

Process development for reproducible synthesis of magnetic eco-friendly adsorbent

Doina Hritcu, Alina Ibanescu, Marcel I. Popa

Faculty of Chemical Engineering and Environmental Protection, “Gheorghe Asachi”

Technical University of Iasi, Romania

Magnetic particulate adsorbents offer advantages over traditional ones due to facile separation from the aqueous phase. Their efficient removal in magnetic field, followed by re-generation and re-use decreases the overall water treatment cost by eliminating time and energy required for filtration/centrifugation processes. A relatively simple procedure to produce magnetite/chitosan composite (MCC) microparticles has been previously developed by our team and the novel material has demonstrated superior adsorption properties towards some heavy metal ions compared to similar products described in the literature. The use of chitosan as a raw material has multiple advantages, but its structure and properties may vary widely due to the fact that the macromolecules are actually copolymers containing both acetylglucosamine and glucosamine sequences of various lengths. This work aims to investigate the influence of the raw material (chitosan) characteristics upon the MCC properties and to identify the appropriate changes in the synthesis parameters that ensure product reproducibility.

ACKNOWLEDGEMENT: This work was supported by a grant of the Romanian National Authority for Scientific Research and Innovation CNCS/CCDI-UEFISCDI PN-III-P2-2.1-PED-2016-0456, within PNCDI III.