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APPLICATION OF ELECTROCHEMICALLY SYNTHESIZED FERRATES (VI) FOR THE REMOVAL OF Th(IV) FROM NATURAL WATER SAMPLES

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The efficiency of the application of electrochemically generated Na_2FeO_4, for the purpose of the elimination of Th(IV) ions from water samples as coagulating agent was investigated. Th is a radioactive element often used as a fuel for nuclear reactors. The continuous exposure to Th(IV) may cause cancer of the pancreas, bone or lung. Analyzed natural water samples spiked with Th(IV) were treated with solution of ferrates (VI) under recommended conditions of electrochemically synthesized ferrates solution and Th(IV) was quantified by established kinetic method. Removal of Th(IV) ions by ferrates (VI) was successfully confirmed by comparison of the concentration of Th(IV) before and after ferrates (VI) treatment of spiked analyzed water samples. A simple kinetic-spectrophotometric method was successfully applied to determine Th(IV) concentration, indicating the decrease in the concentration of Th(IV) in water samples applying ferrate (VI).

Keywords: Th(IV), ferrates (VI), kinetic method, natural waters.

Introduction

Th together with the other long-living nuclides such as ^{40}K, ^{187}Re, ^{222}Rn, ^{235}U, ^{238}U, and its products such as ^{226}Ra, ^{176}Lu, remain present in nature for billions of years. The development of new methods and application of tandem-techniques are topics in numerous scientific papers because of the application of Th as a nuclear fuel, and from the point of its environmental

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