



THE SORPTION OF LEAD(II) IONS FROM AQUEOUS SOLUTIONS ON PEAT: KINETICS STUDY

Laura Bulgariu^{1*}, Mioara Răţoi¹, Dumitru Bulgariu^{2,3}, Matei Macoveanu¹

¹ “Gheorghe Asachi” Technical University of Iaşi, Faculty of Chemical Engineering and Environmental Protection, Department of Environmental Engineering and Management, 71 Mangeron Blvd., 700050 Iaşi, Romania

² „Al.I.Cuza” University of Iaşi, Faculty of Geography and Geology, Department of Geology and Geochemistry, 20A Carol I Blvd., 700506, Iaşi, Romania

³Romanian Academy, Filial of Iaşi – Group of Geography, 18, Carol I Blvd., 700506, Iaşi, Romania

Abstract

The lead(II) ions sorption from aqueous solutions on three types of peat from Poiana Stampei (Romania) was studied. The peat was drawing from different deeps, such as 5-10 cm deep (peat 1), 0.5-1.0 m deep (peat 2) and from > 1.5 m deep (peat 3). The influence of several experimental parameters (initial lead concentration, contact time) was studied in batch experiments. The kinetics of sorption was followed based on the amount of lead(II) ions retained at various time intervals. The results show that sorption (chemical bonding) might be rate-limiting elementary process in the sorption of lead(II) ions on peat. The experimental data were analyzed using two kinetics models: pseudo-first order Lagergren model and pseudo-second order Ho model. On the basis of these models, the kinetics parameters (the rate constant, the equilibrium sorption capacity and the initial sorption rate) for lead(II) ions sorption onto all three types of peat were calculated and discussed.

Key words: kinetics, lead(II), peat, sorption

* Author to whom all correspondence should be addressed: lbulg@ch.tuiasi.ro