TAP topics

Name of Faculty	**Title of PhD topic**	**Project code**	**Area of the research (One key word)**	**Nature of the project (Experimental/Modeling/Theoretical/):**
Ranjit Chiplunkar	Physics-Informed Machine Learning for Interpretable Process Monitoring	RC-TAP	Process Systems Engineering	Both: Theoretical (Computational or Modelling) + Experimental
Sujit Jogwar	Foundational Model to Aide Process Design Activity	SuJ-TAP	Process Systems Engineering	Theoretical / Computational / Modelling
Nagappan Ramaswamy	Development of Proton Exchange Membrane Water Electrolyzers	NR-TAP	Clean hydrogen	Experimental
Jyoti R Seth	Particle-Stabilized Emulsions and Foams	JS-TAP	Soft Matter	Both: Theoretical (Computational or Modelling) + Experimental
Nikhil Subraveti	Continuous manufacturing of liposomal drug products with real-time quality control	NS-TAP	Nanomedicine	Experimental
Mahesh Tirumkudulu	Fluid Mechanics of Smear-Based Diagnostics	MT-TAP	Fluid mechanics, Diagnostics	Both: Theoretical (Computational or Modelling) + Experimental
Abhijit Chatterjee	Interface Engineering with Multifunctional Electrolytes for High-Voltage, Wide-Temperature Aqueous Zinc-Ion Batteries: A combined experimental and modeling study for addressing degradation challenges	AC-HW-TAP	Sustainability	Both: Theoretical (Computational or Modelling) + Experimental
Sanjay Mahajani	Circular economy: Reclamation of waste foundry sand by chemical method.	SMM-HW-TAP	Sustainability	Both: Theoretical (Computational or Modelling) + Experimental
Jyoti R Seth	Field-Driven Beneficiation of Critical Minerals	JS-HW-TAP	Sustainability	Experimental
Yogendra Shastri	Development of a open-source tool to perform LCA of transport fuels and energy products	YS-HW-TAP	Sustainability	Theoretical / Computational / Modelling

FA topics

Name of Faculty	Title of PhD topic	Project code	Area of the research (One key word)	Nature of the project (Experimental/Modeling/Theoretical/):
Sonali Das	Catalyst and reactor development for sustainable light-assisted CO2 Utilization	SD-FA	Catalysis & Reaction Engineering	Experimental
Sonali Das	Catalyst and process development for plasma-catalytic conversion of greenhouse gases	SD-FA	Catalysis & Reaction Engineering	Experimental
Santosh Noronha	Production of chiral pharma intermediates.	SBN-FA	Bioprocess engineering	Experimental
Nagappan Ramaswamy	Water electrolyzers	NR-FA	Energy consumption of hydrogen production	Experimental
Nagappan Ramaswamy	Redox flow batteries	NR-FA	Electrochemical energy storage	Experimental
Bharatkumar Suthar	Development and Electrochemical Modeling of Low-Temperature Optimized Sodium-Ion Batteries	BKS-FA	Batteries	Both: Theoretical (Computational or Modelling) + Experimental
Bharatkumar Suthar	Zinc-Ion Batteries for Affordable Grid Storage	BKS-FA	Batteries	Both: Theoretical (Computational or Modelling) + Experimental
Swati Bhattacharya	Decoding the Antiviral Machinery of anti-HIV protein APOBEC3G	SwB-FA	Computational biophysics	Theoretical / Computational / Modelling
Nikhil Subraveti	From particle design to cellular delivery: targeted lipid nanoparticles for genetic medicines	NS-FA	Nanomedicine	Experimental
Jyoti R Seth	Technologies for Clearing Blockages in Pipelines Using Electric Fields	JS-FA	Field driven flows	Both: Theoretical (Computational or Modelling) + Experimental
Jyoti R Seth	Field-Driven Active Particle Propulsion and Collective Dynamics	JS-FA	Active Flows	Both: Theoretical (Computational or Modelling) + Experimental
Sarika Mehra	A high-productivity CHO platform for difficult-to-express biologics	SM-FA	biotechnology	Experimental
Rajdip Bandyopadhyaya	Chemical sensor device development for detection of water pollutants and technology for their removal	RB-FA	Water	Experimental
Rajdip Bandyopadhyaya	Gravity-driven device for removal of microorganisms, metals and microplastics from water	RB-FA	Water	Experimental
Rajdip Bandyopadhyaya	Engineering nanoparticle size and shape: Multiscale modeling, simulation and applications	RB-FA	Nanoparticle	Both: Theoretical (Computational or Modelling) + Experimental

Hemant Nanavati	Accurate Molecular Models for Real Polymers	HN-FA	Polymer Chemical Physics	Theoretical / Computational / Modelling
Hemant Nanavati	Molecular Modeling of Elasticity of Spider Silk and Related Biopolymers	HN-FA	Biopolymer Physics	Both: Theoretical (Computational or Modelling) + Experimental