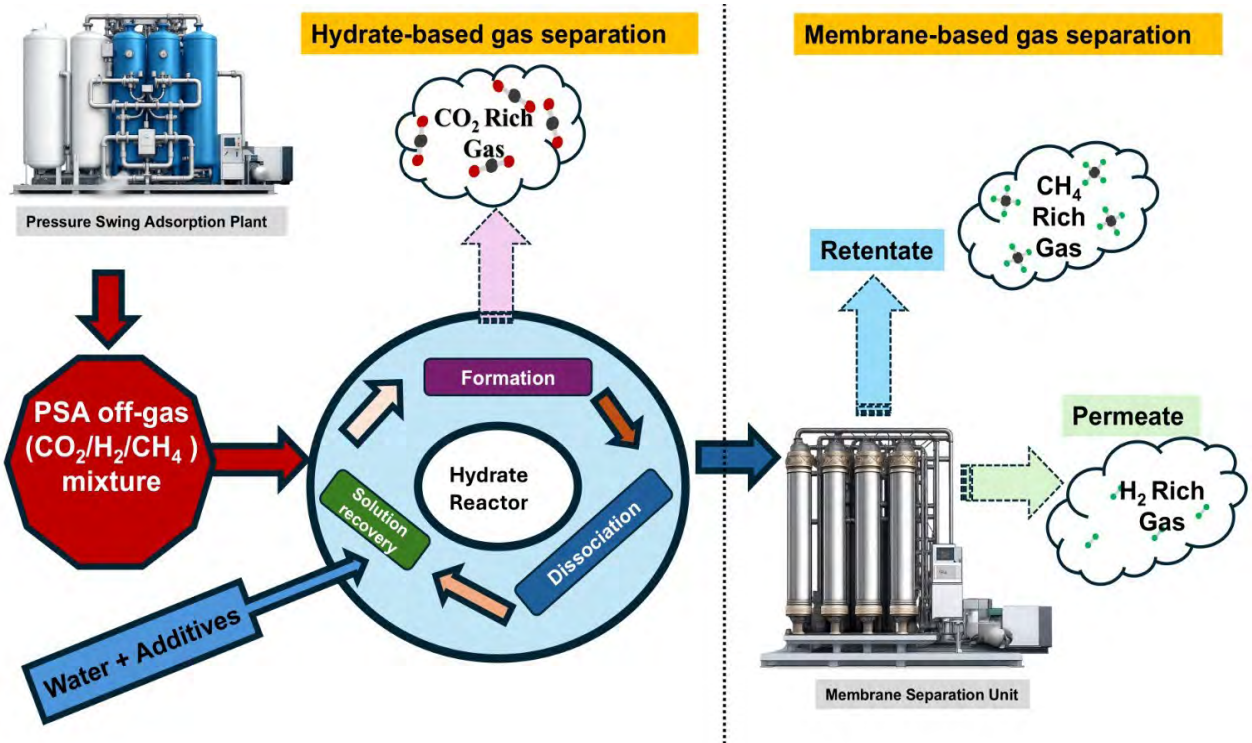
Link : https://ch.iitr.ac.in/~CH/Hari_Prakash_Veluswamy

Sponsor : Numaligarh Refinery Limited (NRL)



Title :

Craft Based Resource Centre (CBRC) - SANCHAY

SANCHAY stands for Safeguarding, Accumulating, Nurturing Craft and Heritage to Stimulate Aatmnirbharta and Yogyata

PI :

Prof. Smriti Saraswat
Department of Design

CO PI :
Prof. Inderdeep Singh
Prof. Bibhuti Ranjan Bhattacharjya
Prof. Usha Lenka

Email ID : smriti.saraswat@ar.iitr.ac.in
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Sponsor : Development Commissioner (Handicrafts) under the National Handicrafts Development Program of the Ministry of Textiles

Abstract :

IIT Roorkee is privileged to establish 'SANCHAY' (Safeguarding, Accumulating, Nurturing Craft and Heritage to stimulate Aatmanirbharta and Yogyata)—a Craft-Based Resource Centre—on its historic campus under the National Handicrafts Development Programme (NHDP) of the Development Commissioner (Handicrafts), Ministry of Textiles.

