

Studies of spallation reactions at GSI

Lydie Giot, GSI Darmstadt

Abstract:

Spallation reactions have attracted interest as they are of importance for the production of high intensity radioactive beams and also for developing intense neutrons sources needed for accelerator driven systems (ADS) for the incineration of nuclear waste, materials physics and biology. All these perspectives have triggered a dedicated long range research program at GSI in order to reach a full comprehension of the protons and deuterons induced spallation reactions by measurements of evaporation and fission residues with the FRS spectrometer in inverse kinematics.

In this talk, an overview of the experimental method and the results obtained at GSI with spallation reactions induced by protons and deuterons at 1 GeV on representative systems for ADS as ^{238}U , ^{208}Pb and ^{56}Fe will be given. The study of the spallation reaction of ^{136}Xe on protons at 500 A MeV, which is a step ahead in the extension of experimental investigations and will provide decisive information on the energy dependence of the spallation process, will also be presented.