Reduction of Content of Lead and Zinc from Wastewater by Using of Metallurgical Waste

Authors : L. Rozumová, J. Seidlerová

Abstract : The aim of this paper was to study the sorption properties of a blast furnace sludge used as the sorbent. The sorbent was utilized for reduction of content of lead and zinc ions. Sorbent utilized in this work was obtained from metallurgical industry from process of wet gas treatment in iron production. The blast furnace sludge was characterized by X-Ray diffraction, scanning electron microscopy, and XRFS spectroscopy. Sorption experiments were conducted in batch mode. The sorption of metal ions in the sludge was determined by correlation of adsorption isotherm models. The adsorption of lead and zinc ions was best fitted with Langmuir adsorption isotherms. The adsorption capacity of lead and zinc ions was 53.8 mg.g^{-1} and 10.7 mg.g^{-1}, respectively. The results indicated that blast furnace sludge could be effectively used as secondary material and could be also employed as a low-cost alternative for the removal of heavy metals ions from wastewater.

Keywords : blast furnace sludge, lead, zinc, sorption