
Departmental Seminar

Seminar Title	: EXPLORING JAMUN LEAF POWDER (SYZYGIUM CUMINI) AS A NATURAL AND SUSTAINABLE SOLUTION FOR EFFECTIVE SURFACTANT REMOVAL IN WASTEWATER
Speaker	: Gyanaranjan Jena (521bm2007)
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Venue	: BM Department Seminar Room
Date and Time	: 18 Mar 2025 (11.00 AM)
Abstract	: Surfactants, commonly present in greywater from domestic sources such as showers and washing machines, represent a significant emerging contaminant that poses risks to water quality and ecosystem health. Their extensive application in cleaning products raises important environmental and public health issues. This study investigates the potential of Jamun leaf (JL) powder as a natural coagulant for removing surfactants from synthetic wastewater. Controlled experiments were carried out using a six-paddle jar test apparatus under specific conditions, including pH 8, a coagulant dose of 3 g/L, rapid mixing at 140 RPM, slow mixing at 40 RPM, and a sedimentation period of 1 h. The observed removal efficiencies were 60.41% for turbidity and 65.50% for surfactant. Analytical methods like Scanning Electron Microscopy (SEM), X-ray Diffraction (XRD), and Energy Dispersive X-ray (EDX) analyses indicated that JL powder contains bioactive compounds, including proteins, lipids, and carbohydrates, with total carbohydrate content recorded at 580 µg/g and protein concentration at 57.44 µg/g. Zeta potential assessments across varying pH levels illustrated the surface charge characteristics of JL and surfactants, while Fourier Transform Infrared Spectroscopy (FTIR) verified the presence of functional groups in JL. The findings suggest that JL powder is an efficient and eco-friendly coagulant for surfactant removal in wastewater treatment processes. Its natural properties and cost-effectiveness position it as a sustainable alternative to traditional methods, promoting environmental conservation and water quality restoration. ALL ARE CORDIALLY INVITED