WORKSHOP SUMMARY

Workshop: Matrix application I/II
Topic: Sublimation and rehydration
Session: 3C & 4C
Time: Wednesday 9:00 am & 11:00 am

Background

Sublimation has emerged as a principal method to apply a homogenous coating on thin tissue sections for imaging mass spectrometry analysis. Sublimation of a MALDI matrix involves applying vacuum and heat to dry MALDI matrix, transforming the matrix into a vapor. The vapor deposits on the chilled sample, producing a uniform coating for subsequent analysis. This method is suitable for high spatial resolution imaging of lipids (≥1 µm). For proteins, the sublimated matrix is recrystallized using organic solvent, producing images to ≥ 2 µm spatial resolution over a range 2,000 – 28,000 m/z. This workshop will demonstrate sublimation of matrices for both lipid and protein imaging experiments as well as rehydration of the sublimated matrix for protein imaging.

Highlights

- Sublimation of 2,5-dihydroxyacetophenone (DHA) for lipid and protein imaging
- Recrystallization of sublimated/TM sprayed matrices for protein imaging
- Discussion of the sublimation apparatus setup
- Discussion of variables in the sublimation process
- Discussion on matrices and practical advice for choosing matrices
- Discussion on alternate strategies using sublimation (precoating)

Summary

In this workshop, attendees will be introduced to the sublimation of MALDI matrices for imaging. Components of the sublimation apparatus and variables in the sublimation experiment will be discussed. Fresh frozen sections (12 µm) from adult mouse brain mounted onto glass microscope slides will be sublimated with DHA. Participants will also gain hands-on experience in the methods of recrystallizing DHA for protein imaging. Matrix selection and alternate strategies for imaging experiments will be discussed.