

Supplementary Information

Chemical Characterization of Sub-micron Aerosols during New Particle Formation in an Urban Atmosphere

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Sampling site



Fig. S1. (a) Kanpur city street-map showing location of the measurement site (IIT Kanpur, IITK) (b) IITK street-map showing location of aerosol (SMPS and HR-ToF-AMS, blue square), trace gases (red square) and meteorological (green square) instruments. (Courtesy: www.arcgis.com).

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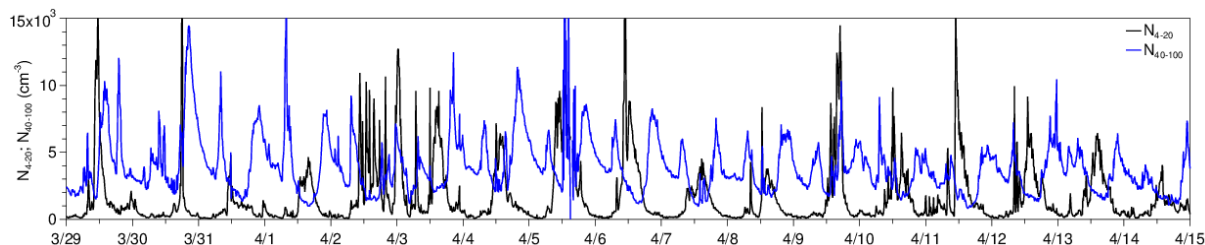


Fig. S2. Time-evolution of nucleation mode particles (N_{4-20}) and the number concentration of particles size between 40 nm and 100 nm (N_{40-100}).

HR-PMF diagnostic and analysis

We have performed PMF analysis of the HR mass spectra with 1–4 factors and fpeak values ranging from -5 to +5 to get 3% change (Zhang et al., 2011) over the minimum Q/Q_{exp} value for each factor.

