## Magnetic Activated Carbon: Preparation, Characterization, and Application for Vanadium Removal

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**Abstract :** In this work, the magnetic activated carbon nanocomposite (Fe-CAC) has been synthesized by anchorage iron hydr(oxide) nanoparticles onto commercial activated carbon (CAC) surface and characterized using BET, XRF, SEM techniques. The influence of various removal parameters such as pH, contact time and initial concentration of vanadium on vanadium removal was evaluated using CAC and Fe-CAC in batch method. The sorption isotherms were studied using Langmuir, Freundlich and Dubinin-Radushkevich (D-R) isotherm models. These equilibrium data were well described by the Freundlich model. Results showed that CAC had the vanadium adsorption capacity of 37.87 mg/g, while the Fe-AC was able to adsorb 119.01 mg/g of vanadium. Kinetic data was found to confirm pseudo-second-order kinetic model for both adsorbents. **Keywords :** magnetic activated carbon, remove, vanadium, nanocomposite, freundlich

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