



Contribution ID: 125

Type: Oral

## Heavy ion induced degradation of carbon materials

*Wednesday, 23 May 2012 09:30 (30 minutes)*

At FAIR, the production target and the beam catchers at the planned Super-FRS fragment separator will have to withstand large amounts of thermal and mechanical stress. To minimize the energy deposited by heavy ions, graphite, a low-Z material has to be chosen. The properties as well as the structure and dimensional stability of the target and beam catcher material are affected by the temperature and the absorbed irradiation dose. Failure of these components due to irradiation-induced damage are related to dimensional changes, embrittlement, reduction of the thermal conductivity, degradation of the thermal shock response and fatigue resistance in the fast-extraction regime.

To evaluate the ion beam- induced structural and dimensional changes and the degradation of material properties involved in the thermo-mechanical response of the target and beam catcher material, in-situ and post-irradiation investigations of graphite samples exposed to large swift heavy- ions doses were performed at GSI. Experimental data for thermal conductivity and elastic modulus of irradiated material provide realistic input parameters for the irradiated material in the thermo-mechanical simulations.

**Primary author:** TOMUT, Marilena (GSI Helmholtzzentrum für Schwerionenforschung, Darmstadt, Germany)

**Presenter:** TOMUT, Marilena (GSI Helmholtzzentrum für Schwerionenforschung, Darmstadt, Germany)

**Session Classification:** Production and Manipulation of RIB

**Track Classification:** Production and manipulation of RIB