National Institute of Technology Rourkela

Registration Seminar

Seminar Title	: Removal of Acetamiprid Insecticide by Electrocoagulation: Modelling of Experimental Results using Response Surface Methodology
Speaker	: Manisha Priyadarshini Tripathy (Rollno : 523ch1006)
Supervisor	: Madhusree Kundu
Venue	: Chemical Engineering New Seminar Room
Date and Time	: 15 Jul 2025 (11 AM)
Abstract	: Acetamiprid is a widely used neonicotinoid insecticide, but its presence in the environment raises significant concerns regarding human health. Consequently, effectively removing acetamiprid from water sources is crucial. Electrochemical techniques, particularly electrocoagulation, have emerged as effective methods for this purpose, offering advantages such as high efficiency, minimal sludge production, and cost-effectiveness. This sludge can potentially be repurposed as a plasticizer. To optimize the removal of acetamiprid, response surface methodology (RSM) was employed to analyze various operational parameters, including reaction time, acetamiprid concentration, and applied voltage. The model's effectiveness was validated through ANOVA, revealing a strong correlation with experimental results (correlation regression of 0.99) and significant statistical values (F-value of 240.1 and P-values below 0.05). The optimal conditions achieved a removal efficiency of 92.71% at a reaction time of 20 minutes, an acetamiprid concentration of 750 ppb, and an applied voltage of 31 V. This eco-friendly electrocoagulation process successfully eliminates acetamiprid from wastewater without the need for additional chemicals.