

WELCOME TO ENVIRONMENTAL ENGINEERING (EE)



Dr. Chandan Sarangi



Dr. Indumathi M Nambi



Dr. Ligy Philip



Dr. Mathava S Kumar



Dr. S Mohan



Dr. Sachin S Gunthe



Dr. Shiva Nagendra S. M



Dr. Mohanakrishnan Logan



Dr. Tanushree Parsai



Environmental Engineering



INDIAN INSTITUTE OF TECHNOLOGY MADRAS



Dr. Chandan Sarangi

PhD (Indian Institute of Technology, Kanpur, India)

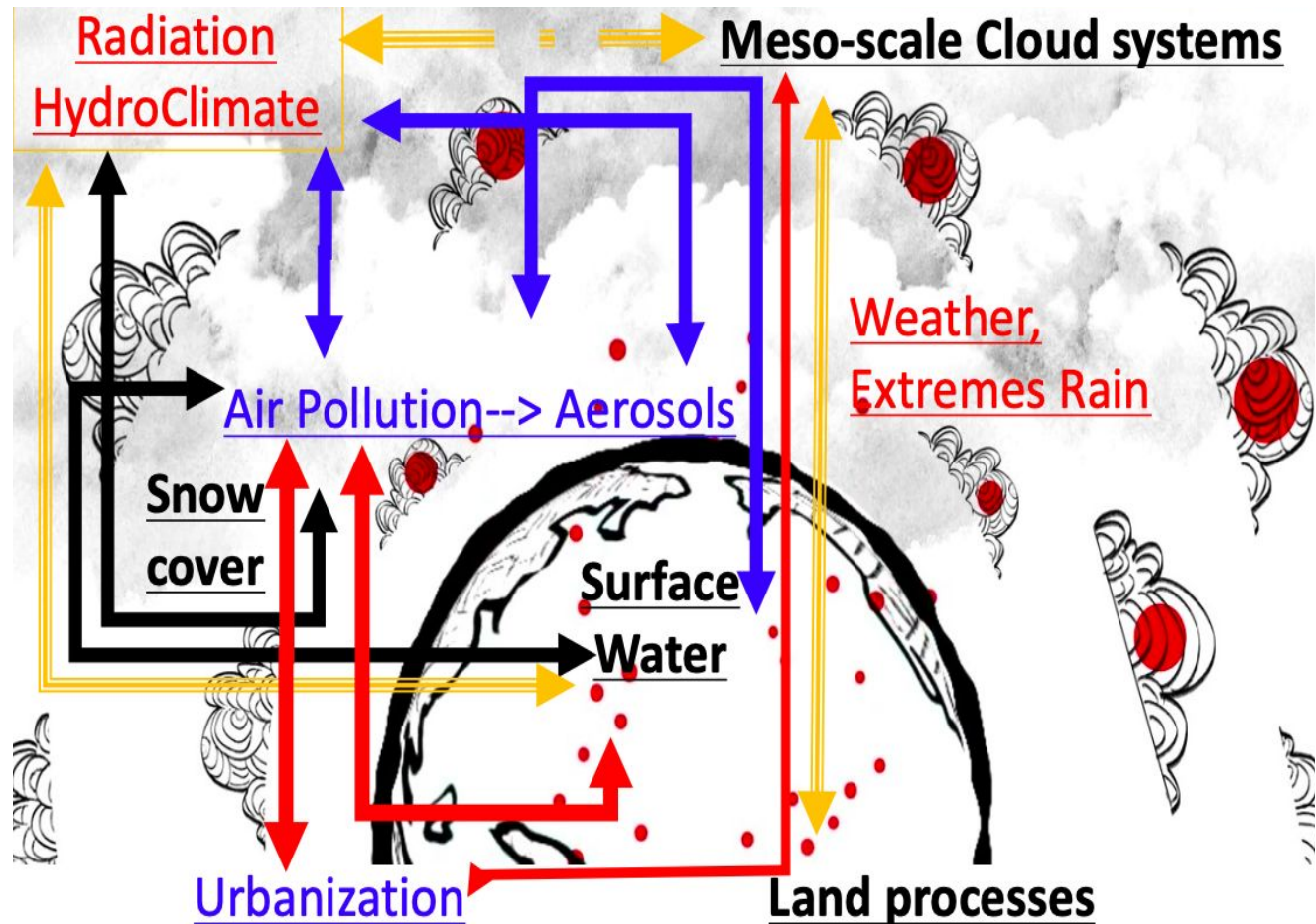
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Major Areas of Research

