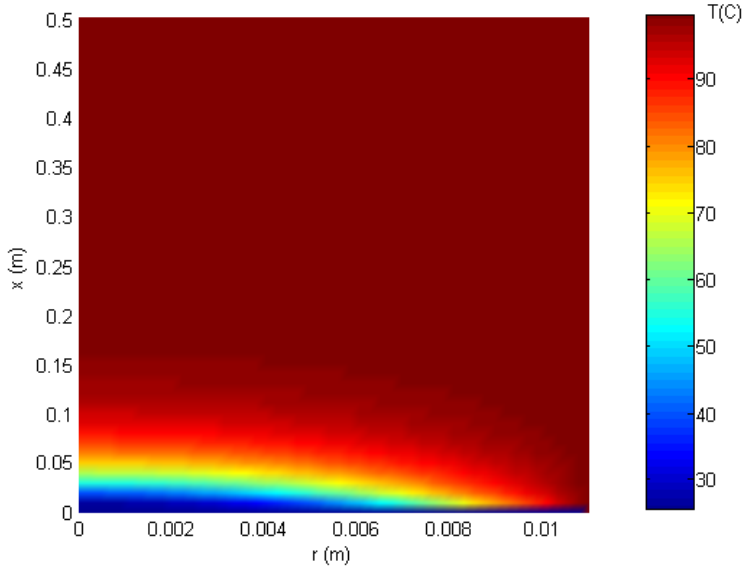

Figure S1. Example of spatial temperature distribution for the thermodenuder model configuration in this study. Initial temperature=25° C, wall temperature= 100°C.

