4.061 Simultaneous and time-resolved measurement of alpha-pinene ozonolysis products in gaseous and aerosol phases for the determination of gas-aerosol partitioning.

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Abstract:

We have developed a real-time measurement system to identify semi-volatile organic compounds (SVOCs) in both the gaseous and the aerosol phases using chemical ionization-mass spectrometry in order to estimate the gas-aerosol partitioning of each SVOCs. In our system, SVOCs in both the gaseous and the aerosol phases are measured by the same technique, which enable us to determine the partitioning of each SVOC from the ratio of ion signals, without knowing the concentration of each SVOC. This ability is a strong point of this approach, because most chemical species in SOAs are thought to be multifunctional, and determining their concentrations seems to be impossible. We show a novel system equipped with dual-proton transfer reaction-mass spectrometers for "real-time" measurements of the partitioning of each SVOC produced in alpha-pinene ozonolysis between the gaseous and the aerosol phases. Time profiles of the SVOCs in both the gaseous and the aerosol phases, *i.e.* "real-time" SVOC partitioning, are also discussed.