



Contribution ID: 56

Type: **Invited Lecture**

INVITED LECTURE - Exploitation of accelerator waste for the production of exotic radionuclides

Wednesday 19 September 2012 16:10 (20 minutes)

High-energetic protons and secondary particles produce in interaction with matter –due to the broadness of the induced nuclear reactions –a big variety of radionuclides, with some of them being very rare, exotic, and, in several cases, difficult to be produced by complementary reactions. Depending on the nature of the activated material, valuable isotopes, interesting for scientific and technological applications, can be extracted from samples stemming from the surroundings or components of a particle accelerator, especially if the initial proton flux is comparable high (in the Megawatt range).

Prominent examples are ^7Be , ^{60}Fe , ^{44}Ti , ^{26}Al , ^{53}Mn and others, which play an essential role for our understanding of the synthesis of elements in different stages of the stellar evolution. Suitable sample materials for basic studies of the key nuclear reactions as well precise determination of the corresponding half-lives are therefore urgently needed.

Since PSI operates the most powerful high-energetic proton accelerator world-wide, this facility is best-suited for a R&D program aimed to “mine” such isotopes. An initiative called ERAWAST (Exotic Radionuclides from Accelerator Waste for Science and Technology) was started in 2006 with an ESF-funded workshop in order to identify and motivate potential users. After five years, in the frame of a second workshop, first achievements as well as realistic future plans for front-end experiments were presented.

The present contribution summarizes the most prominent results and gives an outlook on the upcoming experiments in the frame of the ERAWAST program.

Author: Dr SCHUMANN, Dorothea (Paul Scherrer Institute, Switzerland)

Co-authors: Dr AYRANOV, Marin (Paul Scherrer Institute); Dr DRESSLER, Rugard (Paul Scherrer Institute); Mrs STOWASSER, Tanja (Paul Scherrer Institute)

Presenter: Dr SCHUMANN, Dorothea (Paul Scherrer Institute, Switzerland)

Session Classification: Session 9 - Applications of radiotracers and nanoparticles

Track Classification: Applications of radioactive tracers and nanoparticles