- Impact of aerosols (particulate air pollution) on hydrometeorological processes (clouds, rainfall, fog, transpiration)
- Impact of dust deposition on Himalayan hydrology
- Modelling fate and transport of aerosols at regional and global scale
- Relative role of aerosols on temperature and extreme rainfall over Megacities



Aerosols and Hydro-Meteorology (ahm) Lab

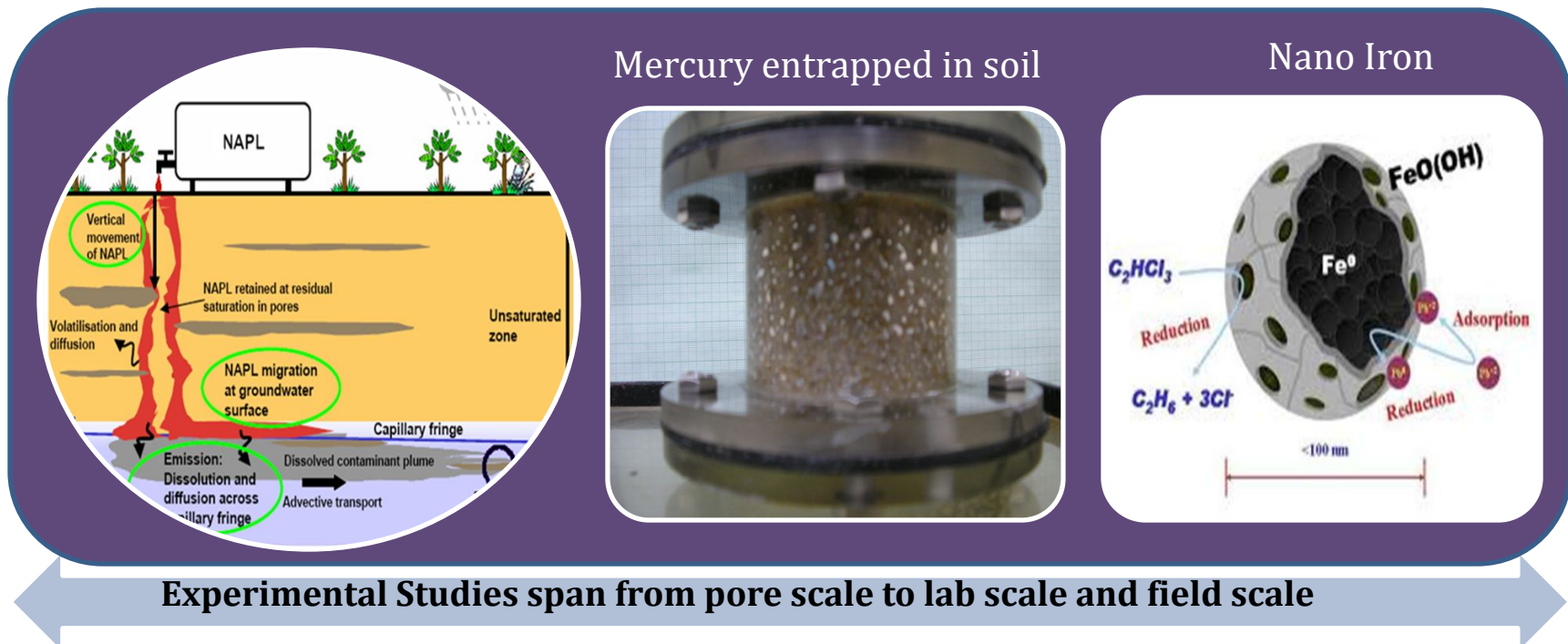
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- ❖ Ground Water Contamination including NAPL /Transport and Remediation
- ❖ Industrial Wastewater Treatment/Physical and Chemical Processes
- ❖ Water and Waste Water /Tertiary treatment for reuse



