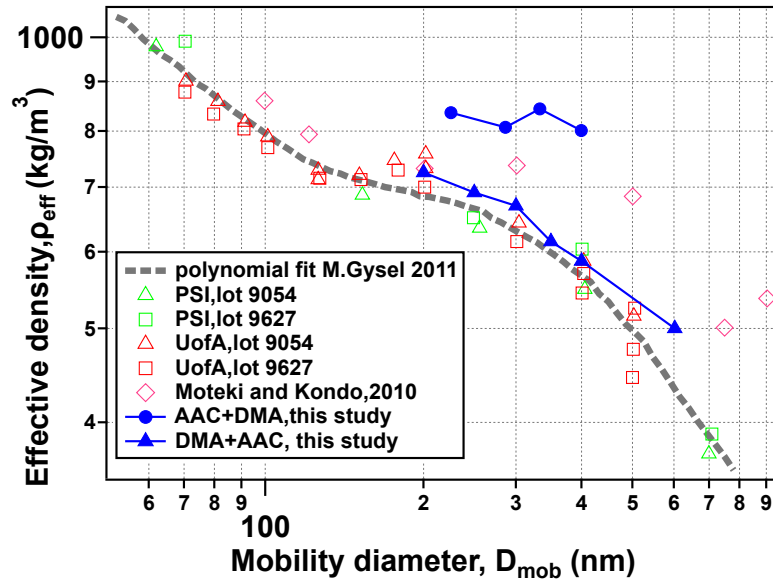
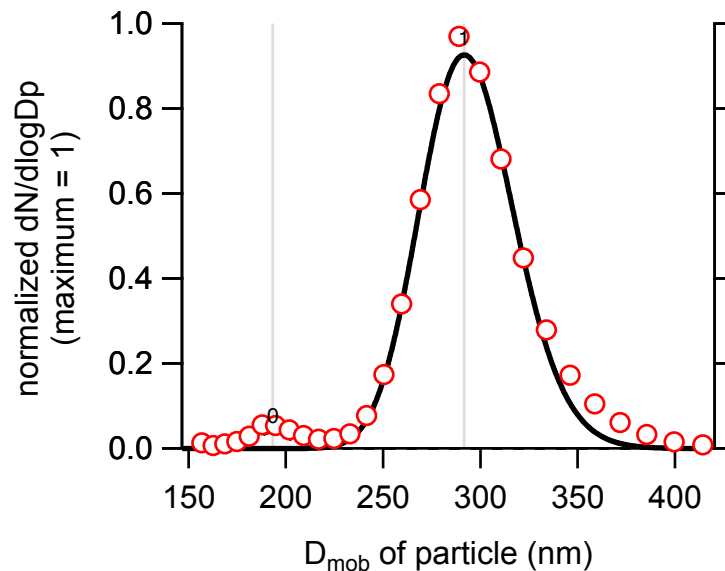


