Supplement of
Chemical characteristic and volatility of atmospheric aerosols during winter in Shenzhen, China

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Figure S1 PMF analysis on the high-resolution organic mass spectra sampled under ambient and TD temperature: (a) PMF results of factor=4, fpeak=0, seed=0; (b) PMF results of factor=6, fpeak=0, seed=0; (c) Diagnostic plots of PMF results of factor=4, fpeak=0, seed=0. (1) Q/Qexpected vs number of factors; (2) Q/Qexpected vs fpeak at 5-factor solution; (3) Q/Qexpected vs seed at 5-factor solution; (4) Scaled residual for each m/z; (5) mass fraction of OA factors as a function of fPeak; (6) mass fraction of OA factors as a function of Seed; (7) correlations of time series and mass spectra among PMF factors.

(a) factor=4, fpeak=0, seed=0
(b) factor=6, fpeak=0, seed=0

- **LOOOA**
  - O/C: 0.59
  - H/C: 1.68
  - N/C: 0.01
  - OM/OC: 1.94

- **MOOOA**
  - O/C: 1.17
  - H/C: 1.09
  - N/C: 0.04
  - OM/OC: 2.70

- **COA**
  - O/C: 0.19
  - H/C: 1.78
  - N/C: 0.00
  - OM/OC: 1.41

- **OA**
  - O/C: 0.58
  - H/C: 1.37
  - N/C: 0.02
  - OM/OC: 1.90

- **HOA**
  - O/C: 0.09
  - H/C: 2.04
  - N/C: 0.01
  - OM/OC: 1.30

- **BBOA**
  - O/C: 0.25
  - H/C: 1.58
  - N/C: 0.03
  - OM/OC: 1.50
(c) diagnostic plots of results of factor=5, fpeak=0 and seed=0
Figure S2 The MS profile of PMF results of data only in ambient temperature, 5-factor solution with fpeak = 0 and seed = 0. In the profile of HOA, the higher contribution of m/z 44 can be a result of the mixing of HOA and OOA.

Figure S3. The correlation of the PM<sub>1</sub> mass concentration (summed by the AMS result and BC from aethalometer) and the mass concentration calculated from the number concentration measured by SMPS.