Envisioned as a dynamic hub at the intersection of tradition and innovation, the Centre aims to safeguard and revitalise India's craft heritage, beginning with endangered crafts of Uttarakhand. Aligned with national priorities and global discourse, SANCHAY integrates Science, Art, Craft, Design, Nature and Heritage through the 4Ps—Pedagogy, Practice, Policy and People.

Title :

Monitoring of Performance & Preparation of Guidelines for Johkasou Technology-Based On-Site Sewage Treatment in India

PI :

Prof. Sanjeev Kumar Prajapati
Department of Hydro and Renewable Energy

CO PI :
Prof. Arun Kumar

Email ID : sanjukec@hre.iitr.ac.in
Link : https://www.iitr.ac.in/~HRE/Sanjeev_Kumar

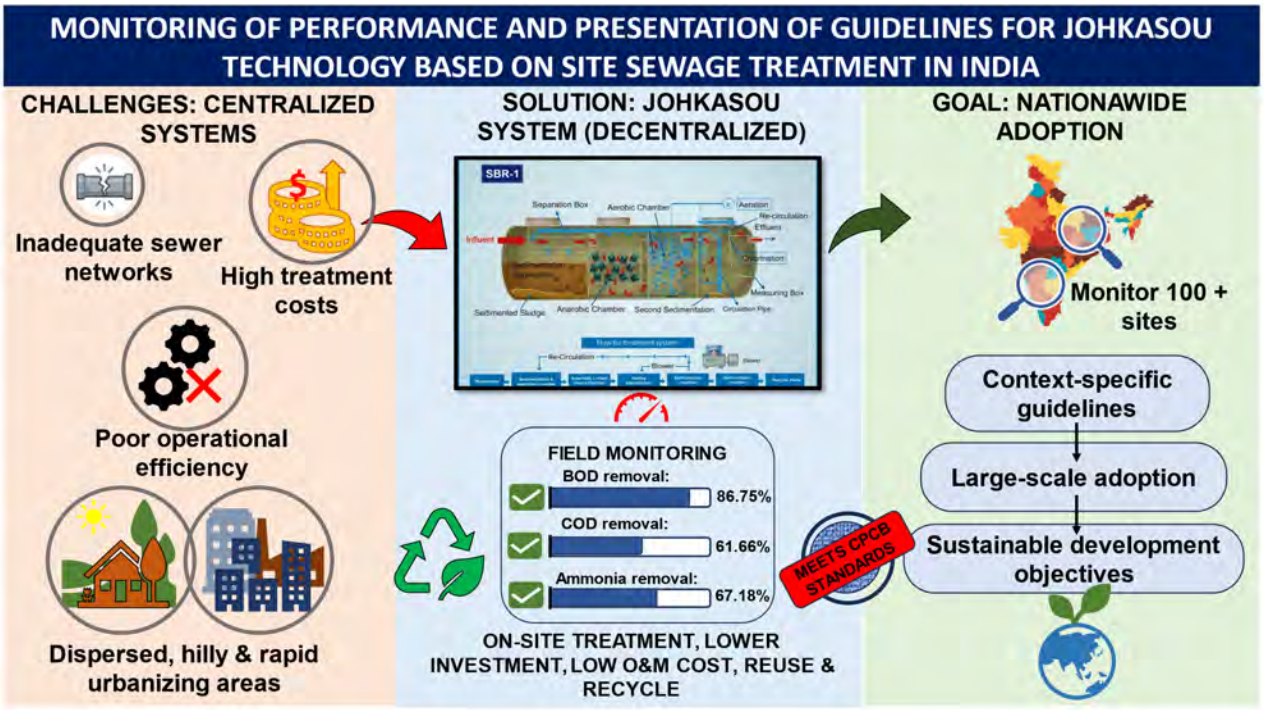
Sponsor : NMCG, Ministry of Jal Shakti

Abstract :

India's sanitation infrastructure faces critical challenges: high treatment costs, inadequate sewer networks, limited sewage treatment plants, and inefficiency of centralized treatment systems in rapidly urbanizing, hilly, and dispersed areas.

Decentralized sewage treatment technologies offer sustainable alternatives, enabling on-site treatment with lower investment and O&M cost. Johkasou, a compact, modular technology, demonstrates promising treatment performance: field monitoring of 18 operational sites across Uttarakhand and Delhi NCR achieved 86.75% BOD removal, 61.66% COD removal, and 67.18% ammonia removal, with all parameters meeting CPCB standards.

