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Removal of Nickel and Zinc Ions from Aqueous Solution by Graphene Oxide and Graphene Oxide Functionalized Glycine

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Abstract : In this study, removal of Nickel and Zinc by graphene oxide and functionalized graphene oxide–gelaycin surfaces was examined. Amino group was added to surface of graphene oxide to produced functionalized graphene oxide–gelaycin. Effect of contact time and initial concentration of Ni (II) and Zn(II) ions were studied. Results showed that with increase of initial concentration of Ni (II) and Zn(II) adsorption capacity was increased. After 50 min has not a large change at adsorption capacity therefore, 50 min was selected as optimaze time. Scanning electron microscope (SEM) and fourier transform infrared (FT-IR) spectroscopy spectra used for the analysis confirmed the successful fictionalization of the Graphene oxide surface. Adsorption experiments of Ni (II) and Zn(II) ions graphene oxide and functionalized graphene oxide–gelaycin surfaces fixed at 298 K and pH=6. The Pseudo Firs-order and the Pseudo Second-order (types I, II, III and IV) kinetic models were tested for adsorption process and results showed that the kinetic parameters best fits with to type (I) of pseudo-second-order model because presented low X2 values and also high R2 values.

Keywords : graphene oxide, gelaycin, nickel, zinc, adsorption, kinetic, graphene oxide, gelaycin, nickel, zinc, adsorption, kinetic

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