Microscopy and microprobe studies of individual particles collected during MILAGRO 2006 study: Posters 1 and 2

K.S. Johnson1, R. Gonzalez2, L.T. Molina2
1Department of Chemistry and of Earth, Atmospheric and Planetary Sciences, Massachusetts Institute of Technology, Cambridge, MA
2Molina Center for Energy and the Environment, La Jolla, CA
R.J. Hopkins3, A.V. Tivanski3, M.K. Gilles3
3Chemical Sciences Division, Lawrence Berkeley National Laboratory, Berkeley, CA 94720-1460, USA, Y. Desyaterik4 and A. Laskin4
4William R. Wiley Environmental Molecular Sciences Laboratory, Pacific Northwest National Laboratory, Richland, WA 99352, USA

A. Laskin, Pacific Northwest National Laboratory
Alexander.Laskin@pnl.gov

Complementary capabilities of a number of analytical microscopy and microprobe techniques have been utilized to provide comprehensive chemical and morphological analysis of aerosol samples collected during the 2006 MILAGRO study. Comprehensive analysis of the aerosol has been facilitated by a complementary combination of computer controlled scanning electron microscopy with energy dispersed analysis of X-rays (CCSEM/EDX), high resolution transmission electron microscopy (TEM), time-of-flight secondary ionization mass spectrometry (TOF-SIMS), and scanning transmission X-ray microscopy (STXM) with near edge X-ray absorption fine structure spectroscopy (NEXAFS). The analysis has been focused to target the following areas: (a) Evidence of aerosol processing (chemical reaction or physical mixing) from T0 to T1, (b) sites through composition and morphological analysis, (c) the phenomenon of emissions of heavy metals and soot from overnight industrial activities at T0, (d) internal structure and mixing characteristics of sulfur and soot containing particles, hygroscopic properties of mixed urban aerosol and susceptibility to wet-removal by washout/rainout.