



Contribution ID : 865

Type : Poster

## Extraction of Indium and Thallium Isotopes as the Homologues of Nihonium Into the Ionic Liquids

*Tuesday, 15 May 2018 18:30 (15)*

This work represents a part of the research dealing with the study of properties of homologues of SHE. The aim of the experiments was to test the possibility of the separation of thallium from indium as the homologues of nihonium using the ionic liquids as the organic phase. Short-lived thallium and indium isotopes were generated by irradiation of Au and Ag target foil on U120M cyclotron at Nuclear Physics Institute of Czech Academy of Science in Rez near Prague. The irradiation was performed with beam of  $^3\text{He}$  ions accelerated to average energy of 47 MeV.

Two ionic liquids (1-hexyl-3-methylimidazolium bis (trifluoromethanesulfonyl) imide - [Hmim][NTf<sub>2</sub>] and Tributylmethylammonium bis (trifluoromethanesulfonyl) imide - [Tbma][NTf<sub>2</sub>]) were used as the organic phase. The extraction was carried out from the medium of hydrochloric acid in the concentration range from 0.2 to 5M. The influence of the oxidizing agent ( $\text{NaClO}_2$ ) was tested, whereas  $\text{Tl}^{1+}$  is extracted successfully only in the higher concentrations of HCl,  $\text{Tl}^{3+}$  is extracted efficiently in the whole range of HCl concentrations. Dependences of the distribution ratios on various extraction parameters will be presented. Based on the results, it can be concluded that extraction of indium and thallium into the tested ionic liquids is possible and will be used in the following detailed experiments.

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**Session Classification :** Poster TAN

**Track Classification :** Chemistry of Actinide and Trans-actinide Elements