Dr. Ligy PhilIP
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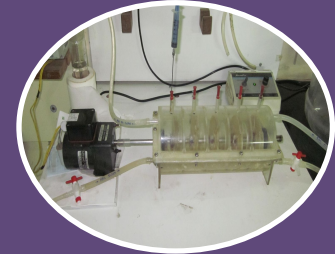
- ❖ Bioremediation of Contaminated Water, Soils, Air and Aquifers
- ❖ Water Treatment and Rural Water Supply
- ❖ Domestic and Industrial Wastewater Treatment, Recycle and Reuse



To cleanup soils , aquifers and air contaminated with organic and inorganic toxic pollutants



Water quality assessment and providing tailor made centralized and point of use water treatment technologies



Sustainable Wastewater management using centralized/decentralized and onsite systems

Pollution Abatement, Drinking water quality assessment and treatment



Dr. S. Mathava Kumar

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Major Areas of Research

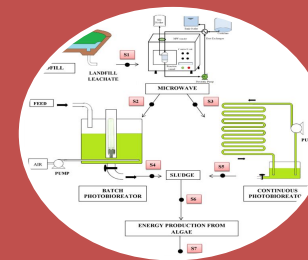
- Membrane Technology for Water and Wastewater Treatment
- Emerging Contaminants/Micro-Pollutants Removal
- Development of Low-cost adsorbents & Remediation of Contaminated Systems



Technology for Emerging Contaminants/Micro-Pollutants Removal



Membrane (Bio)reactor for wastewater treatment



Solid Waste Management and Leachate Treatment

← Application of technologies for water, wastewater and solid waste management →

Dr. S. Mohan

Ph.D, Indian Institute of Science, Bangalore

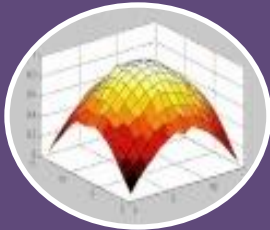
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- ❖ Environmental systems analysis & modeling,
- ❖ Environmental impact analysis,
- ❖ Reservoir operation,
- ❖ Contaminant transport modeling,
- ❖ Sustainable development, GIS & applications,
- ❖ Evolutionary algorithms & their applications



Evolutionary Algorithms



Sustainable Development



Water, Air, and Land
Pollution Abatement

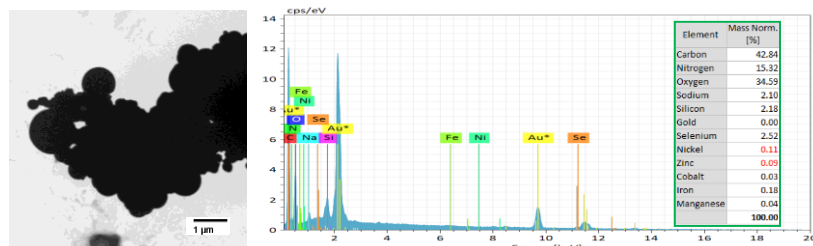
EARTH ALLOWS YOU TO STAND; LET IT STAND THE WAY IT IS



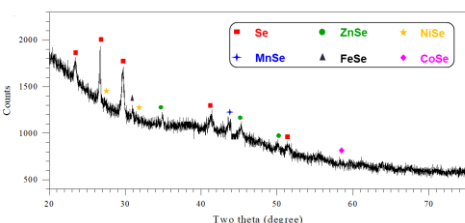
Dr. Mohanakrishnan Logan
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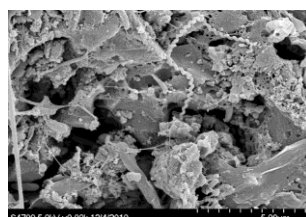
- ❖ Bioprocess for energy and chemical harvesting
- ❖ Metal biotechnology (critical raw metals and rare earth elements)
- ❖ Environmental bioremediation
- ❖ Chalcogen science and technology



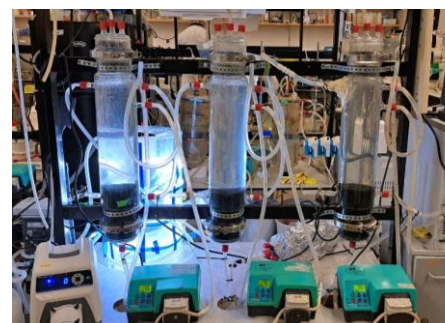
TEM and EDX showing biogenic elemental selenium nanoparticles



