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Modification of precise technique for determining Pu mass fraction by automatic coulometric titration method

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Technique for determining plutonium total mass fraction in Pu preparations and uranium-plutonium mixtures, including MOX fuel for fast reactors by the automatic coulometric titration is developed and successfully used in RIAR for a long time. The paper presents the optimization results of sample preparation and titration conditions on the facility, developed in RIAR to minimize the total analysis error. Use of standard (CO) potassium dichromate specimen without CO PuO₂ for facility calibration during analysis result verification is experimentally proved. Metrological certification of the developed technique version indicated that total analysis error of the Pu mass fraction in the specimen can be less than 0.05%. First, the developed precise technique for plutonium determination was applied during the certification of State PuO₂ standard specimen of the first class for its plutonium mass fraction content.

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