

ADSORPTION OF AMMONIUM IONS ONTO MULTI-WALLED CARBON NANOTUBES

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ABSTRACT. Multi-walled carbon nanotubes (MWCNTs) surfaces have been characterized by FTIR and SEM techniques. The adsorption performance of MWCNTs was investigated for the removal of ammonium ions from wastewater. The effect of contact time, temperature and initial ions concentration on the adsorption of ammonium ions by MWCNTs were studied and optimized. The results showed a high adsorption capacity of 129 mg/g according to Langmuir isotherm model and removal efficiency of 95%. In addition, the adsorption kinetic and equilibrium data were fitted to the pseudo-second-order model. The potential application of MWCNTs for adsorption of ammonium ions from wastewater was successfully accomplished using a batch adsorption technique.

Keywords: Carbon nanotubes; Removal; Adsorption; Kinetics; Isotherm; Ammonium ions; Langmuir

INTRODUCTION

The scientific community has a growing interest in environmental protection against aquatic pollution from various industrial activities for the reduction and/or the valorization of solid wastes. In this context, many studies were performed using nanoadsorbents. These adsorbents are used for removal and adsorption of ammonium ions from wastewater [1, 2]. The use of these

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