

**PT17 Imaging mass spectrometry using automated matrix deposition a promising new research tool**

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Automated matrix deposition in imaging mass spectrometry and applications

Imaging mass spectrometry (IMS) has seen enormous interest since its initial application more than ten years ago by the Caprioli group [1]. The technology involves matrix (E.g. sinapinic acid) deposition directly onto tissue followed by acquisition of mass spectra using a MALDI ion source: typically connected to a time of flight instrument. Spatial visualization of masses ranging from lipids to full size proteins is possible across tissue sections and as such the technology is now being thoroughly tested and developed by numerous laboratories around the world. Given that IMS is still a relatively young technology; no standard methodology exists for critical methodological steps including section treatment and matrix application prior to mass spectra acquisition. As a result our laboratory has set up the IMS technology to encompass matrix deposition by piezoelectric droplet deposition and solution nebulisation. Presented here is a functional comparison of hardware application to matrix deposition and consequent results for imaging data acquisition. Future work will include printer deposition of proteolytic enzyme directly onto the tissue prior to matrix deposition to prepare for full-scale identification and validation protocols, which will complement the mass imaging aspect of the technology.

[1] R.M. Caprioli, T.B. Farmer, Anal Chem 1997, 69(23):4751-60