



Science Week

April 24-27, 2018 at GSI, Darmstadt

Beitrag ID: 46

Typ: Oral

Secondary Ion and Neutral Mass Spectrometry with Swift Heavy Ions and Highly Charged Ions

Mittwoch, 25. April 2018 09:05 (20 Minuten)

A time-of-flight mass spectrometer to investigate sputtered material under swift heavy ion bombardment installed at the M-Branch of the UNILAC beam line is not only capable of getting mass resolved information about sputtered secondary ions, i.e., ionized atoms, clusters and molecules leaving the irradiated surface, but also allows the detection of their neutral counterparts by means of laser post-ionization. This setup provides the capability to gain information about the composition of the sputtered material and how the secondary ion formation process is influenced by changing the nature of the emission process from nuclear sputtering in the keV regime to electronic sputtering in the GeV regime.

We will present results obtained with this instrument during recent beam times and give an outlook of new experiments planned in the future, where not only the instrument at the M-Branch will be upgraded to increase its capabilities but also a new setup is currently under construction for the CRYRING. The new setup installed there will utilize the possibility to alter the kinetic energy of the projectile and its charge state independently. This offers the opportunity to investigate the role of potential energy contained in the projectile with respect to the electronic and nuclear sputtering processes. The new setup will also be equipped with an electron and Raman spectrometer to gain information electron emission under these conditions and material changes due to ion interaction.

Autor: Dr. BREUER, Lars (Universität Duisburg-Essen)

Co-Autoren: Prof. WUCHER, Andreas (University Duisburg-Essen); Dr. SEVERIN, Daniel (GSI, Darmstadt); Prof. SCHLEBERGER, Marika (Universität Duisburg-Essen); Dr. BENDER, Markus (GSI, Darmstadt); Herr HERDER, Matthias (Universität Duisburg-Essen); Herr ERNST, Philipp (Universität Duisburg-Essen)

Vortragende(r): Dr. BREUER, Lars (Universität Duisburg-Essen)

Sitzung Einordnung: Mat Science Week

Track Klassifizierung: Annual Workshop on Ion and Particle Beams (Ionenstrahl Workshop)