XRD: Selenium and metal selenides



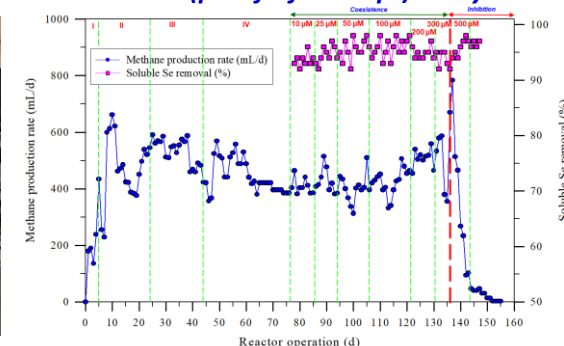
E-pili as electron shuttle



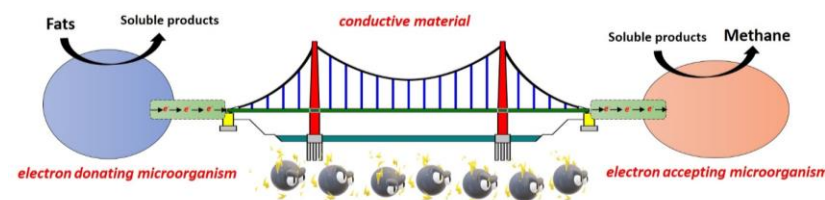
Up-flow anaerobic sludge bed reactor



Batch (proof-of-concept) assays



Simultaneous biomethane production and selenium bioremediation



Conductive material amended anaerobic digestion

Dr. Sachin S. Gunthe

Ph.D, Indian Institute of Tropical Meteorology, India

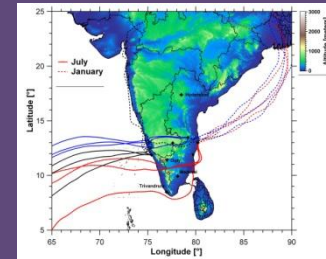
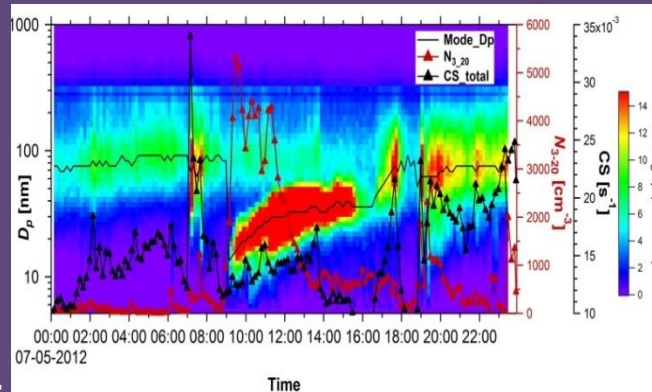
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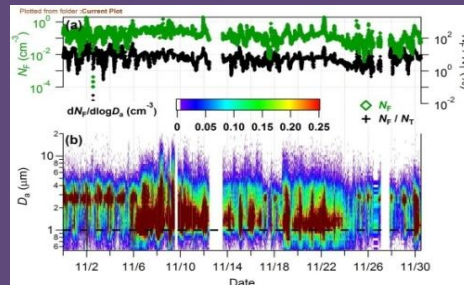
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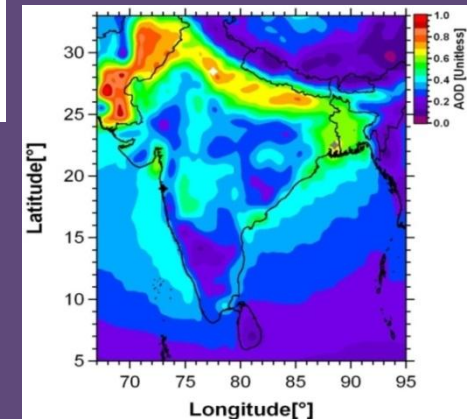
- ❖ Properties and interaction of atmospheric aerosols including bioaerosols
- ❖ Role of atmospheric aerosols in Earth system science
- ❖ Aerosol cloud precipitation interaction – Indian monsoon



Field campaigns



Laboratory studies



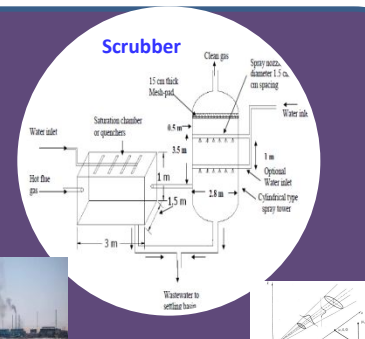
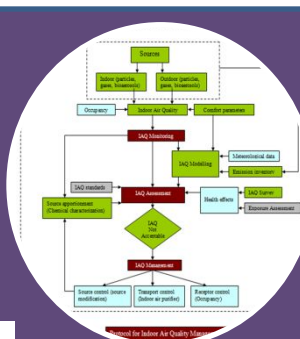
Numerical simulations

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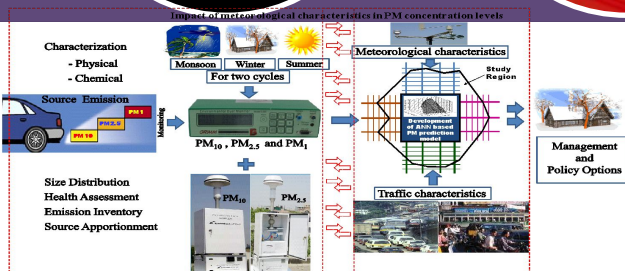
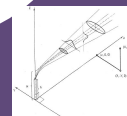


RESEARCH INTERESTS

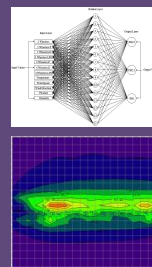
Urban Air Quality Management	Emission inventory, air quality monitoring, modelling, source-receptor modelling and control strategies
Vehicular Pollution Modelling	Deterministic, statistical and artificial neural network approaches
Indoor Air Quality	Monitoring, modelling and control strategies
Industrial Air Pollution Control	Design of air pollution equipments and environmental impact assessment
Environmental data analysis	Multivariate data analysis and environmental auditing