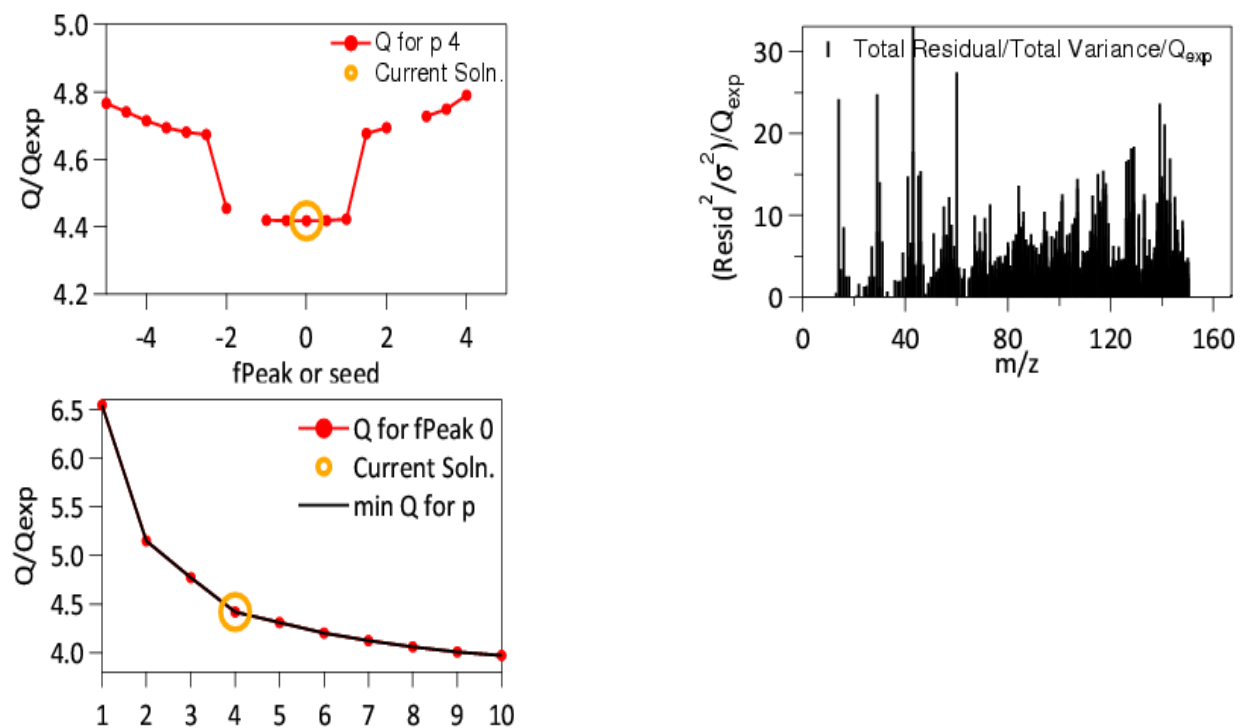


Fig. S3. HR-PMF diagnostic plot, showing lowest Q/Q_{exp} for chosen solution, number of factor vs Q/Q_{exp} plot and residuals at different m/z 's for chosen solution.

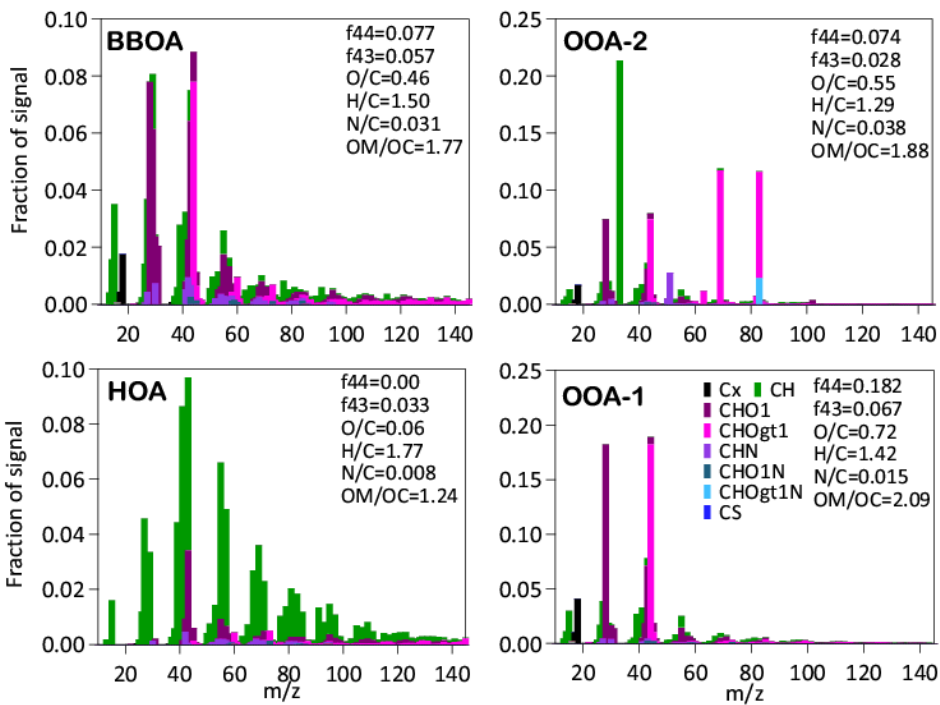


Fig. S4. PMF analysis of the HR mass spectra over entire study period. Four distinct factor profiles include biomass burning organic aerosols (BBOA), a hydrocarbon-like organic aerosol (HOA) and two oxidized organic aerosol (OOA-1 and OOA-2).

