

Design and test of a graphite target system for in-flight fragment separator

Tuesday, 20 May 2014 17:30 (1h 30m)

A graphite target system to produce rare isotope beams using in-flight fragmentation method has been designed for the rare isotope science project in Korea. A main primary beam to bombard the target is ^{238}U in the energy of 200 MeV/u with the maximum power of 400 kW, in which beam power deposit on the target amounts up to 100 kW. A multi-slice target concept was adopted to enhance the radiation cooling effect. A finite element program ANSYS was used to analyze thermo-mechanical behavior of single and multi-slice targets. To validate the design, electron beam at the energy of 50 keV was used to test a single slice target. A good agreement of hot spot temperature was achieved between simulation and measurement. Results of simulation and electron beam simulations will be presented along with a plan to test multi-slice targets.

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Session Classification: HPTW Poster Session & Reception

Track Classification: Target Design Challenges