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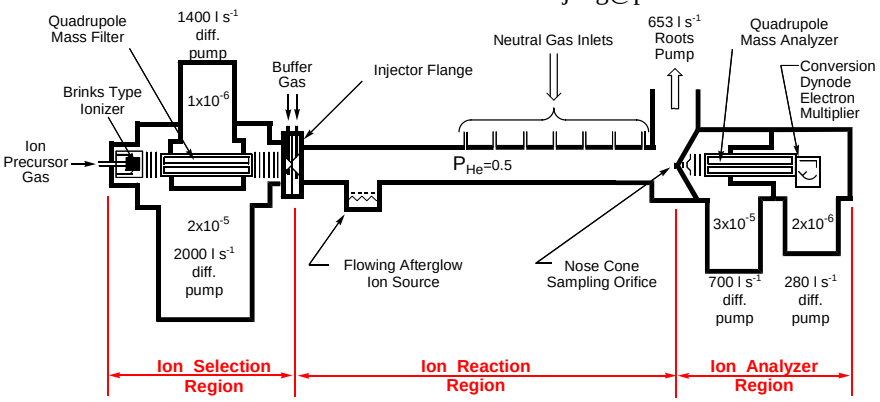
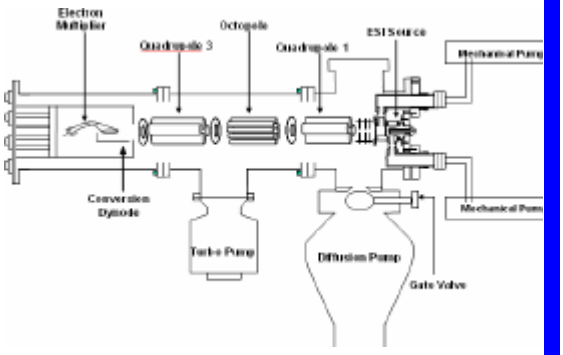


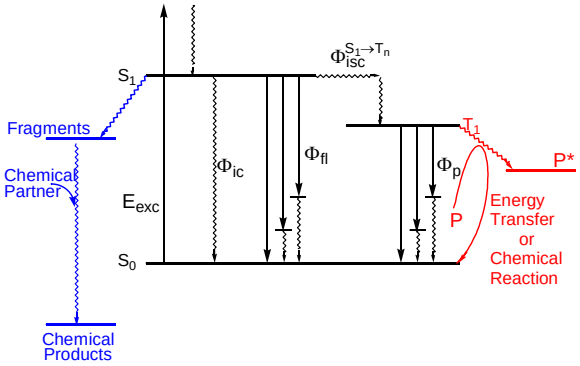
Chemical Ionization Mass Spec

as studied via a custom-built MS^2 instrument (SIFT) allows one to examine chemical reactions in the complete absence of effects of solvent, counter ions, and aggregation. The unique insight gained leads to greater understanding of organic reactivity as well as to precise liquid phase predictions. Two, current projects are (1) quantification of volatile organic compounds in ambient air or breath samples; (2) designer reagents to specifically cleave and sequence peptides.

Applied Mass Spectrometry: SWISS-484

Mass Spectrometry has grown at a tremendous rate in the past ten years due to major instrumental advances. These advances provide substantial new opportunities and challenges. Electrospray ionization presents a novel method for studying chemical ionization reactions, providing impetus for the state-of-the-art quadrupole-octopole-quadrupole instrument recently constructed (adjacent Figure) and which is being used to quantify biologically active components in biological fluids and to test novel methods of peptide sequencing. The ESI-TQ allows us to quantify physical properties of biologically active compounds, including binding affinities to neurologically relevant peptides.



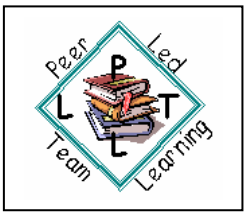


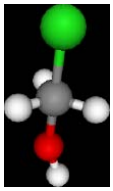
Photoacoustic Calorimetry

is a relatively new method that allows one to quantitatively follow heat deposition to the surroundings after absorption of a photon. Typical organic molecules are thus "visualized" by PAC according to one of the non-radiative transitions shown in the adjacent Figure. This sensitive technique uniquely complements absorption and emission spectroscopies and holds particular advantage for investigating properties of organic molecules in inhomogeneous environments. Among other cases, we have applied PAC to chemistry questions in Vitamin B_{12}, C_{60} and C_{70}, fluorescence, photofragmentations, and functionalized polymer surfaces

Chemical Education http://chemed.chem.pitt.edu

A variety of novel approaches to engaging students in active learning exercises to improve their Chemistry and General Education skills are being developed; all can be accessed from the server noted.





The Virtual Fishbowl

Real-Time, On-Line Organic Chemistry Tutoring

Virtual Mass Spectrometry LABORATORY