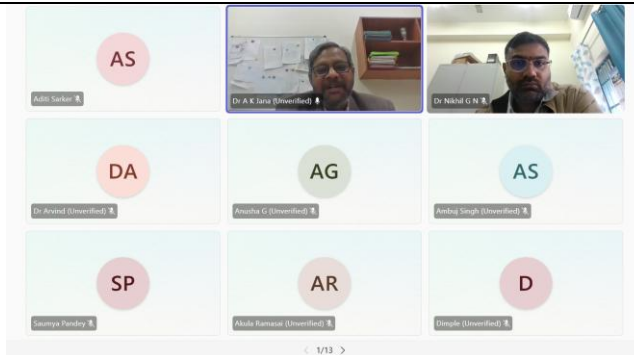
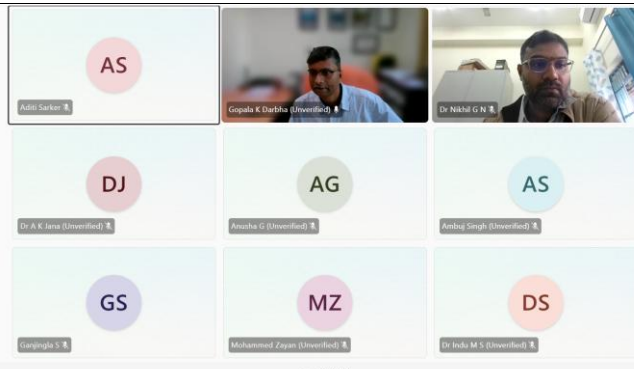
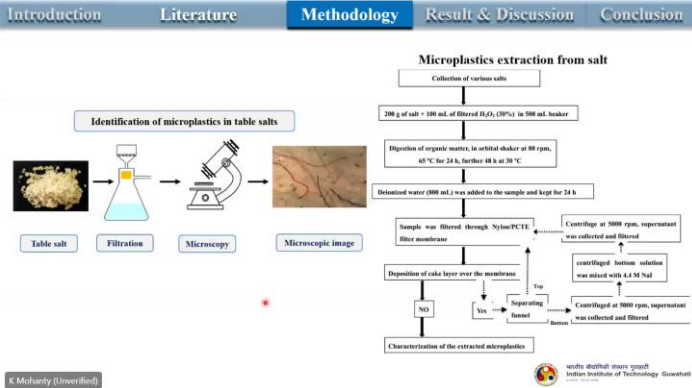
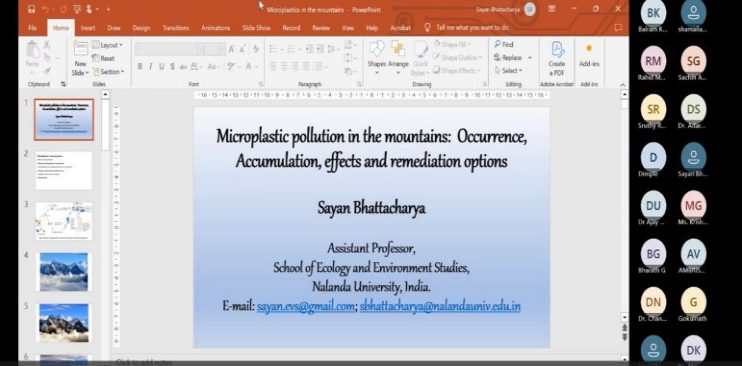


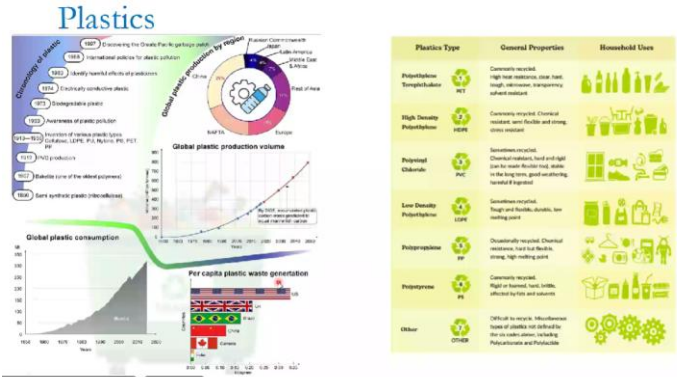
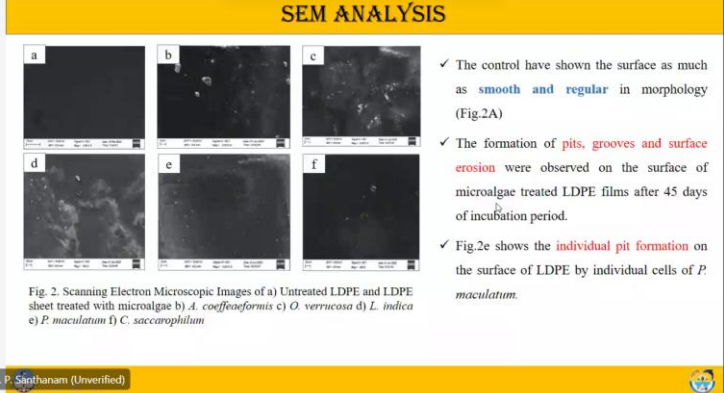
One-week Online Short-Term Course/Faculty Development Program (STC/FDP) on
“Microplastic pollution: Sources, Analysis and Remediation”
(03 Feb - 07 Feb, 2025)

