



“Gheorghe Asachi” Technical University of Iasi, Romania



NEW POLYURETHANE – HYDROXYAPATITE COMPOSITES MEMBRANES

Gabriela Ciobanu^{1*}, Constantin Luca¹, Simona Ilisei¹, Alina Costina Luca²

¹*“Gheorghe Asachi” Technical University of Iasi, Faculty of Chemical Engineering and Environmental Protection,
71 Blvd. D. Mangeron, 700050 Iasi, Romania*

²*“Gr.T. Popa” Medicine and Pharmacy University of Iasi, Faculty of Medicine, 16 Universitatii Street, 700115 Iasi, Romania*

Abstract

This research investigates the influence of certain vitamins (A and D₂) on the possibility of hydroxyapatite formation on polymer surfaces. A coating method based on biomimetic techniques was used to form a crystalline hydroxyapatite thin layer on porous polyurethane matrix. The method is based on a wet process of hydroxyapatite formation that involves porous polyurethane film soaking in a modified synthetic Simulated Body Fluid (SBF) solution. This modified SBF solution contains vitamin A and vitamin D₂. The deposited hydroxyapatite layers were investigated by scanning electron microscopy (SEM) coupled with energy dispersive X-ray analysis (EDX). The results obtained in this research suggest that the formation of hydroxyapatite layer on polymeric substrate is favored by the presence of vitamins A and D₂ in SBF solution. Therefore, this modified method can be used to obtain porous composites based on polyurethane and hydroxyapatite which can be used in bone tissue replacement, with pediatric and adult applications, or in separation processes.

Key words: composite, hydroxyapatite, polyurethane, vitamins

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* Author to whom all correspondence should be addressed: e-mail: gciobanu03@yahoo.co.uk