National Institute of Technology Rourkela

Synopsis Seminar

Seminar Title	: Designing of a novel electro-galvanizing system for improved anti-corrosion and mechanical properties
Speaker	: Pundrikaksha Upadhyay (Rollno : 518mm1001)
Supervisor	: Prof. Archana Mallik
Venue	: UG Class Room, MS 214
Date and Time	: 27 Jun 2024 (11 AM)
Abstract	: In the current study, electrodeposition of Zn, Zn-Al composite and Zn-Ni alloy was done from an acidic sulfate bath onto mild steel at a pH of 3.5. The Zn coating was done both in direct current (DC) as well as the pulsed current mode to investigate whether the two techniques would lead to a difference in the corrosion behavior of the plated films. The range of deposition current density was obtained through a systematic cyclic voltammetry (CV). The chosen current density values are -50, -150, -180, and -250 mA/cm^2. Pulse deposition was done after the DC deposition at the average current density of -180 mA/cm^2 at different duty cycles, frequencies and peak current densities. The thickness of the coating was measured by using a surface profilometer. Phase, structure and composition of the deposition were characterized by XRD, SEM and elemental mapping. Tafel polarization technique and electrochemical impedance spectroscopy (EIS) were done to study the corrosion rate and mechanism in 3.5 wt% NaCl.