The Organic Dye Adsorption Behavior of Biopolymer Composite (GO-PHEMA) Synthesized in Supercritical CO_2

Dian Kharismadewi, 판샤오펭, Trung Hieu Tran, 심재진*
영남대학교
(jjshim@yu.ac.kr*)

Graphene oxide (GO) was functionalized covalently with poly(2-hydroxyethyl) methacrylate (HEMA) by dispersion polymerization in supercritical carbon dioxide system. The stucture of GO-PHEMA composite was characterized by Fourier transform infrared spectroscopy, X-ray diffraction, scanning electron microscopy and thermogravimetric analyses. The adsorption behavior of the composite to methylene blue (MB) organic dye was observed, where the effect of adsorbent dosage, pH and contact time were investigated. Adsorption parameters were found to fit well into the Freudlich adsorption isotherm and the adsorption kinetics studies showed that the adsorption behavior followed a pseudo second order reaction for the dye studied. Experimental results indicate that the prepared composite can remove 99.8% of dye. The composite is a biocompatible and eco-friendly adsorbent, and also could be used for other applications.
Acknowledgment: This research was supported by Basic Science Research Program through the National Research Foundation of Korea (NRF), funded by the Ministry of Education, Science and Technology (2012R1A1A2009529).