

2nd International Conference on

Current Trends in Mass Spectrometry

July 20-22, 2016 Chicago, USA

Improving reproducibility and resolution in Imaging Mass Spectrometry (IMS) through the application of low cost manual sample preparation techniques

Matthew B O'Rourke

University of Technology Sydney, Australia

Matrix assisted laser desorption ionisation imaging mass spectrometry (MALDI IMS) is a technique that is currently seeing widespread use in both research and diagnostics for the spatial analysis of a range of biomolecules. It is currently predominantly used for the diagnostic analysis of cancer biomarkers in tissue microarrays. This requires automated sample preparation methods that need to be highly reproducible. Automated preparation methods rely on the spraying of dissolved matrix that can cause delocalisation of molecules, limiting potential image resolution to that of the smallest possible droplet size (usually >20 μm). The instruments are also expensive to purchase and require regular maintenance and servicing by qualified engineers. We therefore describe an alternate sample preparation method that is both low cost and highly reproducible, utilising sublimation and vapour recrystallisation. This eliminates the issue of delocalisation of molecules and allows for a potential resolution of $\sim 1 \mu\text{m}$, thereby enabling highly reproducible, ultra-high resolution images when the mass spectrometry instrumentation that can acquire at sub- μm resolution becomes available.

Biography

Matthew O'Rourke currently has his PhD in submission after 2 years of candidature and is a resident at the university of Technology in Sydney Australia. He has published several papers in the field of Imaging mass spectrometry and tissue preservation and is an expert in MALDI applications. He also holds a patent in Australia for the development of proprietary MALDI based technology for the identification of microorganisms.

matthew.orourke@uts.edu.au

Notes: