Submicron Particle Organic Functional Groups on NCAR C130 and SIMAT Flux Tower during MILAGRO

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The organic functional group composition of submicron particles was measured by Fourier Transform Infrared (FTIR) spectrometry for samples collected during the MILAGRO campaign. Ambient samples were collected at Mexico City (SIMAT Flux Tower) and on board the NCAR C130. Ground platform samples correspond to a collection period of approximately 8 hr. Aircraft samples were collected during legs at constant altitudes, over sampling times between 15 min and 1 hr. Infrared spectra of aerosol samples were acquired in transmission mode. Alkane, alkene, and aromatic functional groups, as well as carbonyl and hydroxyl groups have been detected. Calibration of the infrared spectra allowed the quantification of organic functionalities and quantification of total organic mass concentration. Sampling times and preliminary composition results are summarized in this work. Analysis by FTIR, and additional elemental quantification of selected samples by X-ray fluorescence (XRF), will continue over the coming months.