INSTRUMENT DEMONSTRATION SUMMARY

Topic: FTICR – lipid imaging
Time: Wednesday 3:00 pm

Background

The Bruker Daltonics solariX is a hybrid Qq-FTICR mass spectrometer. For MALDI experiments, the instrument has a Smartbeam II solid state Nd:YAG laser capable of laser repetition rates up to 1000 Hz and adjustable laser spot sizes down to 20 µm. The instrument is capable of performing fragmentation experiments using collision induced dissociation (CID), infrared multiphoton dissociation (IRMPD), sustained off-resonance irradiation collision induced dissociation (SORI-CID), electron capture dissociation (ECD) and electron transfer dissociation (ETD). A unique capability of this instrument is a signal enrichment technique called CASI (Continuous Accumulation of Selected Ions) in which a single ion, or *m/z* range, is selected with the mass selection quadrupole and the ions resulting from a defined number of laser shots are trapped and held in the accumulation octopole. This can be repeated a specified number of times allowing the selected ion population to be built up resulting in significantly enhanced dynamic range (100-fold) for the mass spectrometric measurement. Many of these features will be demonstrated while setting up a lipid image on a mouse or rat brain section.

Highlights

- Tuning and calibration of the instrument for lipid imaging and MS/MS identification from mouse or rat brain
- "Accumulate During Detect" fast acquisition will be demonstrated from IMS experiments
- FTICR IMS lipid data will be analyzed using flexImaging
- Selected target ions will be identified using CASI and SORI-CID

Instrumental Highlights

- Mass range: *m/z* 100-10,000
- High-Mass Resolving Power: >300,000
- High-Mass Accuracy: < 1 ppm
- Signal Enrichment Capabilities using CASI
- MS^n Capabilities (CID, SORI-CID, ECD, ETD)

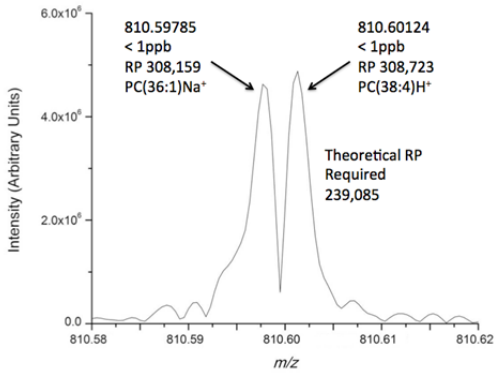

Figure 1. FT-ICR data acquired from rat brain highlighting the benefit of high-mass resolution and high-mass accuracy.

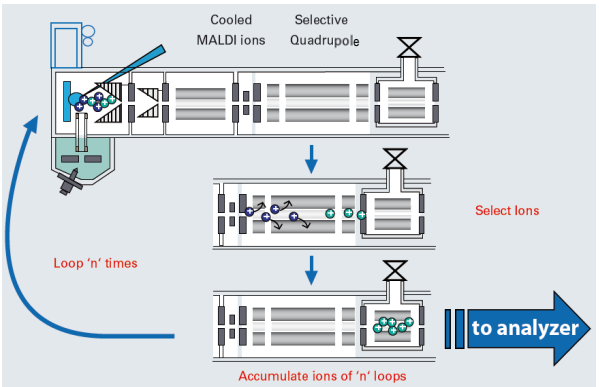

Figure 1. Schematic of CASI workflow where target ions are selected and enriched in the collision cell.