Laserspray and Matrix-Assisted Ionization Inlet Coupled to High-Field FT-ICR Mass Spectrometry for Peptide and Protein Analysis

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Results and Discussion

We present the first coupling (see Figure 1) of laser spray ionization inlet (LSII) and matrix-assisted ionization inlet (MAII) to high-field Fourier transform ion cyclotron mass spectrometry (FT-ICR MS) for generation of electrospray-like ions to take advantage of increased sensitivity, mass range, and mass resolving power afforded by multiple charging. We apply the technique to top-down protein analysis and characterization of metalloproteins. We also present a novel method for generation of multiply-charged copper-peptide complexes with varying degrees of copper adduction by LSII. We show an application of the generated copper-peptide complexes for protein charge state and molecular weight determination, particularly useful for an instrument such as a linear ion trap mass analyzer.

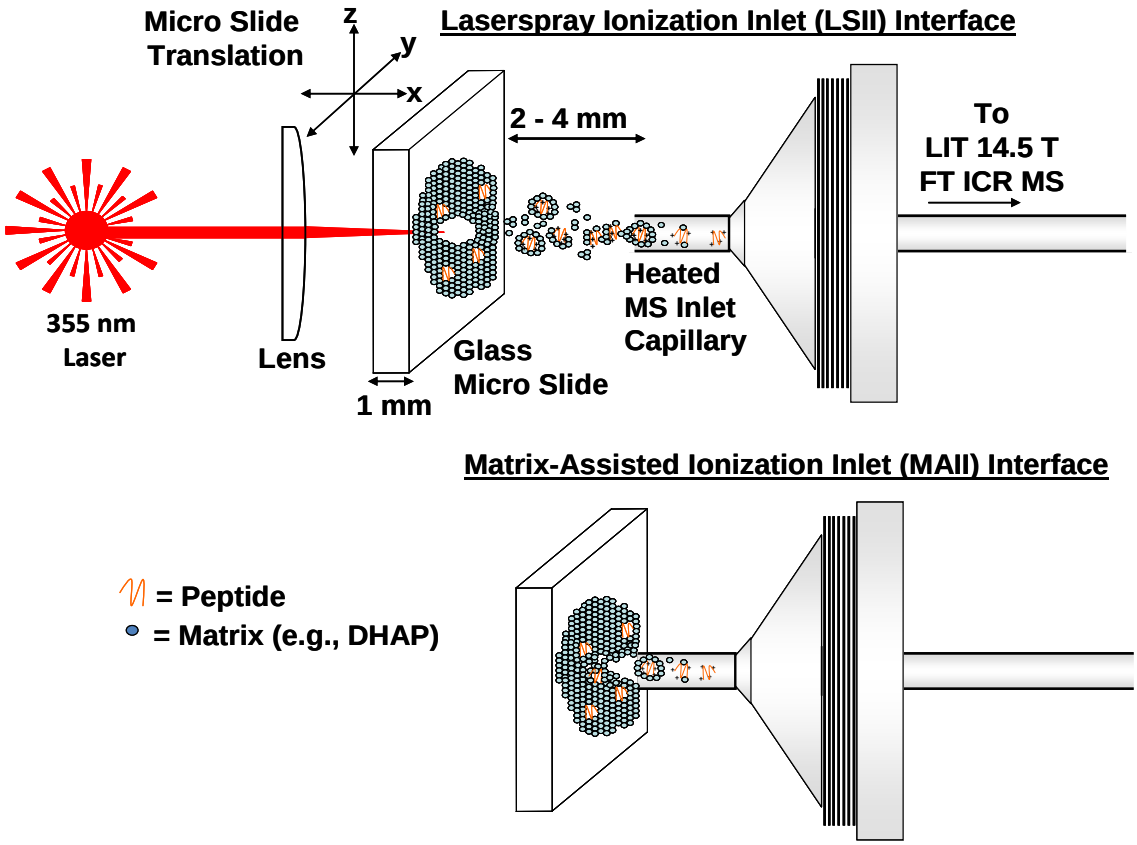

Figure 1. Schematic diagram of laserspray ionization inlet (top) and matrix-assisted ionization inlet source (bottom) interfaced to a hybrid linear quadrupole ion trap 14.5 T Fourier transform ion cyclotron resonance mass spectrometer.

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References

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