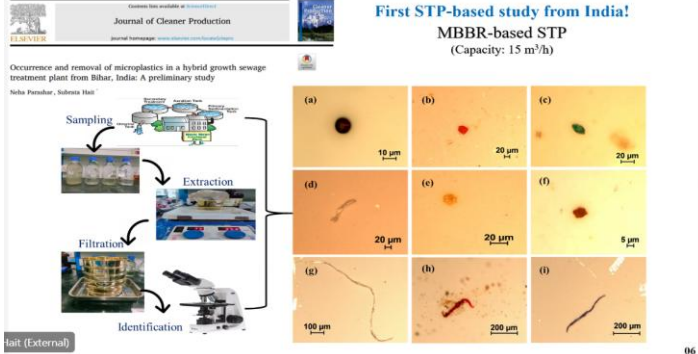
Date & Day (Time)	Speaker	Topic of the Talk	Key Highlights	Photograph
03 Feb 2025 (Day 1, 10:00 AM)	Prof. Arvind Bhardwaj (Head, CCE) & Prof. A.K. Jana (Convener & HOD, BT)	Inaugural Session	- Emphasized the urgency of addressing plastic pollution at both global and local levels. - Introduced the overall objectives and interdisciplinary scope of the STC.	
03 Feb 2025 (Day 1, 10:30 AM-12:30 PM)	Dr. Gopala Krishna Darbha (IISER Kolkata)	Environmental vulnerability of microplastics vs nanoplastics	- Explained in detail the difference between microplastics and nanoplastics, highlighting how their size affects environmental risks and biological interactions. - Discussed the scientific and technological challenges in monitoring and remediation, underscoring the need for advanced tools & cross-disciplinary approaches.	

03 Feb 2025 (Day 1, 4:00 PM-6:00 PM)	Dr. Kaustubha Mohanty (IIT Guwahati)	Microplastics in sea salt: source, identification, and removal	- Presented evidence of microplastic contamination in sea salt, showing how plastics enter the food chain through basic dietary commodities. - Explained analytical techniques such as FTIR and Raman spectroscopy for microplastic detection.	
04 Feb 2025 (Day 2, 10:30 AM-12:30 PM)	Dr. Krishna Mohan Poluri (IIT Roorkee)	Addressing Nanoplastic pollution through bio-nanotechnological interventions	- Introduced bio-nanocomposites and other nanotechnological tools as innovative approaches to remove or degrade plastic pollutants. - Highlighted the importance of integrating biological and material science strategies for sustainable long-term solutions to the plastic crisis.	

04 Feb 2025 (Day 2, 3:00 PM- 5:00 PM)	Dr. Amritanshu Shriwastav (IIT Bombay)	Human exposure to Microplastics	• Outlined major exposure pathways for humans, including ingestion via food and water, inhalation of airborne particles, and dermal contact. • Linked microplastic exposure to toxicological concerns.	Human Exposure to Microplastics MP Exposure Oral Intake: drink, food, food container, baby teat Inhalation: air Skin Contact: personal care product, mobile phone case MP Toxicity Exposure → MICROPLASTIC → Toxicity Toxicity effects: oxidative stress, DNA damage, organ dysfunction, metabolic disorder, immune response, neurotoxicity, reproductive and developmental toxicity Li et al. (2023) https://doi.org/10.1021/acshealth.3c00052 Ramshu Shriwastav (External)
05 Feb 2025 (Day 3, 10:30 AM-12:30 PM)	Dr. E. V. Ramasamy (MGU Kottayam)	Monitoring microplastics in Vembanad Lake- a Ramsar site in Kerala	• Shared detailed case study on Vembanad Lake, a Ramsar site, focusing on methods for sampling, monitoring, and identifying microplastics in freshwater. • Stressed the growing threat posed to freshwater biodiversity and local livelihoods dependent on fisheries due to increasing plastic loads.	MPs Extraction Your microphone is muted Press Ctrl+Shift+M to unmute your mic, or press and hold the Ctrl+Spacebar. Analysis of biota samples done using methods of Daniel et al., 2020 <pre> graph TD A[Biota sample] --> B[Dissecting the sample] B --> C[Digestion using 10% KOH solution] C --> D[Centrifuge the content for 10 mins at 2500 rpm] D --> E[Vacuum filtration] E --> F[Visual examination using Stereo microscope] E --> G[Micro Raman spectroscopic analysis for polymer identification] F --> H[Shape, Size and Colour Determination] G --> I[Raman spectrum analysis using KnowItAll software] </pre> E.V.Ramasamy (Unverified)

