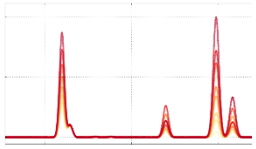
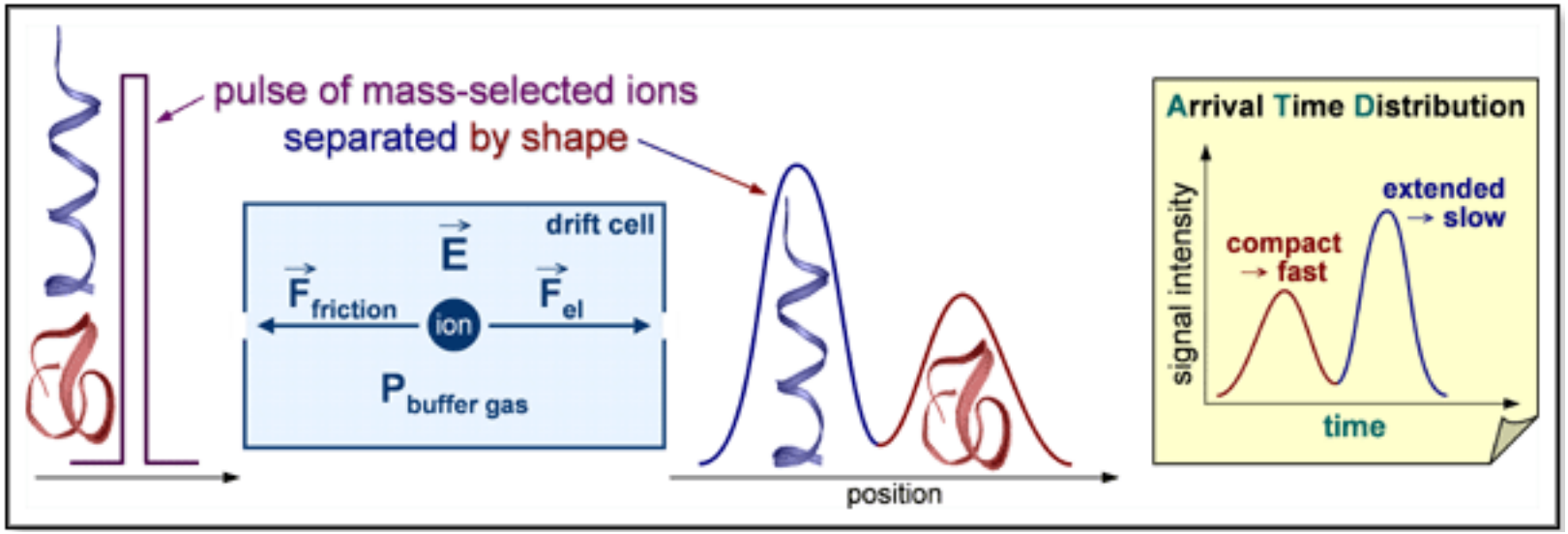


COURSE GOALS

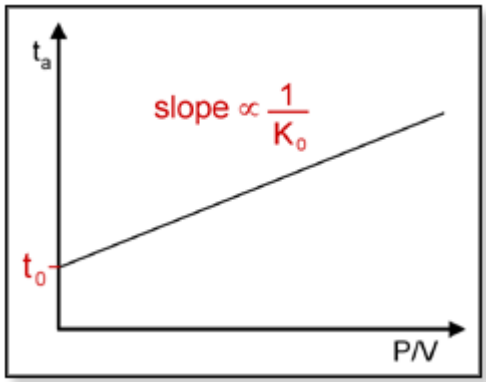
- Gain an introductory *understanding* of the fundamentals of ion mobility spectrometry and its analytical capabilities.
- Describe the various types of IMMS instrument that are commercially available.
- Appreciate the *value-added* aspect of coupling IMS with MS.
- Explore the figures of merit required to *evaluate* different instruments and determine which best suits your analytical needs.
- Highlight the range of applications of IMMS.

