WORKSHOP SUMMARY

Workshop: Matrix application I/II
Topic: Manual spray coating
Session: 3A & 4A
Time: Wednesday 9:00 am & 11:00 am

Background

Tissues to be analyzed by MALDI MS require the deposition of a matrix. Most traditional MALDI matrices form crystals upon the tissue surface when they dry. In addition, the solvent that the matrix is dissolved in assists with analyte extraction from the tissue. In order to image a tissue by MALDI MS, the tissue must be evenly coated with matrix. The spatial resolution is determined by the spot size of the laser as well as the resulting matrix crystals on the surface. Manually spraying a solution of matrix onto a tissue surface results in a relatively homogeneous matrix coating, with matrix crystals ranging from ~25 to 200 μm, depending on the tissue, solvent, and matrix used. This can allow for relatively high spatial resolution imaging. However, care must be taken to minimize delocalization of analytes during the spray process.

Highlights

- Characterizing the sprayer
- Obtaining a wet spray vs. a dry spray
- Application of matrix in cycles (spray, let dry, repeat)
- Evaluating crystals under a microscope
- Evaluating delocalization using ink (Sharpie marker)

Summary

MALDI target plates with brain tissue sections (rat or mouse) will be coated with matrix using a Kontes thin-layer chromatography (TLC) glass reagent sprayer. The sprayer has a 10 mL reservoir that holds the matrix. Spraying will be demonstrated on both glass and gold-coated metal target plates, and participants will be able to use the sprayer to observe how various parameters affect the matrix drops and the resulting matrix crystals. Parameters such as pressure, distance from target, spray motion, and sprayer characteristics will be discussed with regards to how they affect the resulting matrix coating. Crystals will be observed under the microscope in order to evaluate the coating.