This research aims to monitor 100 sites nationwide to develop context-specific guidelines for large-scale adoption aligned with India's sustainable development goals.



Title :

Development of Ideal and Affordable Silkworm Rearing Houses for Indian Sericulture Farmers

PI :

Prof. Akshay Dvivedi
Department of Mechanical & Industrial Engineering

Co PI :
Prof. K. K. Pant

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Link : https://iitr.ac.in/~ME/Akshay_Dvivedi

Sponsor : Central Silk Board, Ministry of Textiles - Govt. of India

Abstract :

The collaborative initiative between IIT Roorkee and CSR&TI Pampore, focuses on developing affordable, modular, and climate-controlled Silkworm Rearing Houses. Initially targeting the North-Western Zone, the project will address the critical failure of traditional pucca and kutcha structures to maintain the structural durability, precise thermal, and hygroscopic conditions, and air quality required for healthy silkworm growth. By replacing traditional, inadequate structures with sustainable engineering solutions, the initiative aims to increase annual harvest cycles and boost farmer incomes. The planned timeline includes stages for material innovation, field testing in diverse climates, and capacity building specifically targeting women and marginalized rural communities.

Ultimately, this collaboration seeks to bridge the gap between technological innovation and traditional agriculture to support India's rural development, aligning with Sustainable Development Goals and creating a scalable model for PAN India adoption.

Title :

Diffusion Bonded SiC-SiC Joints for Thermostructural Strategic Applications: Micro-structure and Mechanical Be-havior

PI :

Prof. B. Venkata Manoj Kumar
Department of Metallurgical & Materials Engineering

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Sponsor : Aeronautics R&D Board (AR&DB), DRDO, Ministry of Defence

Abstract :

Joining ceramic components is one of the major concerns in achieving technological development of hypersonic programs of the Indian defence.

In particular, carbon fiber-reinforced silicon carbide (Cf-SiC) components experience challenges in joining due to the exposure of carbon fiber at the joining interface and potential oxidation/reaction with interface material. The present study explores pressureless diffusion bonding of Cf-SiC ceramics, examining the influence of interface chemistry, temperature, and other key parameters on microstructural evolution and mechanical behavior of joints.

The results from this study will help understand the relationship between interface microstructure and joint strength, providing valuable insights into the diffusion bonding process and aid in developing indigenous ceramics joining technology.

Title :

Prototype development for component recycling from spent solar panels

PI :

Prof. Nikhil Dhawan
Department of Metallurgical & Materials Engineering and Chemical Engineering

CO PI :
Prof. KK Pant
Prof. Komal Tripathi

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Link : https://www.iitr.ac.in/~MIED/Nikhil_Dhawan

Sponsor : DST-CEST

Abstract :

The photovoltaic (PV) market is highly heterogeneous in terms of brand and composition, and the evolution of PV technology has led to significant transitions in the metal content (Ag, Si, Cu-Sn) of modules. Continuous transitions in PV technology have altered the metal inventory of modules, particularly silver (Ag), silicon (Si), and copper-based interconnections. Conventional recycling approaches remain limited by complex multilayer architectures, strong interfacial bonding, technology-specific process requirements, and poor economic viability.

This project work proposes an integrated, low-waste, and sustainable recycling framework that combines automated mechanical separation, chemical treatment, and machine-learning-assisted process optimisation for high-value material recovery from EoL PV modules.

