Supplemental Information

**Evaluation of Fast Mobility Particle Sizer (FMPS) for Ambient Aerosol Measurement**

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Figure S1. Meteorological data obtained from the California Irrigation Management Information System (CMIS) meteorology station at UC Riverside (33.965°, -117.336°) for March 8th. a) Wind direction and speed; b) Ambient temperature; c) Relative humidity; d) Back trajectory (12 hr) analysis, initiated at 15:00 on March 8, 2017 Local Time (before the transition period); and e) Back trajectory (12 hr) analysis, initiated at 21:00 on March 8, 2017 Local Time (after the transition period).
Figure S2. a) Time series of ultrafine (9-100 nm) particle number concentration from SMPS and different FMPS matrices; b) Correlation of ultrafine particle number concentration between SMPS and different FMPS matrices for the time period from 12:30 to 23:00; c) Correlation of ultrafine particle number concentration between SMPS and different FMPS matrices for the time period from 12:30 to 18:00; and d) Correlation of ultrafine particle number concentration between SMPS and different FMPS matrices for the time period from 20:00 to 23:00.
Figure S3. a) Time-resolved geometric mean diameter from SMPS and FMPS for ultrafine particle size range (9-100 nm); b) Correlation between SMPS and FMPS geometric mean diameter for ultrafine particle size range (9-100 nm) for the time period from 12:30 to 23:00; and c) Correlation between SMPS and FMPS geometric mean diameter for ultrafine particle size range (9-100 nm) for the time period from 20:00 to 23:00.
c) after 20:00 \[ y = 1.14x + 4.13 \]
\[ R^2 = 0.97 \]

\[ y = 1.2x - 0.56 \]
\[ R^2 = 0.96 \]

\[ y = 1.09x + 1.85 \]
\[ R^2 = 0.95 \]
Figure S4. a) Time series of CS mode ultrafine particle number concentration from SMPS and different FMPS matrices (9-100 nm); b) Correlation of CS mode ultrafine particle number concentration between SMPS and different FMPS matrices for the time period from 12:30 to 23:00; c) Correlation of CS mode ultrafine particle number concentration between SMPS and different FMPS matrices for the time period from 12:30 to 18:00; and d) Correlation of CS mode ultrafine particle number concentration between SMPS and different FMPS matrices for the time period from 20:00 to 23:00.
d) after 10:00

- Blue dots: FMPS-default
- Red triangles: FMPS-compact
- Yellow diamonds: FMPS-soot

- $y = 0.89x$, $R^2 = 0.87$
- $y = 0.80x$, $R^2 = 0.87$

**Axes:**
- X-axis: SMPS ultrafine particle concentration (#/cm$^3$)
- Y-axis: FMPS ultrafine particle concentration (#/cm$^3$)
Figure S5. Meteorological data obtained from CMIS Meteorology station at UC Riverside (33.965, -117.336) for March 9th. (a) Wind direction and speed (b) Ambient temperature (c) Relative humidity