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NEW COMPOSITE SORBENTS FOR CAESIUM AND STRONTIUM IONS SORPTION

Mykola Kartel [a], Vita Galysh [a,b*]

[a]*Chuiko Institute of Surface Chemistry, National Academy of Sciences of Ukraine, 17, General Naumov Str., Kiev 03164, Ukraine*
[b]*National Technical University of Ukraine "Igor Sikorsky Kyiv Polytechnic Institute", 37/4, Peremogy Ave., Kyiv 03056, Ukraine*
[*]*e-mail: v.galysh@gmail.com; phone: (+38 044) 422 96 02; fax: (+38 044) 424 94 64*

Abstract. New composite lignocellulose-inorganic sorbents based on vegetal residues, modified with ferrocyanide of different *d*-metals and hydrated antimony pentoxide, were prepared and tested for caesium and strontium ions sorption from aqueous solutions. Physical and chemical methods were used to determine the structural properties of the obtained composite sorbents. Comparative analysis of sorption properties of the obtained materials, with different types of modifiers in the bulk of lignocelluloses-carrier towards radionuclides was done. Obtained results highlight the lignocellulose-inorganic sorbent modified with potassium nickel hexacyanoferrate, being efficient for sorption of caesium ions from solution (maximum efficiency - 98.0% and maximum distribution coefficient $2.1 \cdot 10^4$ mL/g) and lignocellulose-inorganic sorbent based on hydrated antimony pentoxide – efficient for strontium ions sorption from solution (maximum efficiency - 97.3% and the distribution coefficient $1.2 \cdot 10^3$ mL/g). The sorption properties of lignocellulose-carrier and lignocellulose-inorganic samples towards heavy metal ions (Pb^{2+} and Cd^{2+}), methylene blue, gelatine and vitamin B_{12} were also evaluated.

Keywords: lignocellulose-inorganic sorbent, caesium ion, strontium ion, sorption efficiency, distribution coefficient.

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