Contribution ID: **330** Type: **Poster**

Extraction chromatography and ion exchange chromatography as a method to obtain Np tracer following proton activation of uranium target at 60 MeV

Thursday, May 15, 2014 5:30 PM (1h 15m)

Anthropogenic nuclides as: Pu, Am, Np and other actinides are present in the components of terrestrial and marine ecosystems as a result of atmospheric nuclear weapon tests, nuclear accident and releases from nuclear installation. In recent years, radiological situation of Pu and Am in environment become better understood since measurements of these elements were more common. This is not the case of Np (Np-237). One of the most important reason of it is lack of available isotopic spike for chemical recovery of Np fraction from samples. Our goal was to test and develop a methodology of purification Np tracer from wide range of elements. For this purpose, uranium (U-235, U-238) target was activated by proton beam (E=30 MeV or E=60MeV, respectively, Imax<40nA) in cyclotron AIC-144 at the IFJ PAN (Poland). One of the products was Np-234 –gamma decay transuranic element with T1/2=4.4 days. Activated target , which was a mix of activation, fission- and decays- products, including Np-234 was subjected to separation using extraction and ion exchange chromatography. These two methods are ideally suited to purification of Np fraction from another elements, because of their good selectivity and simplicity. The most important parameter which decided about the choice of the methodology was time saving concerning short half life time nuclides appeared in the source. This became the starting point for development of methodology dedicated to purification Np fraction. The results of separation were satisfactory and will be presented during Conference. It is planned to search for Np-235 and Np-236 if any present in the obtained Np fraction using ICPMS.
Acknowledgement: The work was done within framework of Polish Governmental Strategic Project: Supporting technologies for the development of safe nuclear power, Action 4: "Development of techniques and technologies supporting management of spent nuclear fuel and radioactive waste (No SP/J/4/143321/11)"and Action 6 "Development of methods to assure nuclear safety and radiation protection for current and future needs of nuclear power plants", contract No. SP/J/6/143339/11.

Primary author: Dr KIEREPKO, Renata (The Henryk Niewodniczanski Institute of Nuclear Physics, Polish Academy of Sciences (IFJ PAN))

Co-authors: Prof. MIETELSKI, Jerzy-Wojciech (The Henryk Niewodniczanski Institute of Nuclear Physics, Polish Academy of Sciences (IFJ PAN)); Mr BARTYZEL, Miroslaw (The Henryk Niewodniczanski Institute of Nuclear Physics, Polish Academy of Sciences (IFJ PAN)); Dr MISIAK, Ryszard (The Henryk Niewodniczanski Institute of Nuclear Physics, Polish Academy of Sciences (IFJ PAN))

Presenter: Prof. MIETELSKI, Jerzy-Wojciech (The Henryk Niewodniczanski Institute of Nuclear Physics, Polish Academy of Sciences (IFJ PAN))

Session Classification: Poster Session - Production and Application of Radionuclides

Track Classification: Production and Application of Radionuclides