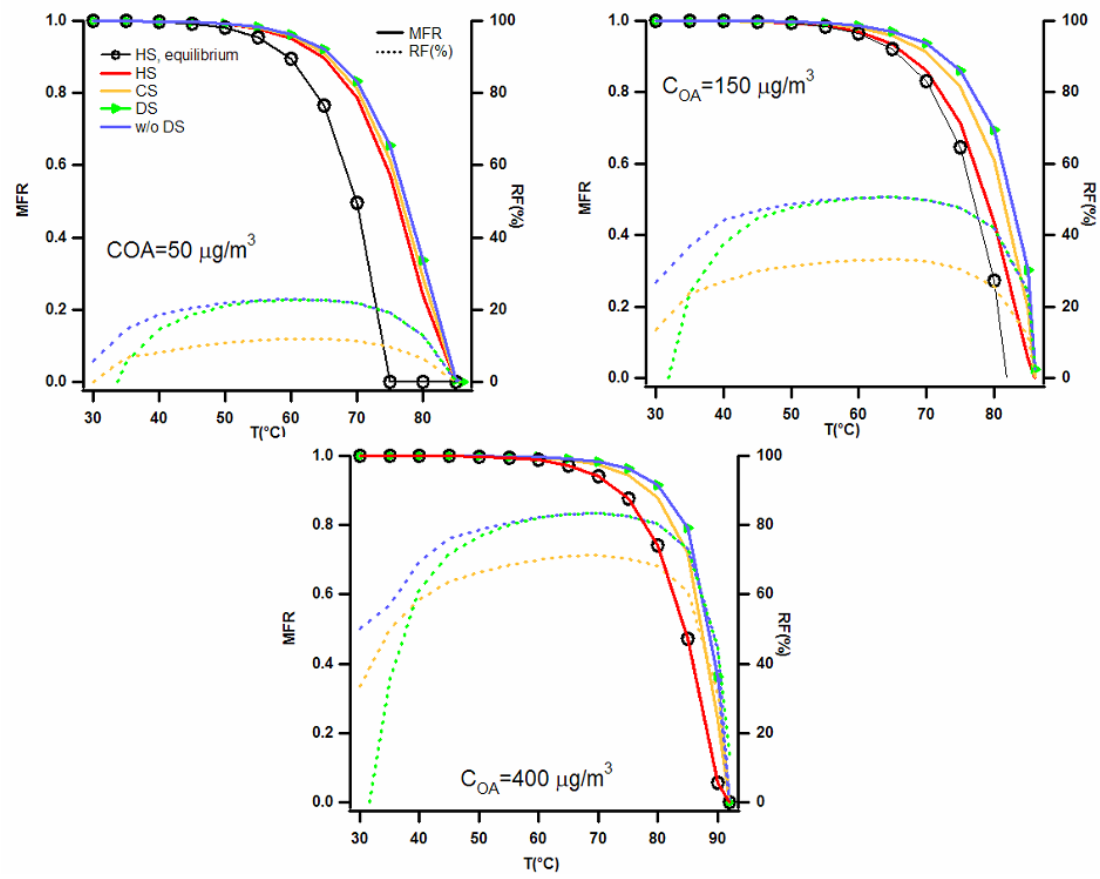

Figure S2. Lower estimates of re-condensation as a function of aerosol mass loading. Plots represent output thermograms (MFR) and re-condensation fraction (RF) for the heating section (HS), cooling section (CS), denuder section (DS) and equivalent configuration without denuder section (w/o DS). Baseline case: *C*sat =0.01 µgm−3, *d*p =100 nm, D*i*=5×10^{-6} m^2/s and γ=1.

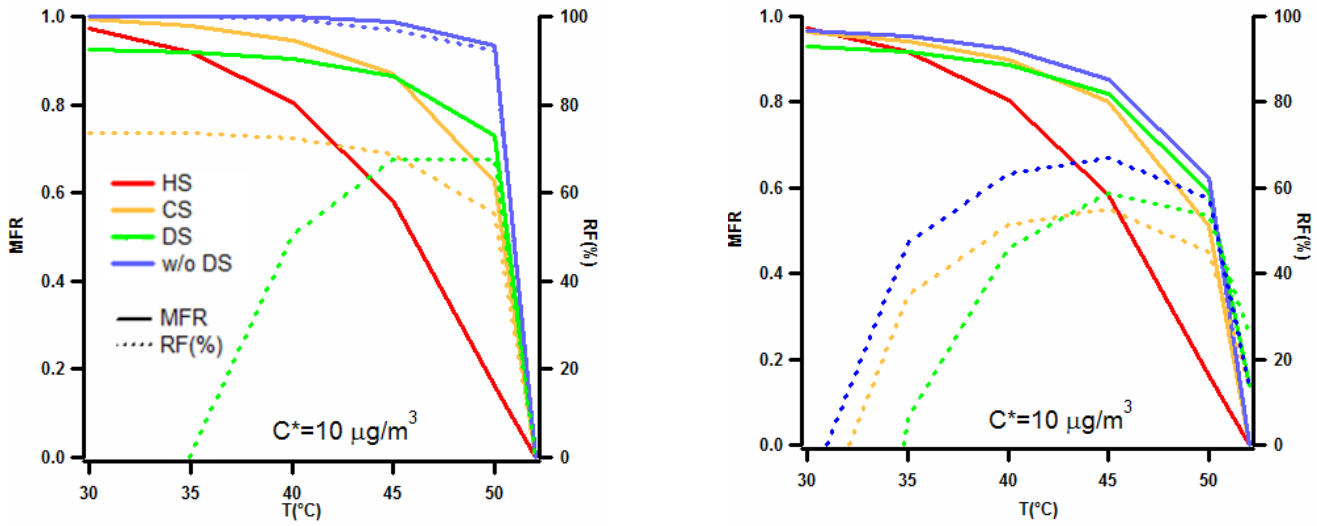

Figure S3: Upper (left) and lower (right) estimates of re-condensation for the case with Csat=10 µgm−3, C_{OA}=400 µg/m3, *d*p =100 nm, D*i*=5×10^{-6} m^2/s and γ=1. Plots represent thermograms and re-condensation fraction for the heating section (HS), cooling section (CS), denuder section (DS) and equivalent configuration without denuder section (w/o DS).

