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Atmospheric Chemistry and Physics Discussions

*Supplement of*

# Model studies of volatile diesel exhaust particle formation: organic vapours involved in nucleation and growth?

**L. Pirjola et al.**

*Correspondence to:* L. Pirjola (liisa.pirjola@metropolia.fi, liisa.pirjola@helsinki.fi)

# Supplementary material

a) b)

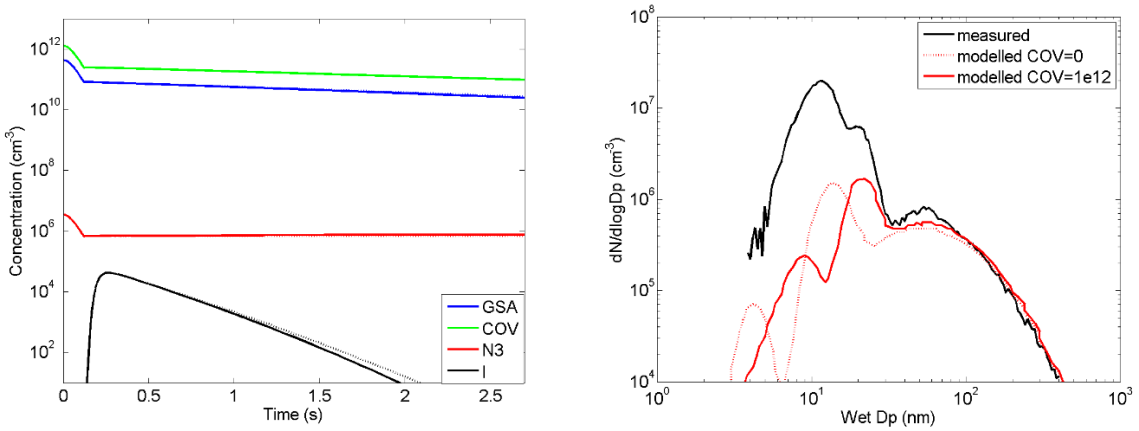


Figure S1. a) Time evolution of particle number concentration ($N_3$), gaseous sulphuric acid (GSA), condensable organic vapour (COV) in $cm^{-3}$, and nucleation rate (I) in $cm^{-3}$ $s^{-1}$. b) Measured (black) and modelled (red) particle number size distribution at the end of the ageing chamber. Raw exhaust GSA = $4e10^{11}$ $cm^{-3}$. NUP formation occurred via HBN mechanism.

a) b) c)

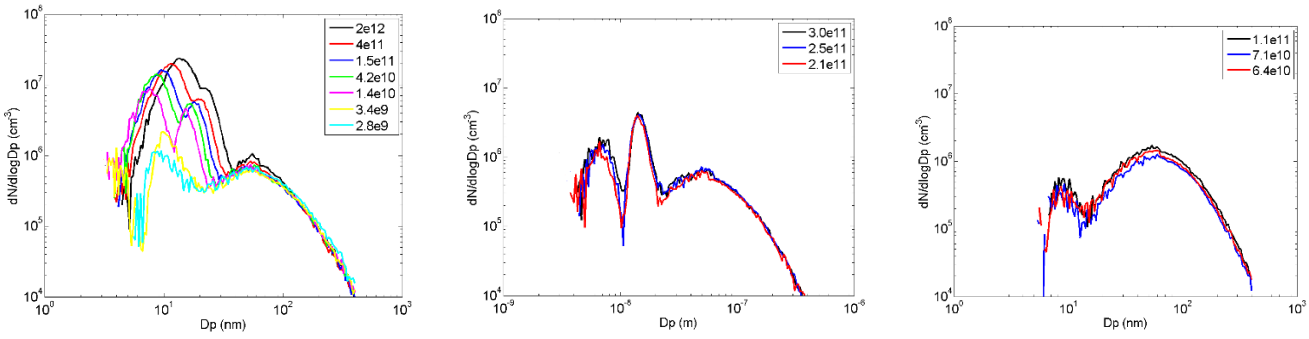


Figure S2. Measured particle number size distributions at the end of the ageing chamber with 100% (a), 75% (b) and 50% (c) engine load. The raw exhaust GSA concentrations ($cm^{-3}$) are mentioned in the legends.

a) b)