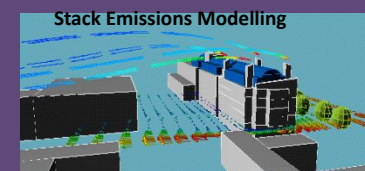
Environmental Pollution Index



Urban Air Quality Management



Indoor Air Quality Management



Industrial Pollution Control



Dr. Tanushree Parsai

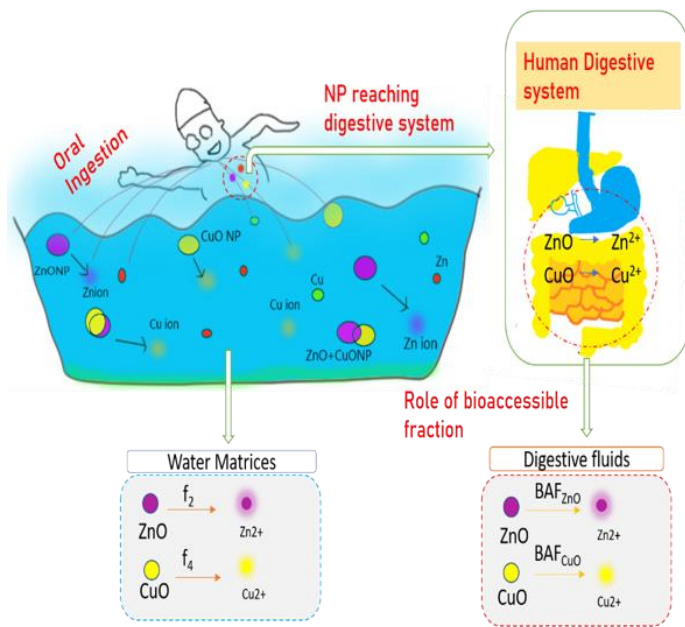
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- Emerging Contaminants (ECs) fate and transport
- Nanoparticles, Microplastics
- Mixture interaction of ECs
- Human Health Risk Assessment
- Water Treatment

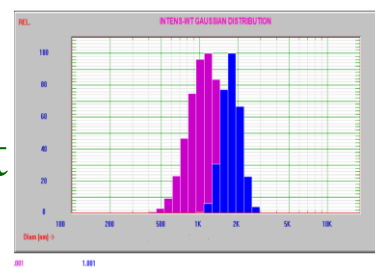
Risk associated with mixture of nanoparticles



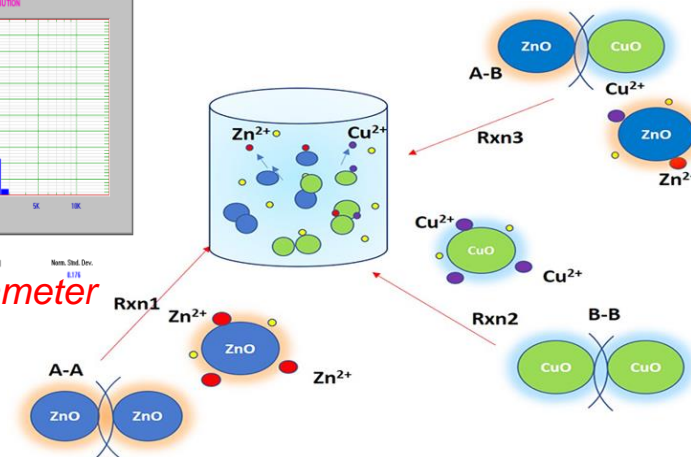
Exposure Assessment

ADD = f(ZnONP, CuONP, Zn²⁺, Cu²⁺ (water), Zn²⁺, Cu²⁺ (Digestive Fluid))

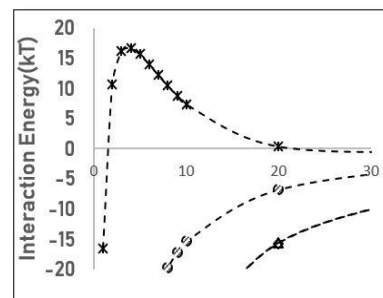
Hydrodynamic diameter



Nanoparticle Mixture Interaction



DLVO Interaction energy



Zeta Potential and pH_{zpc}

