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Kinetics and Products of Radical-Initiated Oxidation of Organic Particles Using Aerosol CIMS GEOFFREY SMITH, JOHN HEARN, University of Georgia — Ambient aerosol can contain a significant fraction of organic material which may react with trace gases in the atmosphere. Recently, it has been proposed that reactions with radical species, such as OH and Cl, may constitute a substantial loss mechanism for organic particles. In particular, the radical-initiated oxidation could lead to the creation of smaller, more volatile species which remove mass from the particles. An accurate assessment of the importance of these radical reactions requires measurements of their rates of reaction as well as identification of the subsequent products. We are exploring OH- and Cl-initiated reactions using Aerosol CIMS (chemical ionization mass spectrometry) to monitor changes in the compositions of the aerosol as well as the gas phase. This technique is well-suited to the study of organic species since the mass spectra contain very little fragmentation. These experiments provide insight into the oxidative processing which may potentially alter many critical properties of organic aerosol, including hygroscopicity and their ability to act as cloud condensation nuclei.

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