05 Feb 2025 (Day 3, 3:00 PM-5:00 PM)	Dr. Sayan Bhattacharya (NU Rajgir)	Microplastic pollution in mountains: Occurrence, accumulation, effects, and remediation options	- Discussed how atmospheric transport and tourism-related waste are major contributors to microplastic accumulation in mountain ecosystems. - Highlighted the ecological risks to fragile alpine systems, noting impacts on soil health, vegetation, and freshwater.	
06 Feb 2025 (Day 4, 10:30 AM-12:30 PM)	Dr. George K. Varghese (NIT Calicut)	Microplastics in sewage sludge and compost	- Explained how sewage treatment plants act as hotspots for microplastic accumulation, with sludge often retaining high concentrations of plastics. - Showed how the reuse of sludge and compost for agricultural purposes leads to re-entry of plastics into soils and eventually into food webs.	

06 Feb 2025 (Day 4, 3:00 PM- 5:00 PM)	Dr. Baranidharan S (NIT AP)	Microplastic behaviour in aqueous environments	- Described the chemical and physical interactions of microplastics with heavy metals, organic pollutants, and other contaminants in water. - Emphasized how environmental factors such as pH, salinity, and temperature affect the transport and toxicity of microplastics in aquatic systems.	 The infographic 'Plastics' provides a comprehensive overview of the plastic industry. It includes a timeline of key milestones from 1907 to 2024, such as the first synthetic plastic, the first biodegradable plastic, and the first plastic bottle. A line graph shows global plastic production volume increasing from 1950 to 2022, with a projected peak around 2030. Another graph shows global plastic consumption from 1950 to 2022, also showing a significant upward trend. A world map displays per capita plastic waste generation by country, with India and China showing high levels. A table on the right lists various plastic types (PET, HDPE, PVC, LDPE, PP, PS, PE, etc.) along with their general properties and common household uses.
07 Feb 2025 (Day 5, 10:30 AM-12:30 PM)	Dr. Perumal Santhanam (Bharathidasan University)	Microplastic pollution in the marine environment: Sources, Impacts, and the Way Forward	- Outline key sources of marine microplastics such as discarded fishing gear, synthetic textiles, and shipping waste. - Highlighted the impacts on marine ecosystems, including coral reef degradation.	 The SEM ANALYSIS slide displays six scanning electron microscopic images (a-f) of LDPE sheets. Image (a) shows the untreated LDPE surface, which is smooth and regular. Images (b) through (f) show the surfaces of LDPE sheets treated with different microalgae: (b) <i>A. coelestiformis</i>, (c) <i>O. verrucosa</i>, (d) <i>L. indica</i>, (e) <i>P. maculatum</i>, and (f) <i>C. saccharophilum</i>. The treated surfaces show various morphological changes, including the formation of pits, grooves, and surface erosion. A text box on the right explains that the control (a) is smooth and regular, while the treated surfaces (b-f) show pits, grooves, and surface erosion. It also notes that the formation of individual pits is observed on the surface of LDPE by individual cells of <i>P. maculatum</i>.

07 Feb 2025 (Day 5, 3:00 PM-5:00 PM)	Dr. Subrata Hait (IIT Patna)	Microplastics in different water matrices, including Sewage Systems: From Pollution to Solution by Sustainable Tertiary Treatment Techniques	- Introduced advanced tertiary treatment methods for microplastic removal. - Stressed the scalability and sustainability of these technologies, encouraging their integration into modern water treatment plants.	
07 Feb 2025 (Day 5, 5:00 PM-6:00 PM)	Valedictory Session	Closing remarks and reflections	Summarized the five-day program; stressed interdisciplinary collaboration and motivation for future research on plastic pollution.	