

Abstract Submitted  
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**Tandem mass spectrometry of single organic aerosol particles: A promising approach for in-situ analysis of mixtures.** PEDRO CAMPUZANO JOST, SARAH HANNA, EMILY SIMPSON, DAMON ROBB, MICHAEL BLADES, JOHN HEPBURN, ALLAN BERTRAM, University of British Columbia — We have built a new single particle mass spectrometer for organic aerosol analysis that combines different previously tried approaches into one single instrument. We use soft, wavelength tunable desorption by using a dedicated pulsed CO<sub>2</sub> laser, (Prather, Baer & coworkers) and soft ionization by tunable VUV radiation (Baer, Wilson & coworkers)) to ensure a minimum of fragmentation. By ionizing the aerosol plume in the center of an ion trap both high sensitivity and the ability to elucidate structure by tandem mass spectrometry (Reilly & coworkers) can be achieved. The analytical performance of the instrument as well as the detection geometry has first been validated by using simpler ionization techniques, 70 eV EI and REMPI, on a suite of aromatic and aliphatic compounds and simple mixtures. The novel tunable VUV laser system has been thoroughly characterized with a host of gaseous organic compounds that has proven both the ability to determine ionization energies with high accuracy and the possibility in many cases to minimize fragmentation by tuning the VUV source close to the ionization threshold. The VUV source has been integrated into the aerosol mass spectrometer and first VUV single aerosol spectra will be presented.

Pedro Campuzano Jost  
University of British Columbia

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