



Adsorption of Nickel ions Ni(II) from aqueous solution by using the Nb₂O₅/CdS nano composites.

Nada Y Fairouz

University of Babylon, College of Science-Department of Chemistry/Hilla- Iraq.

Abstract : Nowadays, development of materials based on coupled photocatalysts in sorption process for removal of heavy metal ions from waste water has been considered by many researchers. In this study, new coupled catalysts Nb₂O₅/CdS was prepared by the wet commixing method at different ratios of (0.75:0.25, 0.6:0.4, 0.5:0.5, 0.85:0.15, 0:1, 1:0, Nb₂O₅:CdS). Calcination was tested at different temperature 200 °C, 500 °C and 800 °C for 4 hours. The prepared powder was characterized by X-ray diffraction. The result showed that (0.85:0.15) percentage at 800 °C has higher activity than other ratio at different temperature. Furthermore, the mass for the catalyst, initial of concentration for Ni (NO₃)₂, effect of temperature, effect of PH.

The experimental data for the Ni cation was analyzed by isotherms and kinetics equation in which the isotherm of the cation and Nb₂O₅/CdS was fitted well with the Freundlich and Langmuir models, respectively. The kinetic study followed pseudo-second order mode, finally the prepared nanocomposite can be used as a good adsorbent for metal cation from waste water.

Keywords : couple Nb₂O₅/CdS nanocomposite, wet commixing method, heavy metal ion Ni (II) removal, Adsorption photodegradation.

Nada Y Fairouz /International Journal of ChemTech Research, 2016,9(12): 495-507
