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REMOVAL OF MAGNESIUM IONS BY FUNCTIONALIZED CARBON NANOTUBE

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Functionalized carbon nanotubes (CNTs) have been extensively studied for various applications, including environmental remediation. One such application is the removal of magnesium ions (Mg^{2+}) from water. The physicochemical characteristics of carbon nanotubes make them suitable for ion adsorption. The functionalization of carbon nanotubes involves modifying their surface properties by attaching different functional groups or molecules to enhance their performance. Magnesium can be removed from water through various treatment processes. In specific industrial applications, such as manufacturing or chemical processes, magnesium in water becomes necessary to ensure the quality and functionality of the products or processes. Carbon nanotubes were synthesized from camphor by chemical vapour deposition at 700 ℃.. Carbon nanotubes were characterized and confirmed with SEM, PXRD, Raman spectroscopy, and UV-Vis spectroscopy. Carbon nanotubes thus synthesized were functionalized with carboxylic and hydroxyl groups by using $KMnO_4$ solution, characterized and confirmed by using FT-IR analysis. The magnesium removal efficiency of functionalized carbon nanotube was examined with different concentrations of magnesium solution such as 1000, 800, 600, 400, and 200 mg L^{-1} showed removal efficiency 28.3%, 33.4%, 35.5%, 45%, and 57.5%, respectively. Further, it showed increased efficiency with the increased amount of functionalized carbon nanotubes.

Keywords: Carbon nanotubes, Characterization, Functionalization, Magnesium