

DETERMINATION OF URANIUM IN $(\text{NH}_4)_3\text{UO}_2(\text{CO}_3)_3$ AND U_3O_8 BY USING OF ALPHA-SPECTROMETRY AND ICP-MS.

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ABSTRACT:

A method is described for determination of uranium content and impurities in $(\text{NH}_4)_3\text{UO}_2(\text{CO}_3)_3$ (AUC) and produced after heating U_3O_8 . The trace metals are determined after solvent extraction for removing the great amount of uranium and measured with quadrupole ICP-MS. The content of uranium in AUC is determined after dissolution, dilution and filtration and measured by using of alpha-spectrometry and parallel measurement by ICP-MS. The U_3O_8 was produced after 36 hours of heating at 750°C. After that it was dissolved in strong hot acid and diluted in ultra-pure water for ICP-MS measurement. It was measured standard raw material from natural uranium for confirmation of mass/activity connection. The samples were measured with alpha-spectrometer for determination of real activity of uranium isotope ^{238}U and comparison between ICP-MS calculated activity and real measured activity with alpha spectrometry.

Key words: AUC, ICP-MS, Uranium, α -spectrometry, U_3O_8

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