

Zimmerman N., Cheol-Heon Jeong, Jonathan M. Wang, Manuel Ramos, James S. Wallace, and Greg J. Evans “A source-independent empirical correction procedure for the Fast Mobility and Engine Exhaust Particle Sizers” *Atmos. Environ.* 100, 178-184  
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**Abstract:**

The TSI Fast Mobility Particle Sizer (FMPS) and Engine Exhaust Particle Sizer (EEPS) provide size distributions for 6e560 nm particles with a time resolution suitable for characterizing transient particle sources; however, the accuracy of these instruments can be source dependent, due to influences of particle morphology. The aim of this study was to develop a source-independent correction protocol for the FMPS and EEPS. The correction protocol consists of: (1) broadening the >80 nm size range of the distribution to account for under-sizing by the FMPS and EEPS; (2) applying an existing correction protocol in the 8e93 nm size range; and (3) dividing each size bin by the ratio of total concentration measured by the FMPS or EEPS and a water-based Condensation Particle Counter (CPC) as a surrogate scaling factor to account for particle morphology. Efficacy of the correction protocol was assessed for three sources: urban ambient air, diluted gasoline direct injection engine exhaust, and diluted diesel engine exhaust. Linear regression against a reference instrument, the Scanning Mobility Particle Sizer (SMPS), before and after applying the correction protocol demonstrated that the correction ensured agreement within 20%.