"Gheorghe Asachi" Technical University of Iasi, Romania

EQUILIBRIUM AND KINETIC MODELING OF Zn (II) SORPTION FROM AQUEOUS SOLUTIONS BY SPHAGNUM MOSS PEAT

Angelica Kicsi [∗], Doina Bilba, Matei Macoveanu

"Gh. Asachi" Technical University of Iasi, Faculty of Chemical Engineering & Environmental Protection, Department of Environmental Engineering & Management,71 A, D. Mangeron Blvd., 700050 Iasi, Romania

Abstract

Equilibrium and kinetics of sorption of Zn (II) ions from aqueous solutions of pH 5 on indigene (Romanian) peat moss were investigated in batch system. The experimental equilibrium sorption data at three temperatures were analysed by Freundlich, Langmuir, Tempkin and Dubinin-Radushkevich sorption isotherm models. Results indicate the following order in to fit the isotherm equations: Langmuir > Tempkin > Dubinin-Radushkevich > Freundlich. The equilibrium sorption capacity determined from Langmuir equation was found to be 12.56 mg/g at $30\,^{\circ}$C. The computed thermodynamic parameters indicate the spontaneous and endothermic nature of the sorption process. The FTIR spectra confirm the ion exchange mechanism of the sorption. Different kinetic models were tested in order to identify a suitable kinetic equation; the experimental kinetic data were best correlated by pseudo-second order equation.

Key words: equilibrium study, kinetics, peat moss, sorption, zinc

---

[∗] Author to whom all correspondence should be addressed: e-mail: akicsi2002@yahoo.com;