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**Pollution Control And Sustainable Environment
(NCPGSE-2023)**



*Proceedings the book of
National Conference
on*

**Pollution Control And Sustainable Environment
(NCPGSE-2023)**

24th & 25th Feb, 2023



**DEPARTMENT OF CHEMISTRY
GOVT. COLLEGE FOR MEN (AUTONOMOUS)
KADAPA, AP, INDIA**



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REMOVAL OF CU(II) AND CD(II) FROM AQUEOUS PHASE BY SILVER NANO PARTICLES DEPOSITED FUNCTIONALIZED MULTIWALLED CARBON NANOTUBES

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Abstract

A new composite based on functionalized multiwalled carbon nanotubes (FMWCNTs) reduced with N,N-dimethylformamide and cross-linked with silver nitrate (Ag-MWCNTs) was invented. The Ag-MWCNTs was characterized by FT-IR, X-ray diffraction, Raman spectroscopy, TGA, scanning electron microscopy (SEM) and transmission electron microscopy (TEM). The experimental equilibrium adsorption data were analyzed by three widely used two-parameter equations Langmuir, Freundlich and Dubinin-Radushkevich (D-R) isotherms. Among these isotherm models Langmuir model provided a better fit with the experimental data than others as revealed by high correlation coefficients and low chi-square values. The kinetics data fitted well into the pseudo-second-order model with correlation coefficient greater than 0.99. Desorption experiments were carried out to explore the feasibility of regenerating the adsorbent and the adsorbed Cu(II) and Cd(II) from Ag-MWCNTs was desorbed using 0.25 M HCl with an efficiency of 98.53% recovery. Thermodynamic properties, i.e., ΔG° , ΔH° , and ΔS° , showed that adsorption of Cu(II) and Cd(II) onto Ag-MWCNTs was endothermic, spontaneous and feasible in the temperature range of 293–313 K and can be successfully used for separation of Cu(II) and Cd(II) from aqueous solutions.

Keywords: Multiwalled carbon nanotubes, Silver nanoparticles, Metal Absorbents, Thermodynamics

POLLUTION AND ITS IMPACT ON SUSTAINABLE DEVELOPMENT

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Abstract

Pollution and its direct and indirect negative effects on humans, and animals is one of the most important issues that researchers have been studying and searching for radical solutions. Therefore, the research sheds light on the definition of pollution, its causes and environmental effects, its most important types, especially radioactive, industrial and household waste, and their levels of risk. The research focuses on the issue of air pollution resulting from fumes, smoke, and gases emitted from cars, factories, volcanic eruptions, and others. It also absorbs the problem of soil and water pollution due to the failure to properly treat factory, household and other waste, and the use of chemical fertilizers and pesticides harmful to water, air and soil. The research addresses the topic of noise pollution and its causes by limiting loud noises from radio, television, cars, airplanes, music, etc.

Key words: pollution, development, soil, noise, water, air