BOOK OF ABSTRACTS

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Effective Adsorbents Based On The Mesoporous TiO2 For Adsorption And Separation Of Heavy Metal Cations

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Problem statement an objective Purifying aqueous solutions from heavy metal ions and radionuclide contamination is a highly complicated topic, which is very relevant for Ukraine. The need for adsorption and separation of radionuclides may be related to water purification and environmental monitoring after the ChNPP accident. Furthermore, selective adsorption and separation of some radionuclides is an important stage of the production of radiopharmaceuticals. In addition, the separation of radionuclides can be used in archaeological dating. Mesoporous TiO2 with chemically impregnated functional groups can actively adsorb heavy metal ions of Sr2+, Y3+, Cr3+, Ba2+, and Zn2+. This work aims to investigate the new adsorbent materials based on anatase modification TiO2. Methods Adsorbents were synthesized by the sol-gel method. The structure and morphology of the TiO2 and TiO2 with chemical modified surfaces were analyzed using XRF, FTIR, SEM, and EDS methods. The adsorption ability of the adsorbents toward heavy metal cations was tested using direct complexometric titration and ICP-MS analysis in some cases. Main results and conclusion The adsorbents based on anatase modification TiO2 possess a high adsorption capacity toward heavy metal cations, for example, Sr2+ and Cr3+. Sodium modified TiO2 possesses a high adsorption capacity toward Cr3+. The analyzed samples of TiO2 possess a high ability to regenerate and keep high adsorption capacity toward Sr2+ even after several adsorption-desorption cycles. Furthermore, it was shown that investigated adsorbents have unique adsorption properties and increased usage in the separation and purification process.

Acknowledgments

I want to say thanks to all Ukrainians

References

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