National Institute of Technology Rourkela

Departmental Seminar

Seminar Title	: Incorporating Jute Biochar in Cement Mortar for Mechanical Properties and Carbon Footprint Reduction
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Supervisor	: Dr. M. Gattu
Venue	: CE Seminar Hall
Date and Time	: 11 Jul 2025 (02:30 PM)
Abstract	: This study investigates the feasibility of using jute fiber biochar as a partial replacement for cement in cement mortar composites. Jute fibers were subjected to controlled slow pyrolysis to produce biochar with enhanced carbonization and a stable porous structure. The produced biochar was thoroughly characterized for its physical and chemical properties, ensuring its suitability for incorporation into cementitious materials. Various mortar mix designs were developed, and a predetermined percentage of cement was replaced by jute biochar. The work evaluates biochar's influence on the composite's mechanical properties, such as compressive strength and durability, along with its potential for reducing the carbon footprint associated with conventional cement production. The study highlights the integration of jute biochar as a sustainable alternative, recycling an agricultural by-product while improving the performance of cement-based materials. This paper presents the methodology for biochar production, the mix design formulation, and the testing protocols.