

India-Taiwan Programme of Cooperation in Science & Technology

Projects approved for implementation in 2025:

- Project Title:** Deep Learning-Based Capacity Estimation for Channels with Memory and Input Constraints
Indian PI: Prof Navin Kashyap, Professor, Dept. Electrical Communication Engineering, Indian Institute of Science, Bengaluru
Taiwanese PI: Stefano Rini, Associate Professor, National Chiao Tung University, Taiwan
- Project Title:** Design and Implementation of Compensation Strategies for Hardware Impairments in 6G OTFS Systems
Indian PI: Dr Sanjeev Sharma, Department of Electronics Engineering, IIT (BHU) Varanasi
Taiwanese PI: Yen-Cheng Kuan, International College of Semiconductor Technology, National Yang Ming Chiao Tung University, Hsinchu City Taiwan
- Project Title:** 3D Printed Tacky liquid metal-ionogel hybrids for bioelectronic interfaces
Indian PI: Dr Tushar Sakorikar, Assistant Professor, BITS Pilani KK Birla Goa Campus, Goa, India
Taiwanese PI: Sheng-Sheng Yu, Associate Professor, Department of Chemical Engineering, National Cheng Kung University, Taiwan
- Project Title:** Bifacial perovskite solar cells for agrivoltaics
Indian PI: Dr Satvasheel Powar, Associate Professor, North Campus Indian Institute of Technology Mandi Kamand, Mandi, Himachal Pradesh
Taiwanese PI: Chao-Yu (Peter) Chen, Professor, National Cheng Kung University (NCKU) Taiwan
- Project Title:** Geothermal assisted HVAC System
Indian PI: Dr. Gurubalan Annadurai, Assistant Professor, Department of Energy Science and Engineering, IIT Bombay
Taiwanese PI: Wang, Jung-Chang, Full Professor, Department Head of DME, Department of Marine Engineering (DME), National Taiwan Ocean University (NTOU)
- Project Title:** Rational Design of Composite Solid Polymer electrolytes for High Performance All-Solid-state Lithium Batteries
Indian PI: Prof. Bhanu Nandan, Professor, Department of Textile and Fibre Engineering, Indian Institute of Technology Delhi
Taiwanese PI: Dr. Che-Yi Chu, Associate Professor, Department of Chemical Engineering, National Chung Hsing University, Taiwan
- Project Title:** Development of the Manufacturing Technologies for Solid-State Lithium Batteries for Renewable Energy Storage Systems
Indian PI: Dr Ranjith Thangavel, Assistant Professor, School of Energy Science and Engineering, IIT Guwahati
Taiwanese PI: Prof Chia-Chen Li, Professor, Department of Materials Science and Engineering, National Tsing Hua University, Taiwan

8. **Project Title:** Development of eco-friendly, flexible perovskite ABX₃ (A = Fa, Cs; B = Ge, Sn; C = Cl, Br, I) quantum dot-based solar cell devices with NiO hole transport layer & Zn(Ox Sy) electron transport layer
Indian PI: Dr. Robin Khosla, Assistant Professor, Indian Institute of Technology (IIT) Mandi, Himachal Pradesh
Taiwanese PI: Prof. Zong-Liang Tseng, Associate Professor, Ming Chi University of Technology, Taiwan
9. **Project Title:** Catalytic Hydrodeoxygenation of Co-Pyrolyzed Bio-oil from Biomass Residues and Plastic Waste
Indian PI: Prof. Kaustubha Mohanty, Professor (HAG), Indian Institute of Technology Guwahati
Taiwanese PI: Prof. Chi-Min Shu, Distinguished Professor, and Dept. of Safety Health and Environmental Engineering, National Yunlin University of Science and Technology (Yun Tech), Taiwan
10. **Project Title:** Developing Non-Invasive Monitoring Techniques for Tumor Progression and Therapeutic Response in PDAC Mouse Models
Indian PI: Dr. Nripen Chanda, Senior Principal Scientist, CSIR-CMERI, Durgapur
Taiwanese PI: Dr. Ching-Chieh Weng, Department of Biomedical Science, National Chung Cheng University, Taiwan
11. **Project Title:** Disposable SERS Sensors For Screening of Cardiac Biomarkers
Indian PI: Prof Sandeep Verma, Professor, Centre for Nanosciences, Indian Institute of Technology Kanpur
Taiwanese PI: Dr Surojit Chattopadhyay, Professor, Institute of Biophotonics, National Yang Ming Chiao Tung University
12. **Project Title:** Novel Molten Catalyst for Dry Reforming of Methane: Experiments and Modeling
Indian PI: Dr Vishal Agarwal, Associate Professor, Indian Institute of Technology Kanpur
Taiwanese PI: Yu-Chuan Lin (Professor), National Cheng Kung University, Taiwan.
13. **Project Title:** Cell and nuclear response in a uniaxial stretcher with micropatterns recapitulating native tissue morphology
Indian PI: Dr. Sreenath Balakrishnan, Assistant Professor, Indian Institute of Technology Goa
Taiwanese PI: Prof. Pen-hsiu Grace Chao, Professor, Department of Biomedical Engineering, National Taiwan University, Taiwan
14. **Project Title:** Cold spray Additive Manufacturing of flexible printable electronics and their mechanical characterization
Indian PI: Dr Lakshmi Narayan Ramasubramanian, Assistant Professor, Indian Institute of Technology Delhi
Taiwanese PI: Dr Jung-Ting Tsai, Assistant Professor, National Taiwan University of Science and Technology, Taiwan
15. **Project Title:** Evaluation of Phototherapy on Wound Healing of Diabetic Foot Ulcer through Deep Learning with Optical Coherence Tomography Imaging
Indian PI: Dr. Sheena Christabel Pravin, Assistant Professor, School of Electronics Engineering, Vellore Institute of Technology, Chennai
Taiwanese PI: Dr. Chi-Wen Lung, Professor and Chair Department of Creative Product Design Asia University, Taiwan.

