



Contribution ID: 126

Type: Poster

## P70 - Molecular imaging using micro-MeV-SIMS

Friday, 11 July 2014 13:00 (1 hour)

The fully ambient pressure micron lateral resolution secondary ion mass spectrometry (MeV-SIMS [1]) device at the Surrey Ion Beam Centre has recently had its analytical capabilities assessed. A 2 MV tandem accelerator and magnetic quadrupole lenses are used to accelerate and focus heavy primary ion beams through a thin exit window to exploit the electronic sputtering phenomenon in air. By simultaneously exciting and measuring characteristic X-rays both molecular and elemental analysis can be performed. A presentation will be given of data acquired of a wide range of samples, which include polymers, organics, and fine aerosol particles collected on PTFE filters.

A presentation of research being undertaken at the INFN Facility, Florence, Italy, outlines how MeV-SIMS is being applied in the field of cultural heritage. Determining the ideal conditions for performing MeV-SIMS on the precious samples that are often studied in this field is of paramount importance. A sample damage minimization campaign will determine primary ion parameters that simultaneously maximize the intact molecular ion yield as well as the heavy ion particle induced X-ray emission production cross section values. This work will offer a better understanding of the sensitivity and useful lateral resolution of MeV-SIMS.

[1] B. N. Jones, J. Matsuo, Y. Nakata, H. Yamada, J. Watts, S. Hinder, V. Palitsin, R. Webb, Surface and Interface Analysis, Special Issue: Proceedings of the Seventeenth International Conference on Secondary Ion Mass Spectrometry, SIMS XVII, Volume 43, Issue 1-2, 2011, 249–252

**Primary author:** JONES, Brian Nathaniel (University of Surrey, Ion Beam Centre, Guildford, Surrey, UK)

**Co-authors:** LUCARELLI, Franco (Università di Firenze, Dipartimento di Fisica e Astronomia and INFN, Sezione di Firenze, Sesto Fiorentino, Firenze, Italy); Dr GRIME, Geoff (University of Surrey, Ion Beam Centre, Guildford, Surrey, UK); Dr CALZOLAI, Giulia (Università di Firenze, Dipartimento di Fisica e Astronomia and INFN, Sezione di Firenze, Sesto Fiorentino, Firenze, Italy); Dr DEMARCHE, Julien (University of Surrey, Ion Beam Centre, Guildford, Surrey, UK); GIUNTINI, Lorenzo (Università di Firenze, Dipartimento di Fisica e Astronomia and INFN, Sezione di Firenze, Sesto Fiorentino, Firenze, Italy); Dr CHIARI, Massimo (Università di Firenze, Dipartimento di Fisica e Astronomia and INFN, Sezione di Firenze, Sesto Fiorentino, Firenze, Italy); Prof. WEBB, Roger (University of Surrey, Ion Beam Centre, Guildford, Surrey, UK); CALUSI, Silvia (Università di Firenze, Dipartimento di Fisica e Astronomia and INFN, Sezione di Firenze, Sesto Fiorentino, Firenze, Italy); NAVA, Silvia (INFN –Sezione di Firenze, Firenze, Italy); Dr PALITSIN, Vladimir (University of Surrey, Ion Beam Centre, Guildford, Surrey, UK)

**Presenter:** JONES, Brian Nathaniel (University of Surrey, Ion Beam Centre, Guildford, Surrey, UK)

**Session Classification:** Poster Session with Cheese and Wine