Ion Mobility Mass Spectrometry

Fundamental Characteristics



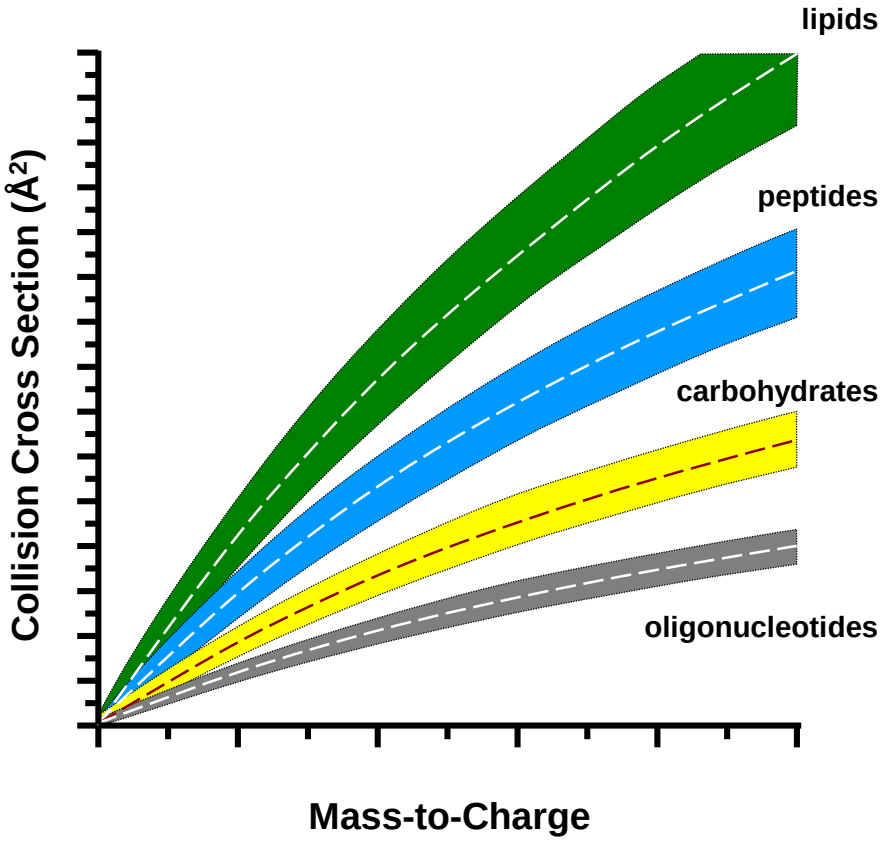
$$K_o = \frac{L^2}{t_d V} \times \frac{P}{760} \times \frac{273.15}{T}$$