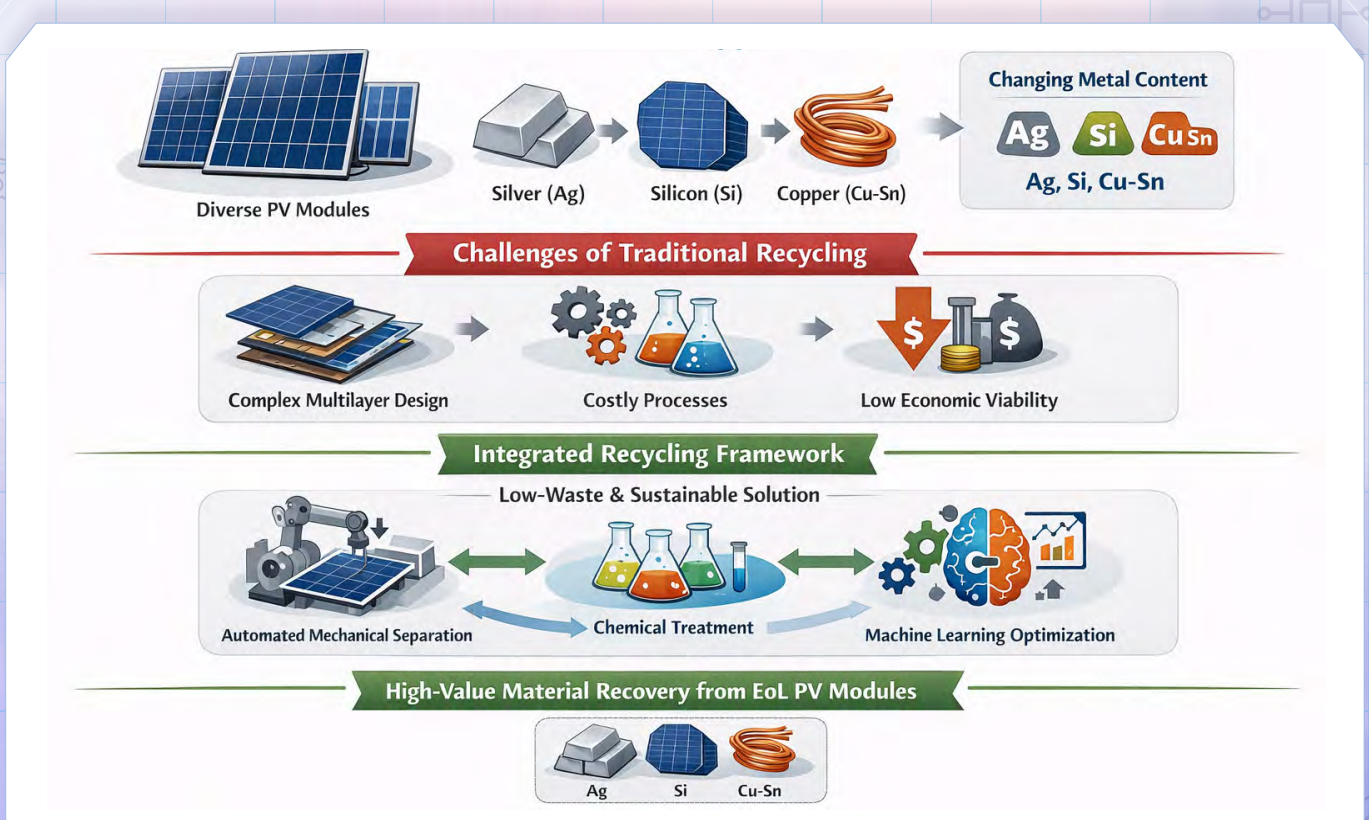

Fig. 1 PV Module Recycling Process

A NEW MILESTONE AT IIT ROORKEE :

LAUNCH OF A CENTRE OF EXCELLENCE (COE) IN CRITICAL MINERALS

CoE. in Critical Minerals :

The Ministry of Mines, Government of India, has recognized the Indian Institute of Technology (IIT) Roorkee as a Centre of Excellence (CoE) under the National Critical Mineral Mission (NCMM). The CoE operates on a Hub-and-Spoke consortium model, pooling complementary expertise across academia, national laboratories, and industries. IIT-Roorkee will serve as the Hub institute, in partnership with the Centre for Materials for Electronics Technology- CMET Hyderabad, the Indian Institute of Technology Delhi, IIT-Delhi, and Malaviya National Institute of Technology, MNIT-Jaipur, as academic partners. The industry partners will be Karo Sambhav, Attero Recycling Pvt. Ltd., Greenko Group, and Geovale Services, which will facilitate implementation and knowledge transfer.

