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 (N4-20) and the number concentration of particles size between 40 nm and 100 nm (N40-100).

**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/Qexp value for each factor.

**Fig. S3.** HR–PMF diagnostic plot, showing lowest Q/Qexp for chosen solution, number of factor vs Q/Qexp 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 f43 and f44 and the ratio f44/f43 during the study period.

Fig. S6. Scatter plot of f44 vs. f43 as a function of f57 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