National Institute of Technology Rourkela

Departmental Seminar

Seminar Title	: Effect of notch shape & size on the mechanical performance of Woven GFRP Laminate: A numerical Investigation
Speaker	: Dr. Subhajit Mondal
Supervisor	: Dr. M. Gattu
Venue	: CE Seminar Hall
Date and Time	: 19 Jun 2025 (10:30 am)
Abstract	: Due to their ability to impart transverse stiffness, glass fibre-reinforced polymer (GFRP) composite materials have increasingly been used in different sectors, especially the woven type. Assembly of such materials in many configurations requires drilling a hole, thus creating a material discontinuity in that component. The failure strength and mode of failure significantly depend on the shape of such notches. The analysis of the effect of notch shapes and sizes is of utmost importance from a design point of view. In this investigation, the numerical model of woven GFRP laminates with various shaped notches is developed and subjected to a displacement-controlled quasi-static tensile test. The size of the notches is also varied to study its effect on the laminate's Bearing Strength (BS). The effect of three shapes, constituting a circle, a square, and a diamond, is evaluated for different ply orientation angles, and their failure pattern are identified.