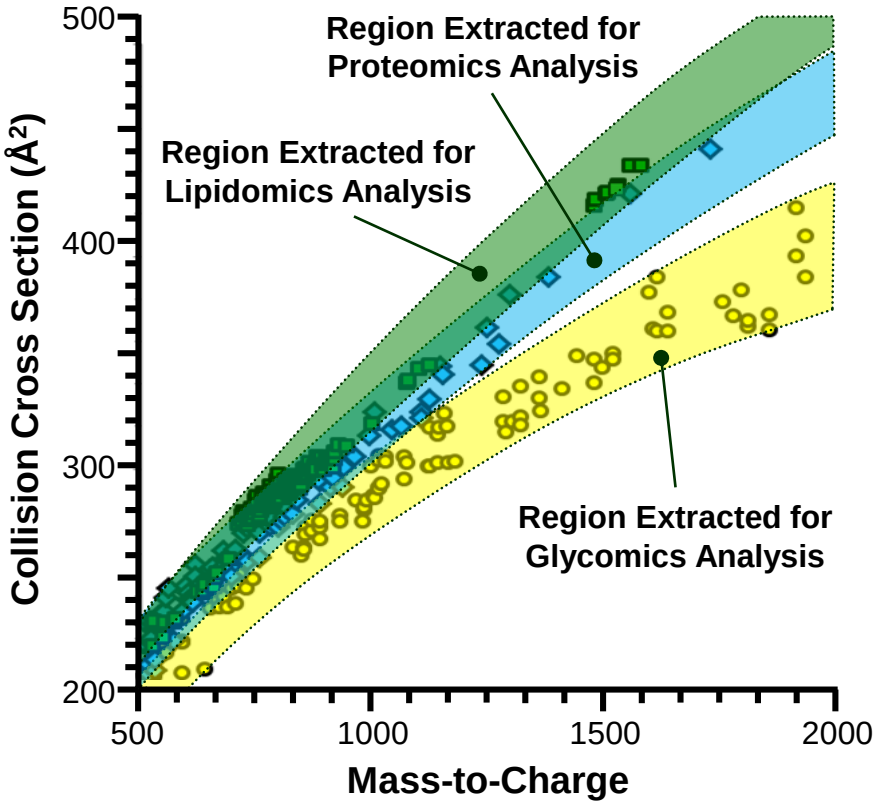


http://bowers.chem.ucsb.edu/theory_analysis/ion-mobility/index.shtml

Biomolecular Class Separations

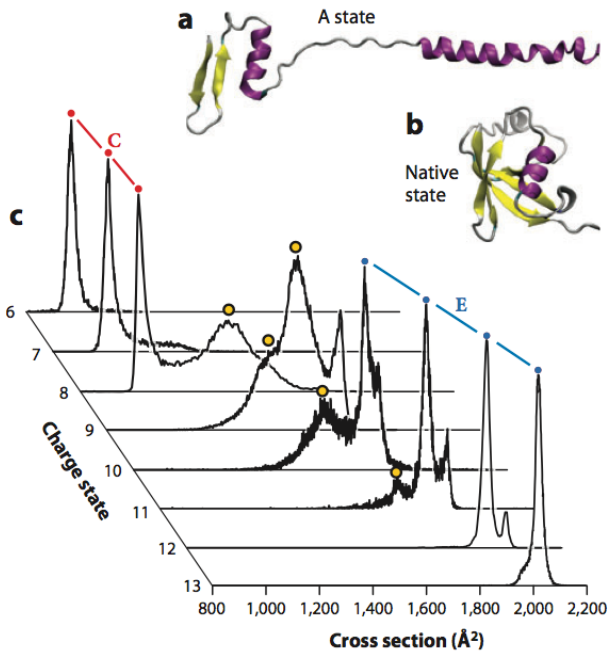
(Analytical selectivity from prevailing structural characteristics)