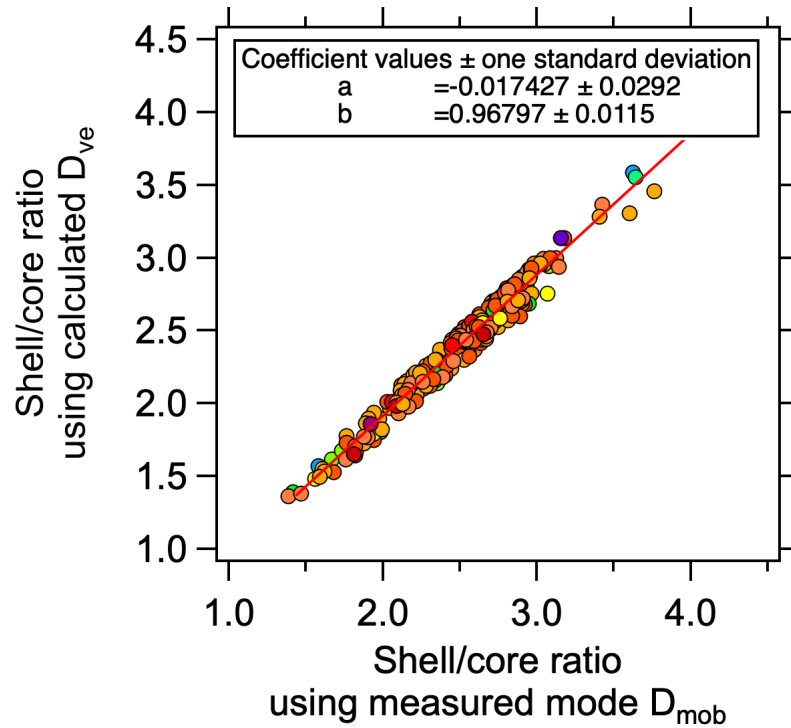
Supplementary Figures



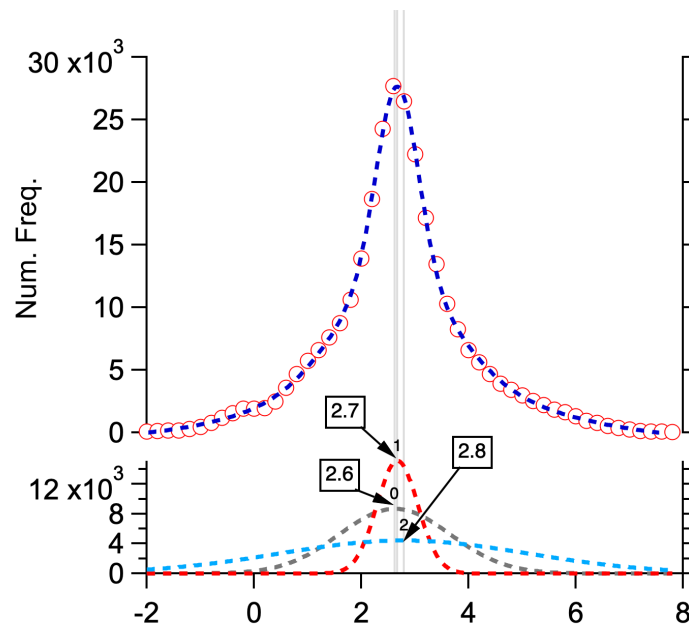
SF.1 Calibration results using a AAC-DMA (blue circles) and a DMA-AAC (blue triangles) tandem system in this study. For comparison, previous calibration results on the basis mass-mobility system are also shown.



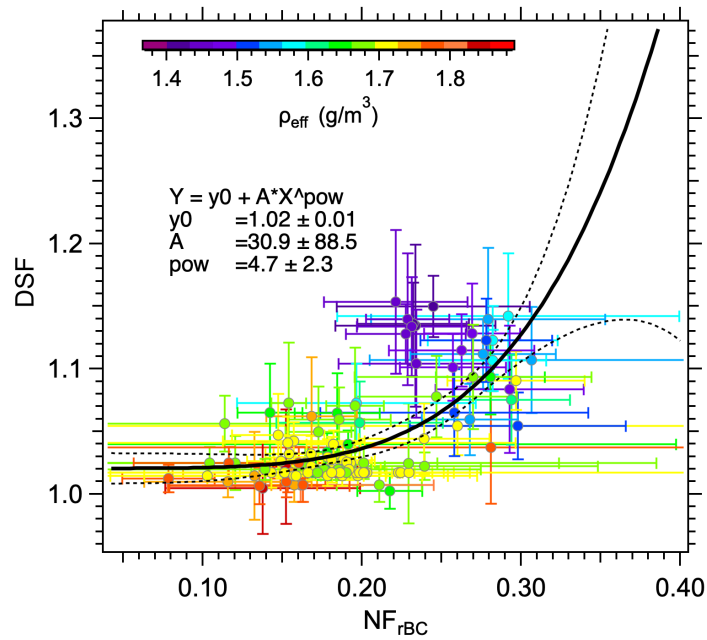
SF. 2 Normalized number size distribution of D_{mob} for particles with $D_{\text{ac}} = 400$ nm. Red circles were the measurement data. Black line was the multiple Gaussian fitting results.



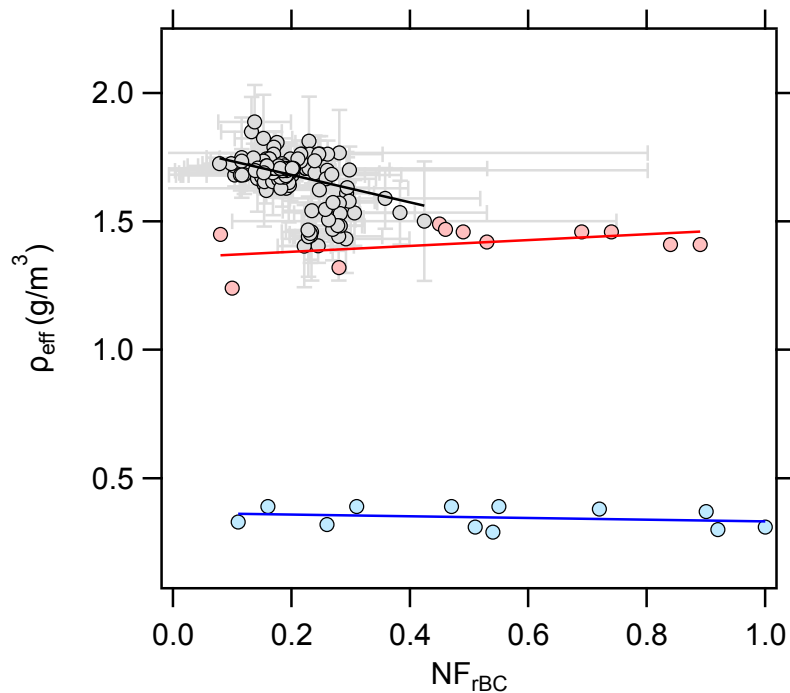
SF. 3 Scatter plot of S/C ratio on the basis of D_{ve} derived from equation (9) and D_{mob} measured by DMA.



SF. 4 Multiple Gaussian fitting of histogram of delaytime (Δt) of rBC-containing particles for all the observational period. Although three peaks were obtained, peak Δt values were almost the same (2.6 ~2.8) and it did not change our major conclusion.



SF. 5 Dependence of dynamic shape factor on the number fraction of rBC-containing particles (NF_{rBC}). Color of the symbols indicated the derived effective density. Dot lines are the upper and lower limits at confidence interval of 90%.



SF. 6 Scatter plot of effective density as a function of NF_{rBC} for all observation period. Red circles and blue circles was observation for the particles with $D_{\text{mob}} = 250 \text{ nm}$ and 350 nm in a traffic urban environment (Rissler et al., 2014)