



# MASS SPECTROMETRY DISCUSSION GROUP



## Mass Spec. Manufacturer's and Poster Night

Thursday, 16 June 2005

Pittsburgh Athletic Association  
4215 Fifth Ave., Pittsburgh, PA

----- 0 -----

**PROGRAM:** Sponsored by our mass spec. related manufacturers

- 4:00 PM      **Manufacturer's Booths and Poster Session Social**
- 6:00 PM      **Complimentary Dinner**
- 7:00 PM      **Speaker: Dr. A. Peter Snyder**

### “Pyrolysis-Gas Chromatography-Ion Mobility Spectrometer: Outdoors Bioaerosol Detector”

**A. Peter Snyder**

US Army Edgewood Chemical Biological Center, Aberdeen Proving Ground, MD

#### **Abstract**

The fielded pyrolysis-gas chromatography-ion mobility spectrometry (Py-GC-IMS) bioaerosol detection system is targeted as a candidate next generation bioaerosol detector for US Army indoor and outdoor applications. The Py-GC-IMS consists of a rapid heating pyrolysis module, a small temperature programmed gas chromatograph, and an IMS atmospheric pressure detector. The Py-GC-IMS can accept solid, liquid, vapor and aerosol forms of a sample, and this offers a degree of versatility in chemical and biological sample analysis applications. Either the system can accept sample by collecting aerosols, placing microliter amounts of solutions or suspensions into the sample introduction heating tube, or admitting unconcentrated/preconcentrated vapors from the ambient environment. The solid or liquid is vaporized and a portion is admitted into the GC column. The separated compounds from the GC column enter a radioactive nickel-63 ionization source of an Improved Chemical Agent Monitor (ICAM) IMS. The neutral GC eluate is ionized and pulsed into the IMS drift tube. The resulting signals in the three-dimensional GC-IMS-intensity dataspace are reduced by multivariate data analysis using discriminant factor analysis (DF) for characterization and discrimination utility. Thus, the pattern of peaks in the GC-IMS interrogation dataspace determines the identity or class of materials. Initial tests have been accomplished using aerosols of Gram-positive *Bacillus subtilis* (BG) spores, Gram-negative *Erwinia herbicola* (EH), ovalbumin protein (OV) and *E. coli* MS-2 virus. Feasibility and basic operation in a controlled laboratory setting was successfully demonstrated.

---

Complimentary Parking behind PAA.

**MUST RSVP to register & for Complimentary Dinner to:**  
manny@pitt.edu, 412-624-6862 by June 13<sup>th</sup>. Tell Manny if you plan to bring a poster.

SEE: SSP-MSDG at <http://chemed.chem.pitt.edu/ssp-msdg>