



COMPARATIVE STUDY OF NITRATE REMOVAL FROM AQUEOUS SOLUTION USING POWDER ACTIVATED CARBON AND CARBON NANOTUBES

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Removal of nitrate from water samples is of significant important from the health and environmental point of view. Therefore, the objective of this study is to remove the nitrate from aqueous solution by using the powder activated carbon (PAC) and carbon nanotubes (CNTs) in batch adsorption technique. The effects of pH, adsorbent dosage and contact time on the adsorption were investigated. The nitrate adsorption capacity of CNTs was found to be higher than PAC and decreased above pH 5. It was found that sufficient time for adsorption equilibrium of nitrate ions is 60 min. The isotherm data were treated according to Langmuir and Freundlich models. Also the adsorption data at 25°C were found to fit almost equally well to Langmuir and Freundlich models, but according to complementary criteria, the Freundlich is preferred. Adsorption capacity of the PAC and CNTs was found to be 10 and 25 mmol nitrate/g adsorbent, respectively.