Vehicle emission factors of solid nanoparticles in the laboratory and on the road using Portable Emission Measurement Systems (PEMS)

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SUPPLEMENTARY MATERIAL



A. Speed profiles of test cycles and on-road traces





Figure S2: Speed profile of the WLTC.



Figure S3: Speed profile of the Random Cycle.



Figure S4: Map of PEMS test routes (from Weiss et al., 2011b).

B. Evaluation of EFM



Figure S5: Example of exhaust flow correlation between CVS-determined (total dilution tunnel flow minus dilution air) and EFM-measured.



C. GMD of solid particle number distributions

Figure S6: Geometric Mean Diameters (GMD) of particles emitted by the tested vehicles. Error bars show one standard deviation.

D. Ambient temperature effect on SPN



Figure S7: SPN emissions of Vehicle GDI #1 over WLTCs at different ambient temperatures.



Figure S8: Exhaust gas temperatures at the tailpipe of Vehicle GDI #1 over WLTCs at different ambient temperatures.

E. Effect of engine rpm on SPN emissions



Figure S9: Speed profiles of the 6 tests over the extra high speed part of the WLTC (WLTC_D) (Vehicle GDI #3). Numbers indicate different drivers; "a" and "b" indicate first and second repetition.



Figure S10: RPM profiles of the 6 tests over the extra high speed part of the WLTC (WLTC_D) (Vehicle GDI #3). Numbers indicate different drivers; "a" and "b" indicate first and second repetition.



Figure S11: SPN emissions of 6 tests over the extra high speed part of the WLTC (WLTC_D) (Vehicle GDI #3) as measured from the dilution tunnel with PMP-CVS. Numbers indicate different drivers; "a" and "b" indicate first and second repetition.



Figure S12: SPN emissions at constant speeds with different gear ratios (Roman numbers) (Vehicle GDI #3). Numbers in the diagram indicate rpm.