ADSORPTION OF CADMIUM IONS FROM WATER ON DOUBLE-WALLED CARBON NANOTUBES/IRON OXIDE COMPOSITE

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Abstract. A new material (DWCNT/iron oxide) for heavy metals removal was developed by combining the adsorption features of double-walled carbon nanotubes with the magnetic properties of iron oxides. Batch experiments were applied in order to evaluate adsorption capacity of the DWCNT/iron oxide composite for cadmium ions. The influence of operating parameters such as pH value, amount of adsorbent, initial adsorbate concentration and agitation speed was studied. The adsorption capacity of the DWCNT/iron oxide adsorbent for Cd^{2+} ions was 20.8 mg g^{-1}, which is at the state of the art. The obtained results revealed that DWCNT/iron oxide composite is a very promising adsorbent for removal of Cd^{2+} ions from water under natural conditions. The advantage of the magnetic composite is that it can be used as adsorbent for contaminants in water and can be subsequently controlled and removed from the medium by a simple magnetic process.