Projects approved for implementation in 2024:

- 1 Title: Development of portable NMR prototype and its application in medical field using AI/ML
Indian PI: Dr Arup Polley
Associate Professor, Indian Institute of Science, Bangalore
Taiwanese PI: Prof Henry Horng-Shing Lu, Distinguished Professor, National Yang Ming Chiao Tung University
- 2 Title: CO₂ Photoreduction For Producing Value Added Fuels Using Halide Perovskite Heterocatalysts
Indian PI: Prof Soumitra Satapathi, Associate Professor, Department of Physics for sustainable energy, IIT, Roorkee
Taiwanese PI: Prof Di-Yan Wang, Associate Professor, Department of chemistry, Tunghai University
- 3 Title: Localizing fast radio bursts with BURSTT
Indian PI: Dr Saurabh Singh, Associate Professor I, Astronomy & Astrophysics, Raman Research Institute Raman Research Institute, Astronomy & Astrophysics, C. V. Raman Avenue, Bengaluru, Karnataka
Taiwanese PI: Prof Ue-Li Pen, Distinguished Research Fellow & Director, Institute of Astronomy and Astrophysics, Academia Sinica (ASIAA), 106, Taiwan, Taipei City
- 4 Title: Sustainable Hydrogen Production, Storage and Utilization using Hybrid Photoelectrocatalysts
Indian PI: Dr Rakesh K Sharma, Professor, Department of Chemistry, Indian Institute of Technology Jodhpur
Taiwanese PI: Prof Jeffrey C. S. Wu Professor, Department of Chemical Engineering, College of Engineering, National Taiwan University (NTU)
- 5 Title: Design and Technology Co-Optimization of Stacked Nanosheet RF for 6G Applications
Indian PI: Prof Yogesh Singh Chauhan, Professor, Department of Electrical Engineering, Indian Institute of Technology, Kanpur
Taiwanese PI: Prof Chee Wee Liu, Distinguished/Chair Professor, National Taiwan University
- 6 Title: Self-powered wound dressing for treatment of diabetic foot ulcers
Indian PI: Dr Siddharth Jhunjhunwala, Associate Professor, Indian Institute of Science, Bangalore
Taiwanese PI: Prof Zong-Hong Lin, Professor, National Taiwan University
- 7 Title: Design and synthesis of dendrimer-based organic photocatalysts for the applications in sustainable clean energy
Indian PI: Dr Rajamalli Pachaiyappan, Assistant Professor, Materials Research Centre, Indian Institute of Science, Bangalore
Taiwanese PI: Prof Ho-Hsiu Chou, Professor, Department of Chemical Engineering, NTHU, Taiwan
- 8 Title: Room Temperature Ferroelectricity in Two-Dimensional Janus TMDs for Image Processing
Indian PI: Prof Shaibal Mukherjee, Professor, Department of Electrical Engineering, Indian Institute of Technology Indore

Taiwanese PI: Prof Yu-Lun Chueh, Professor, Department of Materials Science and Engineering, National Tsing Hua University

