



---

## HYDROXYAPATITE/POLYURETHANE COMPOSITE MEMBRANES FOR LEAD IONS REMOVAL

Gabriela Ciobanu\*, Dorina Ignat, Gabriela Carja, Constantin Luca

*"Gheorghe Asachi" Technical University of Iasi, Faculty of Chemical Engineering and Environmental Protection,  
71 D. Mangeron Blvd., 700050 Iasi, Romania*

---

### Abstract

This work describes the preparation of a hydroxyapatite/polyurethane composite membrane and their characteristics. The porous hydroxyapatite/polyurethane composite membranes were made via solvent casting process. The deposited hydroxyapatite layers were investigated by scanning electron microscopy (SEM) and X-ray diffraction (XRD). The data suggest that the method utilized in this work can be applied to obtain deposition of coating of crystalline hydroxyapatite on porous polyurethane. The capacity of polyurethane/hydroxyapatite composite membranes for removal of lead ions from aqueous solution was investigated. Polyurethane/hydroxyapatite composite membrane has shown a certain ability to retain  $Pb^{2+}$  ions from aqueous solutions. Polyurethane/hydroxyapatite composite membrane was effective in removing  $Pb^{2+}$  ions from solutions with minimum of 80 % Pb removed. The effective removal of Pb from aqueous solution suggests that porous polyurethane/hydroxyapatite composite membranes have the potential to immobilize  $Pb^{2+}$  ions in lead-contaminated wastes.

*Key words:* composite, hydroxyapatite, lead ions removal, polyurethane

---

---

\* Author to whom all correspondence should be addressed: e-mail: [gciobanu03@yahoo.co.uk](mailto:gciobanu03@yahoo.co.uk)