The vision and objectives :

The CoE-IIT Roorkee are to develop, demonstrate, and deploy end-to-end technologies for critical minerals using a circular-economy approach. A key focus is on advancing technologies to higher Technology Readiness Levels (TRLs), targeting TRL 7-8 pilot-plant and pre-commercial demonstrations to enable rapid industrial adoption. The CoE is inherently interdisciplinary, drawing on expertise from Chemical Engineering, Metallurgical and Materials Engineering, Earth Sciences, and Environmental Engineering to deliver sustainable and industry-ready solutions. The five petals of the flower, as depicted in Fig. 1, demonstrate the vision, functional area, and key outcomes of the CoE. Each petal highlights a specific waste stream/industrial sector, along with the associated critical minerals being targeted. By linking environmental sustainability, economic feasibility, and national resource security, the CoE at IIT Roorkee is poised to become India's leading center for circular economy innovation. The CoE's initial project portfolio spans strategic secondary resources and industrial wastes critical to India's clean energy and technology sectors: Recycling of spent lithium-ion batteries; Printed circuit boards; Rare earth magnets; spent solar panels (PV modules); industrial wastes (mine tailings, red mud, fly ash, spent catalysts, etc).

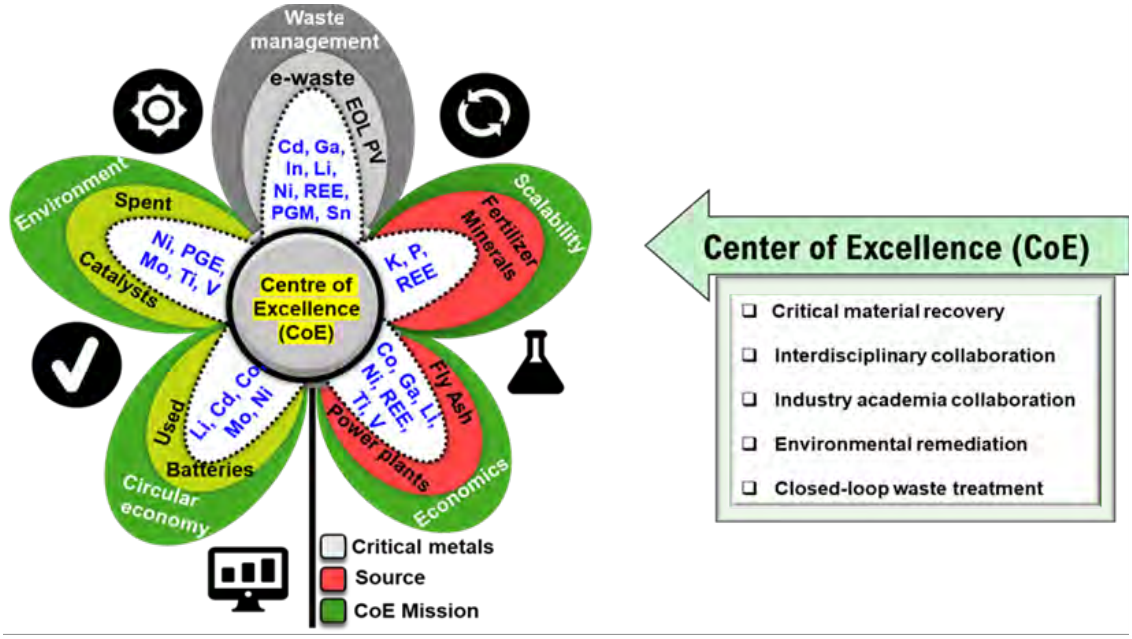

Fig. 1 Vision of CoE: Indian Institute of Technology (IIT) Roorkee

CENTRE OF EXCELLENCE IIT ROORKEE

(PARTNER DETAILS)

Team: Centre of Excellence (CoE): IIT Roorkee (HUB)				
Academic/R&D Partner*				
	IIT Roorkee (HUB)	IIT Delhi (Spoke)	CMET, Hyd (Spoke)	MNIT Jaipur (Spoke)
Team Members (IIT-R): Prof. Nikhil Dhawan (Coordinator); Prof. KK Pant; Prof. Prasenjit Mondal; Prof. Komal Tripathi; Prof. B. Bhattacharya; Prof. Rajarshi Chakravarti; Prof. Bhaskar Jyoti Deka; Prof. Puneet Gupta; Prof. Vivek Malik; Prof. Kiran Ambatipudi, Prof. Karun Rawat Team Members (IIT-D): Prof. Vikram Singh, Prof. Manjesh Kumar Team Members (MNIT-J): Dr. Ram Dyal, Dr. Rohidas Bhoi and Dr. Bandi Suresh Team Members (CMET-Hyd): Dr. Ratheesh, Dr. Ajay Kaushal				
Industrial Partner*				
	Karo Sambhav	Attero	Greenko Energies	Geovale Services
Team Members (Attero Recycling private limited): Dr. Abhinav, Dr. Smruti Prakash Barik, Team Members (Karo Sambhav): Mr. Pranshu Singhal Team Members (Greenko Energies): Dr. Rambabu Paravastu, Mr. Saleem Team Members (Geovale Services): Mr. Biplob Chatterjee				

