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Advance Secondary Ion Mass Spectrometry (SIMS) Techniques and Applications in emerging Materials and Biological Science

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Abstract

SIMS is one of the most powerful characterization techniques for materials, chemistry, physics, and biology because of its unique capabilities to provide trace sensitivity (ppm to sub-ppb range) and excellent depth (as good as 1 nm) and lateral resolution (< 1 μm for ion microscopes and 30 nm for ion microprobes). In particular, it has become an indispensable characterization technique in the fields of material, marine and biological science which require analytical techniques capable of probing small areas and detecting impurities at low concentrations. A succinct review on the basic principles of SIMS, will be given, followed by a description of the current status on the SIMS technique. Some most intriguing results of SIMS studies in materials, such as MoS_2, TiO_2, AlGaN, thin film and biological science will be reviewed (including studies of studies of diatom, otolith, plant root, human tooth, coral, and soil samples) and a comparison of SIMS with other micro-analytical techniques.

Profile

Dr. Rong Liu: Graduated in Physics from National University of Singapore and has 35 years of experience on SIMS analysis of various types of materials. He has had published 88 journal papers as co-authored. He joined Tianjin Electronic Materials Research Institute working on application aspects of SIMS in microelectonic materials and related fields in 1984. From 1998-2005, he had been with the Surface Science Lab of the National University of Singapore. His research activities concentrate on application of SIMS in physics, chemistry, materials, and related fields. From 2005-2011, he worked as SIMS lab manager at University of Manitoba and had concentrated his effort on SIMS isotope ratio measurements for research projects in geological, archaeological and environmental sciences. He joined CMCA, UWA at Perth on July, 2012 and moved to UWS on Aug, 2013. At last few years, he is interested in SIMS imaging application in metals, biomedical materials and marine science.

Staff and students at all levels are welcome to attend.

Venue and Time:

This talk will be held on Tuesday April 2nd at 2 pm at the Campbelltown Campus in Building 21, Lecture Theatre 5 (CA. 21.G.03). Or via ZOOM https://uws.zoom.us/j/885196278

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