**Polyelectrolyte complexes of chitosan and sodium alginate for the sorption of selected radionuclides from aqueous solutions**

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The worldwide production of radioactive waste is projected to rise in the coming years as more countries turn to nuclear energy to lessen their dependence on fossil fuels. As a result, it is crucial to explore and develop remediation methods capable of removing radionuclides from radioactive waste, including those released into the environment [1,2]. Radioactive waste wasters that contain radioactive metal ions, e.g. Cs(I), Sr(II), Co(II) and Am(III) are dangerous for people and for the environment. There are several methods to removal them from aqueous samples, water streams and wastes. Alternative method of eliminating the radioactive metals from waste water is sorption by low cast natural materials of the biological origin. Among its major advantages over conventional treatment are: low cast, easy regeneration of biosorbent and possibility of metal recovery [3].

This work focuses on the synthesis of hydrogel sorbents based on a polyelectrolyte complex (PEC) of chitosan and sodium alginate and the examination of the sorption process of the radionuclide 137Cs(I) 85Sr(II), 60Co(II) and 241Am(III). The sorption process was investigated in relation to the pH of the initial solution and the contact time between the solution and the sorbent. These parameters were measured using γ-ray spectrometry with high-purity germanium. The equilibrium data were analyzed using the Langmuir, Freundlich, and Dubinin–Radushkevich sorption isotherms. The PEC was characterized by SEM, SLMK and TGA/DTG. The sorption capacity of the PEC was determined based on the removal efficiency and distribution coefficients.

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