L. S. Fenn, M. Kliman, A. Mahsut, S. R. Zhao, and J. A. McLean, Analytical Bioanalytical Chemistry 394, 235-244 (2009).

Gas-Phase Protein Conformations



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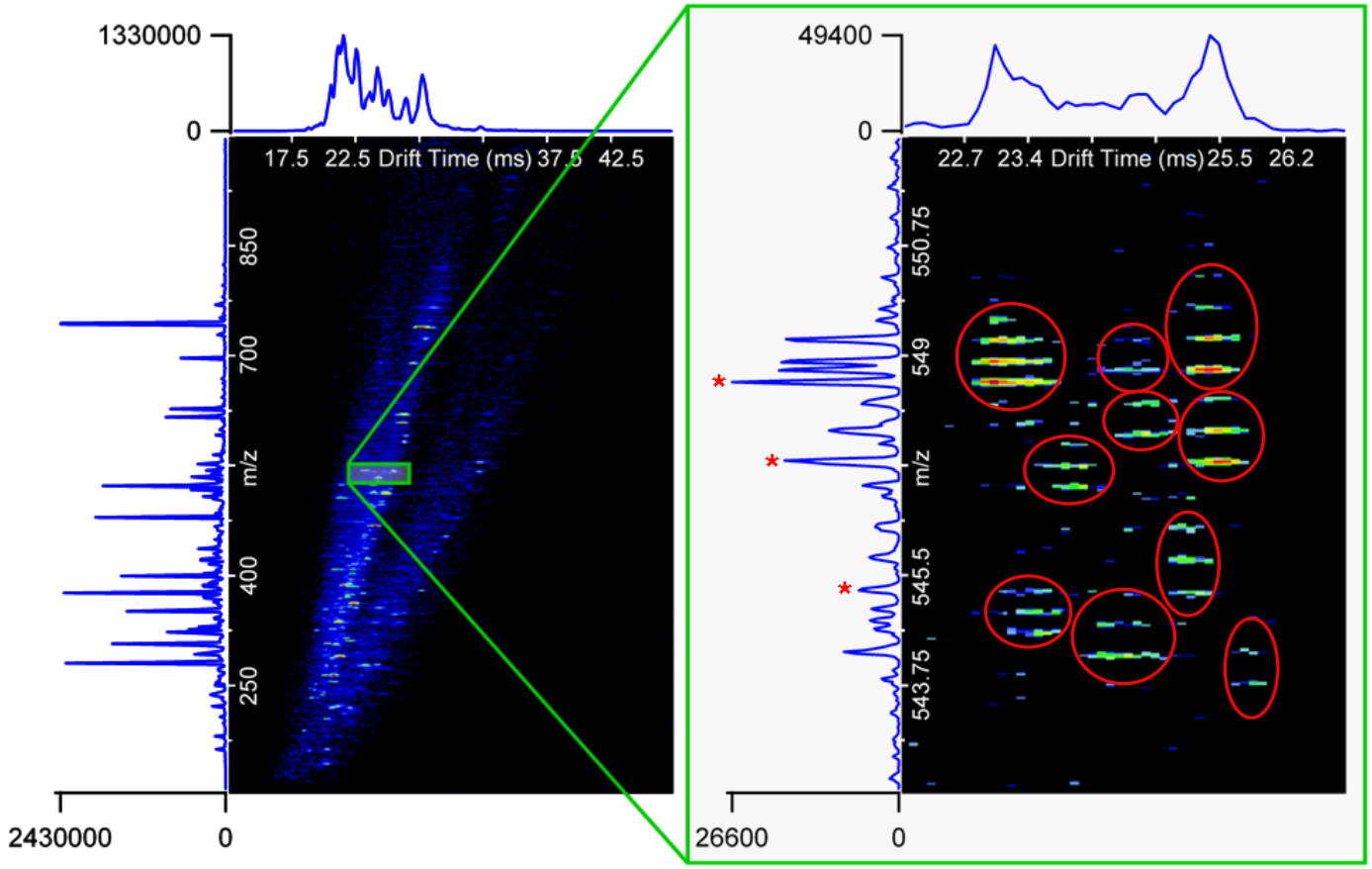
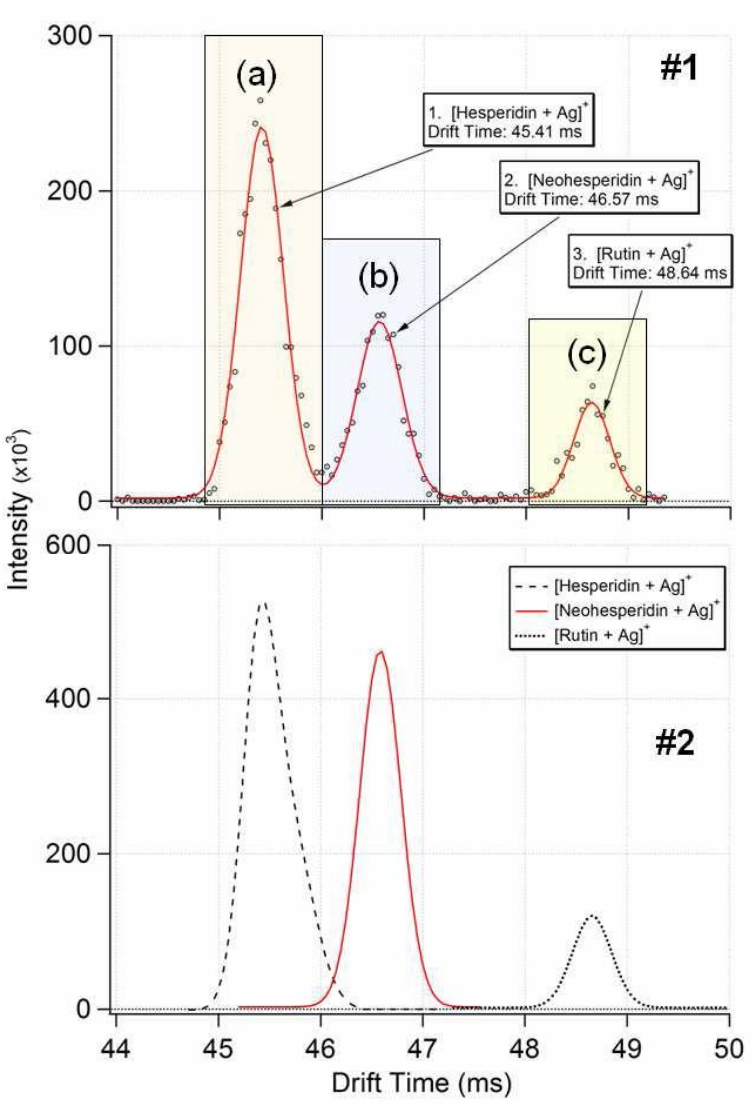
Enhanced Data Interpretation Enabled by IMMS

