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Name of the Department: Chemistry

Topic of the research: Adsorptive Removal of Pollutants from Aqueous Solutions

Findings

The thesis entitled “**Adsorptive Removal of Pollutants from Aqueous Solutions**” consists of six chapters. The thesis describes the synthesis of various adsorbents like activated carbon nanocomposite, hydrogel nanocomposites and functionalized hydrochar utilizing environmentally affable substance and procedures. The prepared multifunctional and proficient adsorbents were employed for the aqueous phase sequestration of dyes, heavy metals, inorganic pollutants, and other emerging contaminants. Various techniques including X-ray diffraction (XRD), Fourier Transform infrared spectroscopy (FTIR), Brunauer–Emmett–Teller (BET) analysis, Transmission electron microscopy (TEM), Scanning electron microscopy (SEM), Energy dispersive X-ray spectroscopy (EDX), and X-ray photoelectron spectroscopy (XPS) assisted the physio-chemical characterization of the adsorbents. Adsorption optimization was strategized via response surface methodology. Further, non-linear isotherm, kinetic models and thermodynamic study were applied for adsorption mechanism elucidation.