



NES Colloquium

Wednesday, 12 Oct. 2016, 11:00 - 12:00, Auditorium

Exotic radionuclides: what are they good for?

Dr. D. Schumann, PSI, NES-LRC

High-energetic protons and secondary particles induce in matter the production of a big variety of radionuclides, some of them being very rare, exotic, and, in several cases, difficult to obtain by complementary reactions. These isotopes are of high importance in research fields like nuclear astrophysics, basic nuclear physics or environmental science, and sufficient sample material for scientific experiments is urgently needed.

Highly activated components stemming from the surroundings or parts of a high-power particle accelerator are a unique possibility to gain such valuable isotopes. The advantage of “mining” isotopes from waste materials consists in their principal availability, not requiring “extra” beam time. The challenge is their radiochemical isolation from the matrix.

PSI operates the Spallation Neutron Source SINQ, which is driven by one of the most powerful high-energetic proton accelerators worldwide (590 MeV, 2.4 mA), and is therefore best suited as a producer of such rare exotic radionuclides. In the frame of the ERAWAST (Exotic Radionuclides from Accelerator Waste for Science and Technology) initiative a complex program for isotope separation from different matrices has been established at PSI within the past decade.

The talk presents an overview on the isotope resources at PSI, the methods for isolation and sample preparation as well as some of the highlights in scientific application.