KEY STRENGTH OF EACH HUB AND SPOKE

Academic/R&D Partner*	IIT Roorkee (HUB)	IIT Delhi (Spoke)	CMET-H (Spoke)	MNIT-J (Spoke)
Key strength and Roles	E-waste: (PCBs, CFLs, Batteries; Solar Panels, Permanent Magnets); industrial waste (Red Mud, Fly ash); Silicate rocks (Potash source); Green solvents (DEs); Membrane Separation; Adsorption (COFs/MOFs); Crystallization; AI based separation; High temperature pyrolysis	Screw Pyrolyzer unit; Batteries; PCBs; Spent catalysts; Carbon capture and utilization (CO_2 leaching); Closed loop routes; Green solvents (DEs); Membrane Separation; Environmental Remediation and wastewater treatment	1000 kg/day PCBs processing; expertise in Ta, Nb, Hf, Te, Cd, Zn and Ge. Solvent extraction. Permanent Magnet and Solar panels.	Pyrolysis; Nano particles syntheses; Cathode materials; Fractionation; Crystallization; low-temperature NH_4Cl roasting; machine learning-driven process optimization
Industrial Partner*				
	Attero	Karo Sambhav	Greenko Energies	Geovale Services
Key strength and Roles	India's Largest E-Waste Recycler; Expertise in LiB recycling; 7,500 TPA LiB Recycling capacity. Mechanical–Hydro Metallurgy technology; Lowest Capex and Opex per tonne for Li-B recycling globally; extracts 22+ metals with >99.5% purity; in-house PCB recycling- 9 patents, 22+ metals (Globally highest number of metals) including Gold, Silver, Tin, Copper, Aluminum, etc.	E-waste distributor and collector; dismantling units; feed supply, and pilot run facility; technology transfer; Commercialization, design, and Scale-up	Commercialization, design, and Scale-up; pilot run facility; technology transfer	Geological mapping; global footprint in mineral exploration and advisory; pilot run facility; technology transfer

SOME OF MAJOR COLLABORATIONS

- Command Area Development & Water Management Wing (CADWM), Ministry of Jal Shakti
- KIE Engineering Pvt. Ltd.
- Hydrocarbon Sector Skill Council (HSSC)
- Lala Lajpat Rai Memorial Medical College, Meerut
- Imagination Environmental Solution Pvt ltd (IESPL)
- Madan Mohan Malaviya University of Technology, Gorakhpur
- CENTRAL WAREHOUSING CORPORATION (CWC)
- CADFEM India Pvt. Ltd.
- Rajkiya Engineering College, Ambedkar Nagar
- Shaikh-Ul-Hind Saharanpur Medical College
- Deloitte (Renewal from 94AB)
- Defense Institute of Physiology and Allied Sciences (DIPAS)
- Maithri Aquatech Pvt. Ltd.
- NTNU & DynaVec AS, Norway
- Uttaranchal University, Dehradun
- Inland Waterways Authority of India (IWAI)
- Rajkiya Engineering College, Bijnor
- PhysicsWallah Ltd.
- Dr. R S Tolia Uttarakhand Academy of Administration, Nainital
- Organic Recycling Systems (ORS) MoU
- Abhitech Energycon Ltd
- Kavach Infosolutions & Consultancy Services LLP
- Sri Dev Suman Uttarakhand University (SDSUU)
- Indian Chambers of Commerce
- THDC India Limited, Rishikesh
- Gujarat Mineral Development Corporation (GMDC)-GMRICS
- HONC Gas Pvt Ltd.
- Centre for Development of Telematics (C-DOT)
- Uttarakhand Open University, Haldwani

