Time and Size-Resolved Chemical Composition of Submicron Particles in Pittsburgh - Implications for Aerosol Sources and Processes

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Figure Captions:

Figure S1. Variations of meteorological variables and gas phase species during Sept. 7 - 22, 2002.

Figure S2. Correlation between the mass concentrations of NR-PM1 species measured by the AMS, colored by time. The red lines are the fits to the data.

Figure S3. Particle number and apparent volume distributions measured by the SMPS. The apparent volume is calculated from the number distribution with the assumption of spherical particles.

Figure S4. Colored image plots of the mass concentrations of total, sulfate, ammonium, nitrate and organics as a function of time and particle size. Gray areas on the plots are due to either occasional instrumental malfunction or maintenance/calibration; white areas are due to the omission of data points that are below the 2 detection limits of the AMS.

Figure S5. Average daily size distributions of particle species during Sept. 7 - 22, 2002.

Figure S6. Average daily AMS mass spectra of particle species during Sept. 7 - 22, 2002
Figure S2:

- Ammonium vs. Sulfate: \[\text{NH}_4^+ = 0.46 + 0.29 \times \text{SO}_4^{2-}\]
  \[r^2 = 0.83\]

- Organic vs. Sulfate: \[\text{Org} = 2.07 + 0.35 \times \text{SO}_4^{2-}\]
  \[r^2 = 0.41\]

- Nitrate vs. Sulfate: \[\text{NO}_3^- = 0.46 + 0.068 \times \text{SO}_4^{2-}\]
  \[r^2 = 0.09\]

- Nitrate vs. Chloride: \[\text{NO}_3^- = 0.67 + 3.24 \times \text{Cl}^-\]
  \[r^2 = 0.30\]
Figure S3

![Graph showing time series data with two plots: one for Number and the other for Volume. The plots display data over the dates from 9/7/02 to 9/21/02 with size distributions along the abscissa and number or volume along the ordinate. The color scale indicates the density per log unit of size.]
Figure S4
Figure S5

$dM/d\log D_{va}$ (µg m$^{-3}$)

$D_{va}$ (nm)
Figure S6

**Mass concentration (µg m⁻³)**

- 09/02: SO₄²⁻, NO₃⁻, Organics, NH₄⁺
- 09/03: SO₄²⁻, NO₃⁻, Organics, NH₄⁺
- 09/04: SO₄²⁻, NO₃⁻, Organics, NH₄⁺
- 09/05: SO₄²⁻, NO₃⁻, Organics, NH₄⁺
- 09/06: SO₄²⁻, NO₃⁻, Organics, NH₄⁺
- 09/07: SO₄²⁻, NO₃⁻, Organics, NH₄⁺
- 09/08: SO₄²⁻, NO₃⁻, Organics, NH₄⁺
- 09/09: SO₄²⁻, NO₃⁻, Organics, NH₄⁺
- 09/10: SO₄²⁻, NO₃⁻, Organics, NH₄⁺
- 09/11: SO₄²⁻, NO₃⁻, Organics, NH₄⁺
- 09/12: SO₄²⁻, NO₃⁻, Organics, NH₄⁺
- 09/13: SO₄²⁻, NO₃⁻, Organics, NH₄⁺
- 09/14: SO₄²⁻, NO₃⁻, Organics, NH₄⁺
- 09/15: SO₄²⁻, NO₃⁻, Organics, NH₄⁺
- 09/16: SO₄²⁻, NO₃⁻, Organics, NH₄⁺
- 09/17: SO₄²⁻, NO₃⁻, Organics, NH₄⁺
- 09/18: SO₄²⁻, NO₃⁻, Organics, NH₄⁺
- 09/19: SO₄²⁻, NO₃⁻, Organics, NH₄⁺
- 09/20: SO₄²⁻, NO₃⁻, Organics, NH₄⁺
- 09/21: SO₄²⁻, NO₃⁻, Organics, NH₄⁺