

DISTRIBUTION COEFFICIENTS OF ELEMENTS IN THE SYSTEM OF CATION EXCHANGE RESIN - SELENOUS ACID

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Enriched selenium used in low-background experiments [1] is expediently purified using ion exchange. This work is devoted to the study of the sorption of a number of traditional radioactive impurities in solutions of selenous acid on a cation exchange resin. The radioactive indicators Ra-223, Ac-225 and U-230 were obtained from a proton-irradiated thorium target [2]. The radionuclide Th-234 was isolated from the U-238, and the Co-60 and Cs-137 (a chemical analog of potassium) were of commercial origin. The distribution coefficients (KD) of a same of elements at the Dowex 50W×8 cation exchange resin in selenous acid solutions are shown in the figure 1.

FIG.1 IS ATTACHED.

Figure 1. The distribution coefficients of a same of elements at the Dowex 50W×8 (200-400 mesh) in selenous acid solutions.

As can be seen from Figure 1 that the KD values of elements decrease with an increase of the concentration of selenous acid. It is also seen that selenium can be effectively purified from the impurities on the cation exchange resin. In addition, it should be noted that uranium and thorium can be selectively separated from a wide range of elements in this system. These results are in good agreement with the hypothesis that for the studied metals in such solutions there is a significant interaction with the neutral form of selenous acid.

References:

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2. D.V. Filosofov et al. // Radiochemistry 55(4), 410 (2013).

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