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COMPARATIVE CHARACTERISTICS OF SOME POLYMERIC MATERIALS IMPREGNATED WITH IONIC LIQUID FOR THE REMOVAL OF RADIONUCLIDES

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Abstract

In order to remove various radionuclides (Tl^+, $Sr^{2+}$and La^{3+}) from wastewaters we used three solid supports of (styrene-divinylbenzene) grafted with different pendant groups (1-triphenylphosphonium; 2-izo-propylphosphonate; 3-aminoethylaminomethyl). The solid supports with different pendant groups were impregnated with ionic liquid (Cyphos IL-101-trihexyltetradecylphosphonium chloride). IR-spectra, EDX-ray and SEM image were used to characterize the adsorbent obtained after the impregnation of the studied solid support with Cyphos IL-101. The analysis used for the characterization of the samples proved the fact that the studied solid supports were impregnated with the ionic liquid, underling the increasing of the phosphorous and chlorine ions content. The styrene-divinylbenzene grafted with 3-aminoethylaminomethyl groups and impregnated with Cyphos IL-101 developed the highest adsorption capacity in the removal process of the studied radionuclides from aqueous solutions, due to the synergic effect obtained from the two ions of the adsorbent (amino groups from the solid support and phosphorous ions from the impregnated ionic liquid).

Key words: adsorption, impregnation, ionic liquid, solid support, radionuclides

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