- 9 Title: Heterogeneously Integrated CMOS-Piezoelectric MEMS Low Phase Noise Oscillator
Indian PI: Dr Gayathri Pillai, Assistant Professor, Indian Institute of Science, Bangalore
Taiwanese PI: Dr Ming-Huang Li, Assistant Professor, National Tsing Hua University
- 10 Title: Highly Efficient Sperm Sorting Chip and Commercialization
Indian PI: Dr Tuhin Subhra Santra, Associate Professor, Engineering Design, Indian Institute of Technology Madras, India
Taiwanese PI: Prof Fan-Gang Tseng, Distinguished Professor, Engineering System Science, National Tsing Hua University, Taiwan
- 11 Title: Solar Fuels: Green H₂ via Solar Thermochemical Splitting of Water and Conversion of CO₂ to CO over Reducible Oxides
Indian PI: Prof Sounak Roy, Head of the Department, Professor, Department of Chemistry, BITS Pilani Hyderabad Campus
Taiwanese PI: Dr Bor Kae Chang, Associate Professor, Dept. of Chem. & Mat. Engin, National Central University, Taiwan
- 12 Title: Design and Development of Self energized battery operated FEP based Tribo-electric nanogenerator coupled for machine tool condition monitoring
Indian PI: Prof Anand Palani Iyemperumal Professor, Indian Institute of Technology Indore
Taiwanese PI: Prof Chuan-pu Liu, Professor, National Cheng Kung University, Taiwan
- 13 Title: Design and Development of Group-III nitride-based LEDs for UV-Blue region for underwater communication
Indian PI: Dr Nikhil Deep Gupta, Assistant Professor, Visvesvaraya National Institute of Technology (VNIT), Nagpur
Taiwanese PI: Prof Ray Hua Horng, Professor, National Yang Ming Chiao Tung University/ Hsinchu, Taiwan
- 14 Title: Feasibility study of emergency cooling in an air-cooled datacenter using PCM (phase change material) thermal module
Indian PI: Prof Atul Bhargav, Professor, Indian Institute of Technology Gandhinagar, Palaj, Gandhinagar
Taiwanese PI: Prof Chi-Chuan Wang, Chair Professor, National Yang Ming Chiao Tung University
- 15 Title: Experimental and Numerical Study on Combustion Characteristics of the Green Propellants with Nitrous Oxide Fuel Blend
Indian PI: Prof Amit Kumar, Professor, Indian Institute of Technology Madras
Taiwanese PI: Prof Hsin-Yi, Professor, Chang Gung University, Taiwan

Projects approved for implementation in 2023:

- 1 Title: Development and Growth of industry scale DS and CCZ silicon ingots for PV Applications
Indian PI: Dr. Manikkam Srinivasan, Sri Sivasubramaniya Nadar (SSN) College of Engineering, Noida
Taiwanese PI: Prof Chen Jyh-Chen. Department of Mechanical Engineering, National Central University, Taiwan
- 2 Title: Combined Machine Learning and Molecular Simulation for New Broadly Neutralizing Antibodies against COVID-19 and AIDS
Indian PI: Prof. Prabal K. Maiti, Indian Institute of Science Bangalore
Taiwanese PI: Prof Shiang-Tai Lin, National Taiwan University, Taipei
- 3 Title: Nanoconfinement of hydrides in functionalized porous hybrid materials based on silica, MOF, and polymers for tunable hydrogen release
Indian PI: Prof. Leena Nebhani, Indian Institute of Technology Delhi
Taiwanese PI: Prof Cheng-Yu Wang, National Yang Ming Chiao Tung University
- 4 Title: Renewable energy storage based on reversible PEM Fuel Cell for grid applications
Indian PI: Dr. Satya Sekhar Bhogilla, IIT Jammu
Taiwanese PI: Prof Jenn-Kun Kuo, National Sun Yat-sen University
- 5 Title: AI/ML-based Reconfigurable Intelligent Surface Assisted IoT Networks
Indian PI: Dr. Sudip Biswas, Indian Institute of Information Technology, Guwahati
Taiwanese PI: Prof Meng-Lin Ku, Department of Communication Engineering, Taiwan
- 6 Title: A numerical and experimental study of the water-drop-based mobile energy harvesting on different hydrophobic and superhydrophobic substrates
Indian PI: Dr. Bahni Ray, IIT Delhi
Taiwanese PI: Prof An-Bang Wang, Institute of Applied Mechanics, National Taiwan University, Taiwan
- 7 Title: Vaccine development for Streptococcus agalactiae and Streptococcus Iniae in tilapia and hybrid grouper
Indian PI: Dr. Preetham Elumalai, Cochin University of Science and Technology, Cochin
Taiwanese PI: Prof Shih-Chu Chen, National Pingtung University of Science and Technology, Taiwan
- 8 Title: ALDH binding PROTACs for cancer therapy: Computational design, synthesis, and biological testing
Indian PI: Dr. Mohane Coumar Selvaraj, Pondicherry University
Taiwanese PI: Hsing-Pang Hsieh, National Health Research Institutes, Taiwan

- 9 Title: Probing Ion Transport and Osmotic Energy Harvesting through Sub-nm Channels in Two-Dimensional Metal-Organic Frameworks
Indian PI: Dr. Gopinadhan Kalon, IIT Gandhinagar
Taiwanese PI: Prof Li-Hsien Yeh, National Taiwan University of Science and Technology
- 10 Title: AI/ML- based Channel Estimation and Beamforming for mmWave MIMO-OTFS in 6G
Indian PI: Dr. Kuntal Deka, IIT Guwahati
Taiwanese PI: Prof Yuan-Pei Lin
Dept. Electrical Engr. And Institute of Electrical and Control Engineering, National Yang Ming Chiao Tung University Hsinchu, Taiwan
- 11 Title: Integration of group-III oxide and III-nitride-based wide bandgap semiconductors for next-generation electronics applications
Indian PI: Dr. Ankush Bag, IIT Guwahati
Taiwanese PI: Prof Jen-Inn Chyi, National Central University, Taiwan