OTHER RECENTLY REGISTERED PROJECTS

Principal & Co-Principal Investigator(s)	Title of the Project	Sponsor Agency
Prof. Avlokita Agarwal (APD)	Integrated Livelihood Renewable Energy, and Environmental Resilience Initiative for Rural Communities Uttarakhand	International Sustainable Energy Foundation (ISEF), Austin Texas
Prof. Prabhat Singh Chani (APD)	Self-Powered and Self Conscious Kinetic Facades	Coalition for Disaster resilient Infrastructure (CDRI) Fellowship, New Delhi
Prof. Maya S. Nair (BSBE)	Drug Development using Natural Products for Neurodegenerative Diseases and Narcotic Drug Abuse Targeting Sigma-I Receptor	CSIR, New Delhi
Prof. Hari Prakash Veluswamy (ChED)	Gas hydrate based CO_2 capture and storage along with blue H_2 production from PSA tail gas of steel methane reforming plant in petroleum refineries	DST, New Delhi
Prof. R.K. Peddinti (CY)	Synthesis and characterization of API related Substances	Pharmaffiliates analytics & Synthetics Pvt. Ltd. Panchkula (Haryana)
Prof. Ravindra Pandey (CY)	Probing the interfacial water structure at covalent organic interfaces using vibrational sum frequency generation	DST, New Delhi
Prof. R.D. Garg (CED)	Eco- Spray- Autonomous Smart Pesticide Sprayer	Balmer Lawrie and Co. LTD. Kolkata
Prof. Hemant Kumar (CED)	Integration of managed aquifer recharge and water food nexus in higher education	SPARC
Prof. Piyush Srivastava (CoEDMM) Prof. Srikrishnan Sivasubramani (CoEDMM) Prof. Ajanta Goswami (ES)	Modelling and analysis of cloudburst events in the northwest himalayan region	National Remote Sensing Control, ISRO, Hyderabad
Prof. Ajanta Goswami (CoEDMM)	Comprehensive analysis of glacial lake dynamics in ladakh and its associated risk under changing climatic condition using geospatial techniques	ISRO, Balanagar, Hyderabad
Prof. Kaushik Parida (CFSE)	Nanogenerator activated Ionic Diodes	ANRF, New Delhi
Prof. Ashish Kumar Chowdhary (CSST)	Metamaterial based photonic devices tailored for application in terahertz communication and sensing	ISRO, Bangalore
Prof. Saurabh Khanna (CSST)	GPU accelerated Denoising and Super resolved unmixing of R-Separable hyperspectral Data	ISRO, Bangalore
Prof. Lalita Sharma (CSST)	Plasma modelling and collision dynamics of propellant atoms	ISRO, Bangalore

OTHER RECENTLY REGISTERED PROJECTS

Principal & Co-Principal Investigator(s)	Title of the Project	Sponsor Agency
Prof. Apurv Kumar Yadav (CSST)	High Frequency GaN based electronic Power Conditioner for solid state power amplifier	ISRO, Bangalore
Prof. Siba kumar Patro (CSST)	Enhanced Protection enabled GaN based High Voltage electronic power conditioner for travelling wave tube amplifiers for aerospace applications	ISRO, Bangalore
Prof. Bishnu Prasad Das (CSST)	RISC-V Processor With In-memory Computation (IMC) for image processing in vision - based tracking application	ISRO, Bangalore
Prof. Bodhibrata Mukhopadhyay (CSST)	SkyLARC : Development of long range joint ranging and communication for UAVs	ISRO, Bangalore
Prof. Bihu Suchetana (CSST)	Development of a satellite imagery informed decision support system for climate resilient drinking water treatment (SiDCReW)	ISRO, Bangalore
Prof. Nitin Khandelwal (CSST)	Integrating remote sensing and experimental studies to assess wildlife impacts on soil and water quality	ISRO, Bangalore
Prof. Simanchal Padhy (CSST)	Investigating subsurface scattering structure of the moon near the Chandrayaan-3 landing site with seismic dataset	ISRO, Bangalore
Prof. Nachiketa Rai (CSST)	Investigation of element partitioning behaviour under lunar relevant high temperature conditions	ISRO, Bangalore
Prof. Basant Yadav (WRDM)	Climate resilient water services partnership with IITR	United Nations Children's Fund, New Delhi
Prof. Smriti Saraswat (DoD)	Gap Analysis of craft villages and designing a replicable Model	Ministry of Textile, National Handicraft development programme Govt. of India
Prof. Kirtiraj Kundlik Gaikwad (DPPT)	The Smart Energy Metering and Billing system (SEMB): Enhancing EV Charging Infrastructure for Efficiency and Accessibility	IIT Bhilai Innovation and Technology foundation Chattisgarh
Prof. Apurv Kumar Yadav (EED)	Development of sustainable substrate solutions for sublimation coating and printing applications	DCC Group, Mumbai
Prof. Yogesh Vijay Hote (EED)	Cybersecurity analysis of networked microgrid	IHUB NTIHAC Foundation IIT Kanpur
Prof. Anand Bulusu (ECE)	Development of a Customizable Instruction Set Processor with embedded AI capability for edge Data analytics used in Industrial and Consumer	Uniconverge Technologies Pvt.Ltd, Noida

