Collaborative Research: Characterization of Sources and Processes of Organic Fine Particulate Matter in Mexico City

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This project will provide detailed analysis of data from the MCMA (Mexico City Metropolitan Area) 2003 and upcoming 2006 campaigns. The data collection in 2003 was supported by the Department of Energy (DOE) and NSF, and the 2006 ground-based measurements, on which this project is partly based, will be supported by the DOE. MCMA-2006 will be part of the MILAGRO (Mexico City Initiative – Local and Global Research Observations) integrated field program. The dataset to be analyzed includes the characterization of emission fluxes of fine primary particles, highly time-resolved ambient fine particles (primary and secondary) chemical composition, size distributions, and mass loadings; and extensive real-time measurements of secondary aerosol precursor gas emission sources and ambient concentrations. This analysis will provide detailed information on the roles and relative importance of primary motor vehicle fine particle emissions and atmospheric photochemical production of ambient secondary fine particles. Measurements as well as urban-scale and regional models will address the question of the influence of transport, mixing, chemistry, and loss processes on the evolution of organic aerosol concentrations and properties.

This project will contribute to the training of a number of students, and foster collaborations between U.S. and Mexican research institutions.