

Synopsis Seminar

Seminar Title	: Design and Synthesis of Polymeric Nanocomposite Materials for Efficient Removal of Cr(VI) from Aqueous Solutions
Speaker	: Abhijit Behera (Rollno : 519cy1025)
Supervisor	: Prof. Raj Kishore Patel
Venue	: Seminar Room – Department of Chemistry
Date and Time	: 25 Sep 2024 (11 am)
Abstract	: Water pollution has become a significant global issue due to the increased presence of heavy metal ions and various pollutants in aquatic systems giving a serious threat to living organisms. Cr(VI) is highly toxic among heavy metals pollutant which affects millions of people worldwide. Even exposure to Cr(VI) above permissible limit causes a number of diseases . So, the remediation of Cr(VI) is a necessary which makes the researchers to focus on this research. This research is undertaken with an aim of design and synthesis of a number of polymeric nanocomposite to remove hexavalent chromium from aqueous solution. The polymeric nanocomposite synthesized are polypyrrole zirconium phosphate, polyaniline zirconium tungstophosphate, polyaniline yttrium phosphate and polypyrrole modified layer double hydroxides by using pyrrole and aniline as an organic component and zirconium phosphate, zirconium tungstophosphate, yttrium phosphate and layer double hydroxides as inorganic components respectively. The assessment of the structural, morphological, textural, functional, and thermal stability of the synthesized materials is conducted using various analytical techniques like XRD, TEM, FESEM, EDX, Raman spectroscopy, TGA-DTA, FTIR, N ₂ sorption isotherms, Zeta potential measurements, XPS and other instrumental analyses. Batch adsorption experiments were performed to find Cr(VI) adsorption capacity by nanocomposite material. Regeneration studies are carried out to know about better durable, sustainable and capable of composite material. These studies show that these nanocomposite have potential adsorbent for efficient removal of Cr(VI) from aqueous solution.