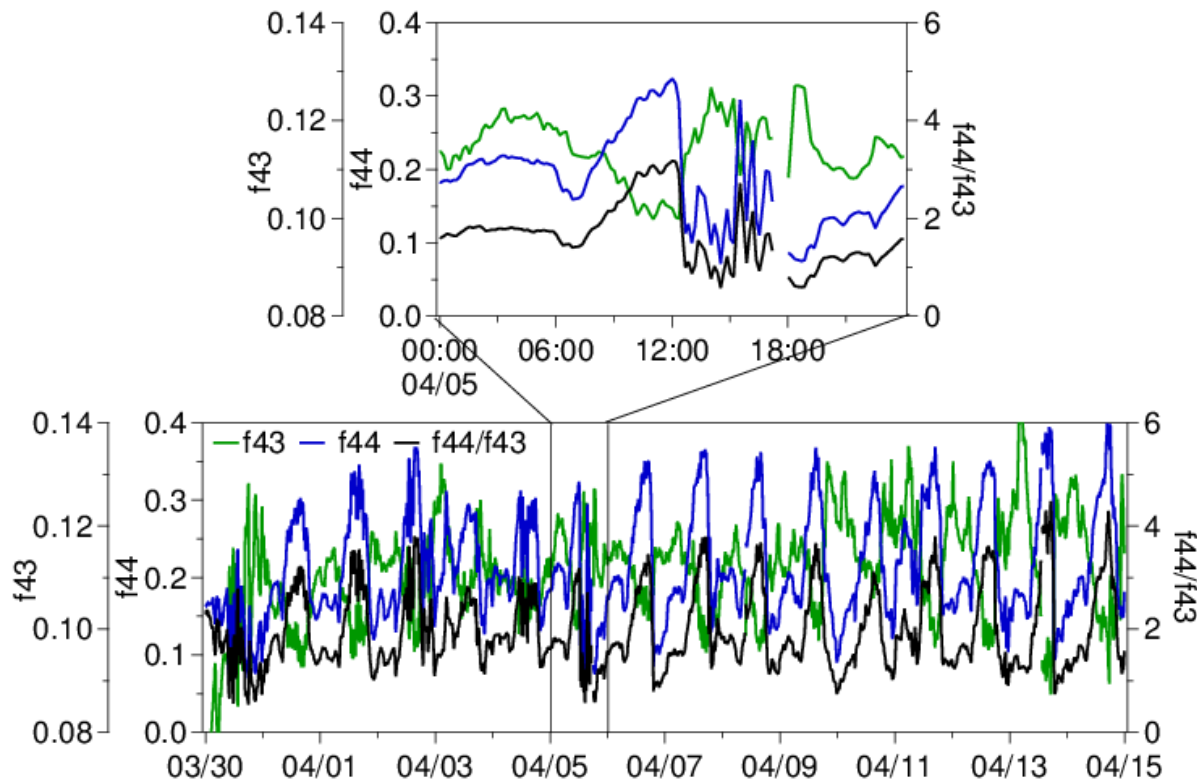


Fig. S5. Time evolution of fractions f_{43} and f_{44} and the ratio f_{44}/f_{43} during the study period.

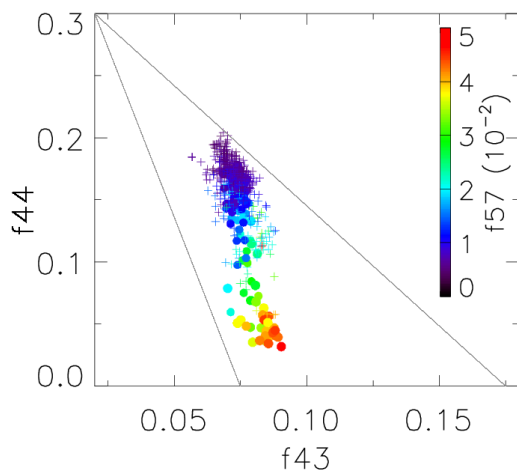


Fig. S6. Scatter plot of f_{44} vs. f_{43} as a function of f_{57} for 12:00 – 18:00 LT on observed NPF event days. The solid dots and plus sign indicate Type-I and Type-II events, respectively.

REFERENCES

- Zhang, Q., Jimenez, J.L., Canagaratna, M.R., Ulbrich, I.M., Ng, N.L., Worsnop, D.R. and Sun, Y. (2011). Understanding Atmospheric Organic Aerosols Via Factor Analysis of Aerosol Mass Spectrometry: A Review. *Analytical and Bioanalytical Chemistry* 401: 3045–3067.