Algerian Journal of Environmental Science and Technology
Avril edition. Vol.3. N°1. (2017)
ISSN : 2437-1114
www.aljest.webs.com

Synthesis and characterization of nano-magnetic material based on (carbon nanotubes / nickel ferrite): Application for the removal of methyl orange dye from contaminated water

K. Seffah [1], N.Bensacia[1*], A. Skender[1, 2], E. Flahaut [3], A. Hadj-ziane-zafour[1]

[1] Laboratoire de Génie Chimique, Université Saad Dahlab de Blida, Algérie
[2] Laboratoire des Materiaux et Environement, Université Yahia Fares Médéa, Algérie
[3] CIRIMAT, Université Paul Sabatier, Toulouse, France

*Corresponding author: polyadsorption@yahoo.fr Tel +213 5 53344549 Fax +213 25 473631

ARTICLE INFO

Article History:

Received ***: 01/01/2017***
Accepted ***:00/03/2017***

Key Words:

Carbon nanotubes
Adsorption
Methyl orange
Nickel-ferrite

ABSTRACT/RESUME

Abstract: *This work aims the synthesis of (DWNTCs / $NiFe_2O_4$) by refluxing process. Herein, the synthesized adsorbent was characterized via Fourrier Transform Infrared Spectroscopy (FTIR), X-ray diffraction (DRX), BET, zeta potential and transmission electron microscopy (TEM), where the adsorption of methyl orange on (DWNTCs / $NiFe_2O_4$) has been carried out by studying the adsorption kinetics, pH, mass and the initial concentration. The results indicated that the maximum adsorption rate is 7.77 $mg.g^{-1}$ at pH 5 with 100 mg of (DWNTCs / $NiFe_2O_4$), and an initial orange methyl concentration of 10 $mg.l^{-1}$. In addition, the adsorption process describes a second-order kinetic model, where the modeling of adsorption isotherms showed that the Freundlich one seem to be the adequat model describing the adsorption process with $R^2 = 0.97$.*