

**A COMPARATIVE STUDY ON THE REMOVAL OF URANYL IONS FROM
ARTIFICIALLY ENRICHED RADIOACTIVE WATERS USING CLAYS FROM
ROMANIA**

DOINA HUMELNICU¹, ROMEO IULIAN OLARIU², CECILIA ARSENE², BETY
DENISSA BURGHELE

¹ “Al. I. Cuza” University of Iași, Faculty of Chemistry, Inorganic Chemistry
Laboratory, 11 Carol I Blvd., Iasi, 700506, Romania

² “Al. I. Cuza” University of Iași, Faculty of Chemistry, Analytical Chemistry Laboratory,
Carol I Blvd., Iasi 700506, Romania

Abstract

The present work evaluates the results of the experiments performed with three different clay minerals from Romania (Nereju (N) - Vrancea County, Valea Chioarului (V.C.) – Maramures County and Marsid (M) – Salaj County), so as to establish their potential to be used in the treatment of radioactive wastewaters. The sorption behaviour of uranyl ions from artificially enriched radioactive waters samples on clays sampled from Romanian regions has been studied, in the absence of any ionic competition, as a function of the contact time, effect particle size, temperature and concentration of the radioactive solution. Thermodynamic parameters, the Gibbs free energy, enthalpy and entropy were also calculated. The positive values of both ΔH° and ΔS° and the negative value of ΔG° indicate an endothermic and a spontaneous adsorption process, respectively. Out of all three clay types, the one sampled from Masid (Salaj County) is the best one as far as the purposes of the present study are concerned.

Keywords: uranyl ions, clay minerals , removal of uranyl ions.

¹ e-mail: doinah@uaic.ro; ² oromeo@uaic.ro