OTHER RECENTLY REGISTERED PROJECTS

Principal & Co-Principal Investigator(s)	Title of the Project	Sponsor Agency
Prof. Ekant Sharma (ECD)	Design and development of waveform for IAF SDR	International Institute of Information Technology, Bangalore
Prof. Saurabh Shiradhonkar (EQD)	Assessment of seismically resilient compact mud house in afghanistan	AKAH, GENEVA, Switzerland
Prof. Himanshu Jain (HRED)	Investigation of Wide-ara Simulation framework for renewable energy and HDFC systems to accurately capture their dynamic behaviour	Grid Controller of India Ltd. Mumbai, & IIT Bombay
Prof. N.K. Goel (ICED)	Development of an improved THDCIL-IITR Inflow forecasting model for tehri hydro power complex using strengthened hydro meteorological data	THDCIL, Rishikesh
Prof. Akshay Dvivedi (MIED)	IIT Roorkee Lead Knowledge Institute	Lead Knowledge Institute State Support Mission, New Delhi
Prof. Akshay Dvivedi (MIED)	Gyroscopically stabilised stretcher	Central Command of the Indian army, Headquarter: Lucknow, UttarPradesh
Prof. Pradeep Kumar Jha (MIED)	Development of Casting Simulation and Design laboratory (CSDL)	KIE Engineering PVT. LTD. Mundiyaki, Roorkee
Prof. Pradeep Kumar Jha (MIED)	Investigation on Casting Parameters optimization and Solidification behaviour of melt cast/cast cure explosives	DRDO, Chandigarh
Prof. Piyush Vijay Jagtap (MMED) Prof. G.P. Choudhary (MMED)	Developing Ti/steel Laminate Composites by accumulative roll bonding : effect of hot rolling vs electro pulsing and interlayers on microstructure and mechanical properties	DRDO, Delhi
Prof. Sai Ramudu Meka (MMED) Prof. Vivek Kumar Malik (PHY)	Mill Scale to rare earth free permanent magnet Fe16n2	Daniel India Limited, Company Tirupati, (Andhra Pradesh)
Prof. Tarun Sharma (MSD)	Modelling Demand Responsive Pricing for India's power sector: A scenario-based policy analysis using the switch platform	Environmental Defense Fund New York
Prof. Gaurav Dixit (MSD)	Generative AI Intervention for inclusive education in rural uplands: An action research study to address school education disparities	University of Manchester, United Kingdom
Prof. Abhijit Maiti (PPE)	Quality assessment of groundwater samples for identifying suitable locations to build two water purification systems of 3000 L/Day Capacity for Drinking Water	Imagination Environmental Solutions PVT. Ltd. New Delhi

AWARDS & ACCOLADES

FICCI Higher Education Excellence Award for Excellence in Research & Innovation

CII Industry Academia Partnership Award- 2025

CII Excellence for Women in STEM Award 2025

CII Industrial IP Awards 2025

TECHNOLOGY TRANSFER

Prof K B Mishra & team, IIT Roorkee, Technology Transfer with Swan Environmental Pvt. Ltd.

Prof N Siva Mohan Reddy & team, IIT Roorkee, Technology Transfer with Infinate Integrated Energy Technologies LLP.

Prof B. Gowrish & team, IIT Roorkee, Technology Transfer with MTEKPRO Technologies Private Ltd.

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NO. OF PATENTS FILED	NO. OF PATENTS PUBLISHED	NO. OF PATENTS GRANTED
27	34	18

CORRESPONDENCE

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