National Institute of Technology Rourkela

Registration Seminar

Seminar Title	: Investigation on the Mechanical and Wear Behavior of Fused Deposition Modelling (FDM) based 3D Printed Parts
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Venue	: Departmental Seminar Room
Date and Time	: 29 Apr 2025 (4.30 PM)
Abstract	: Additive manufacturing (AM) is a process that builds layers to make a physical part from a digital model. It offers many advantages, including material flexibility, design freedom, reduction in material waste, and an increased range of complex structures. Currently, varieties of 3D printing technologies have been developed and among them, FDM is the most commonly used process with the advantages of low cost and simple operation. Study of mechanical and wear behavior is crucial for 3D printed parts as it directly influences their performance, durability, and lifespan in various applications. The objective of the present work is to study the effect of various process parameters on the mechanical and wear behaviour of FDM based 3D printed Polylactic Acid (PLA) and carbon fiber reinforced PLA (PLA+CF) parts. The bond strength of adhesively bonded joint of 3D printed parts will also be studied. Numerical analysis of adhesively bonded joint of 3D printed parts will be done and will be validated using experimental results. In the work done so far, significant effect of FDM process parameters on the tensile strength of the printed PLA parts is observed. Layer thickness is found to be most significant factor. Bond strength of adhesively bonded part is found to be comparable to the mechanical fastened jointed part.