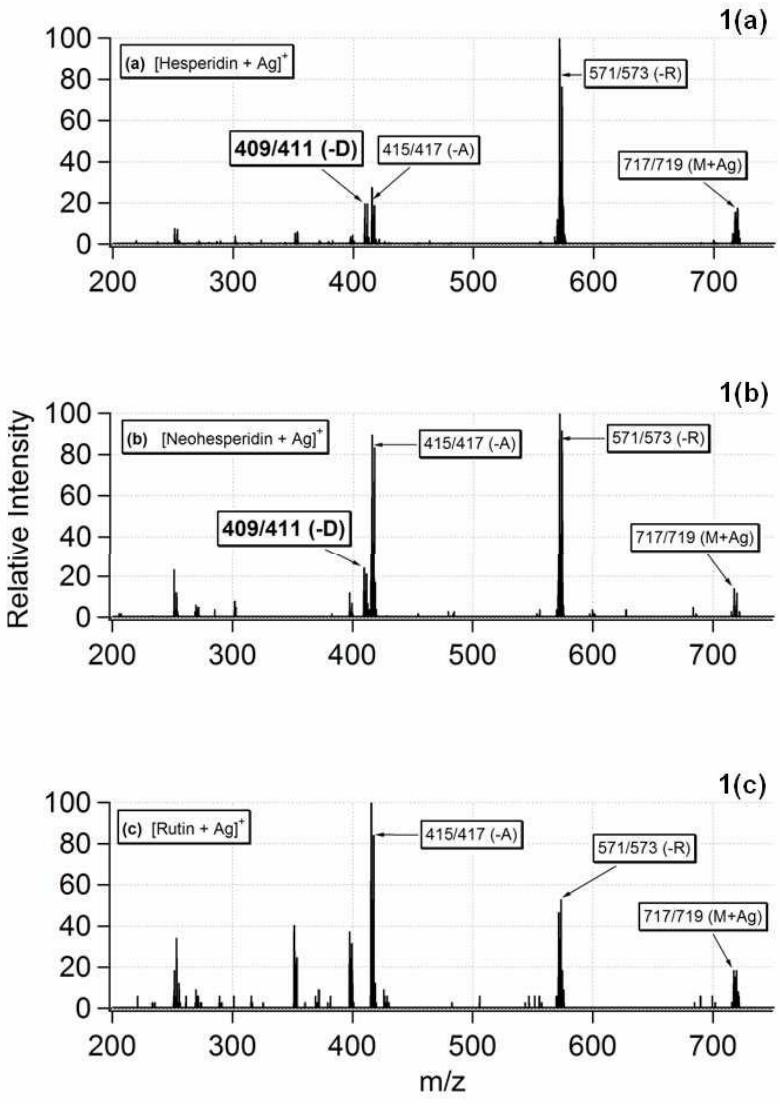
- Improved Sensitivity & Increase Confidence in Feature



Only 3 features discerned without drift time dimension (*)

Separation of Isobaric Species





J. Mass Spectrom. 2006; **41**: 339–35100