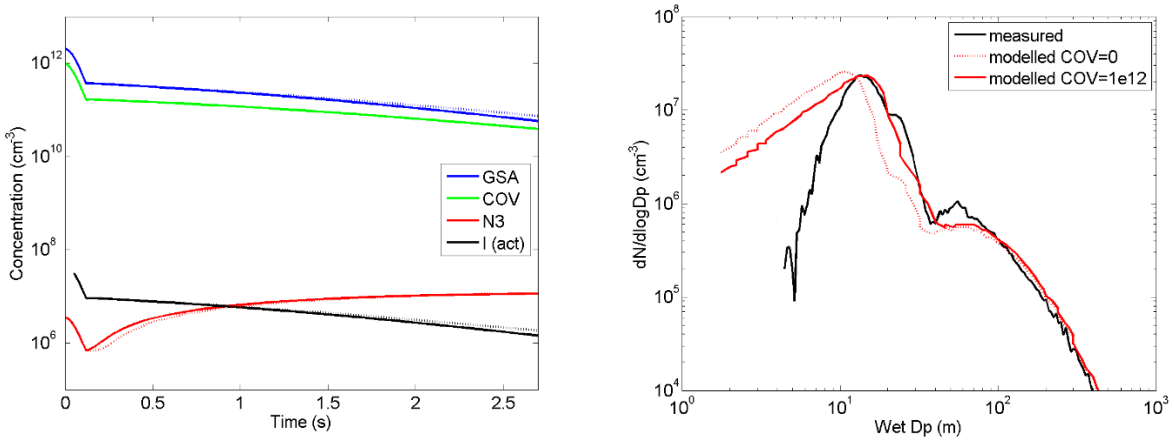


Figure S3. Time evolution of particle number concentration ($N_3$), gaseous sulphuric acid (GSA) and condensable organic vapour (COV) in $cm^{-3}$, as well as nucleation rate (I) in $cm^{-3}$ $s^{-1}$ (a), and measured (black) and modelled (red) particle number size distribution at the end of the ageing chamber (b). Raw exhaust GSA = $2e10^{12}$ $cm^{-3}$ and COV= $1e10^{12}$ $cm^{-3}$. Dashed lines refer to COV= 0 $cm^{-3}$. NUP formation occurred via the ACT mechanism.

a) b)

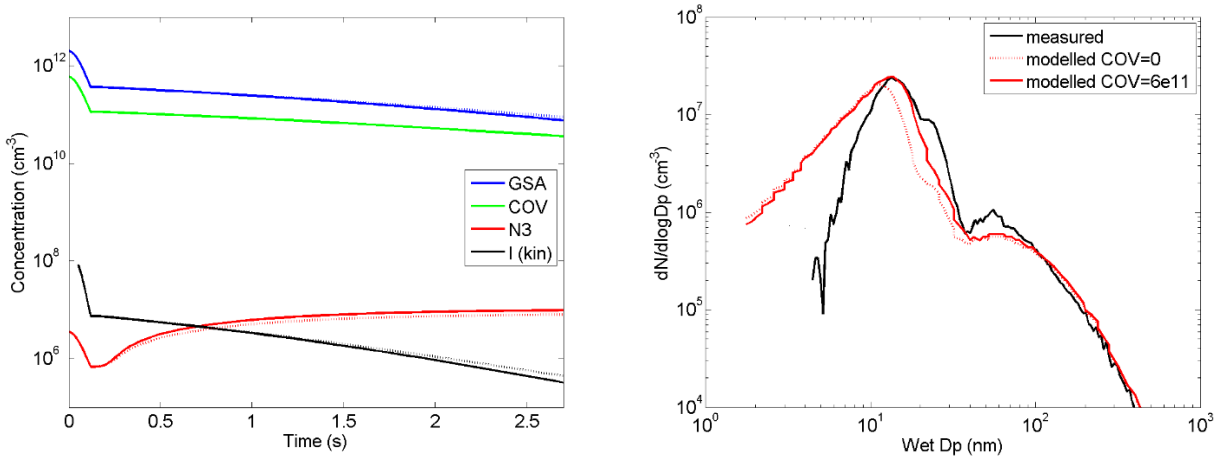


Figure S4. Time evolution of particle number concentration ($N_3$), gaseous sulphuric acid (GSA) and condensable organic vapour (COV) in $cm^{-3}$, as well as nucleation rate (I) in $cm^{-3}$ $s^{-1}$ (a), and measured (black) and modelled (red) particle number size distribution at the end of the ageing chamber (b). Raw exhaust GSA = $2e10^{12}$ $cm^{-3}$ and COV= $6e10^{11}$ $cm^{-3}$. Dashed lines refer to COV= 0 $cm^{-3}$. NUP formation occurred via the KIN mechanism.