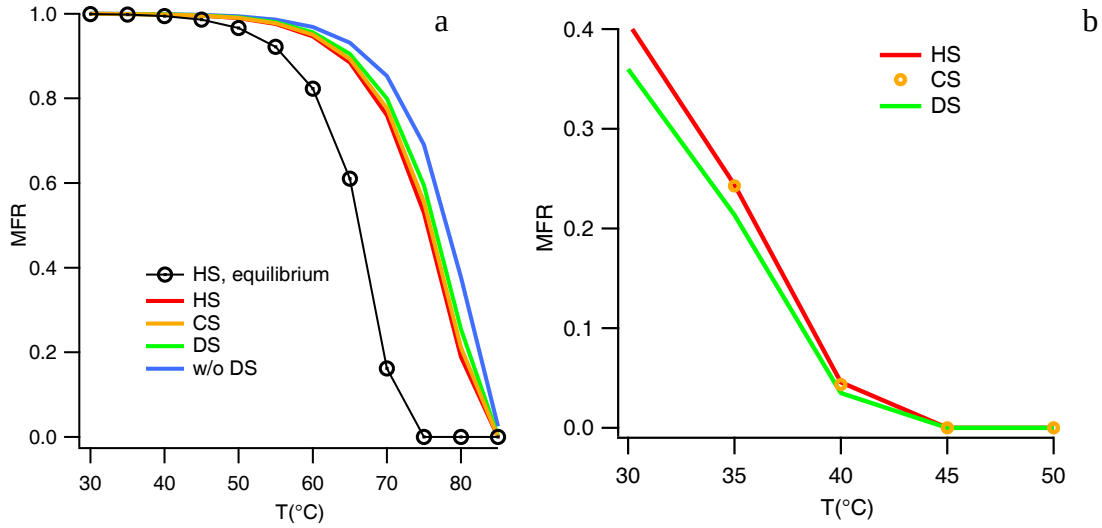

Figure S4. (a) Heating section (HS), cooling section (CS), denuder section (DS) and cooling section without denuder (w/o DS) output thermograms for 30 µg/m^3 aerosol mass loading. Baseline case: C*=0.01 µg/m^3, d_{p0}=100 nm, D_i=5e-6 cm^2/s and γ=1. (b) Heating section (HS), cooling section (CS) and denuder section (DS) output thermograms for 20 µg/m^3 aerosol mass loading. Baseline case: C*=10 µg/m^3, d_{p0}=100 nm, D_i=5e-6 cm^2/s and γ=1. (data provided represent the upper estimate for re-condensation)

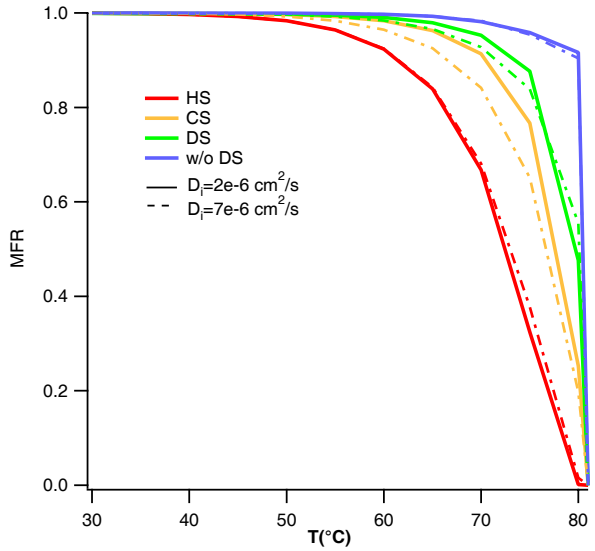

Figure S5. Output thermograms and recondensation fraction for the heating section (HS), cooling section (CS), denuder section (DS) and equivalent configuration without denuder section (w/o DS) for different diffusion coefficients. Baseline case: C_{OA}=400 μg/m^3; C*=0.01 μg/m^3, d_{p0}=100 nm, D_i=5e-6 cm^2/s and γ=1. (data provided represent the upper estimate for re-condensation)

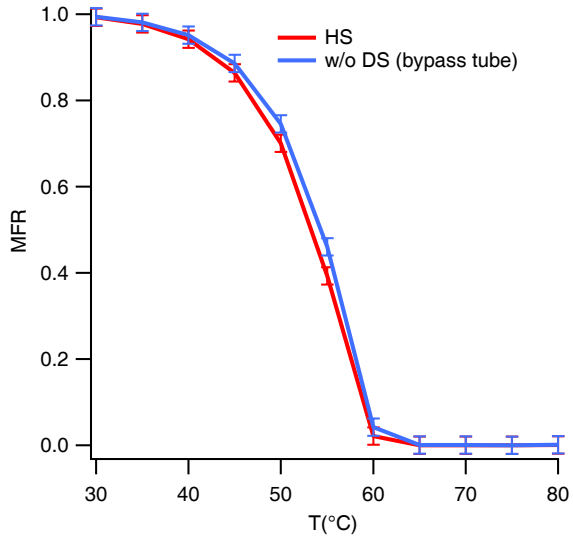

Figure S6. Modeled thermograms of adipic acid aerosol in the re-condensation test experiments by Saleh et al. (2011) (initial aerosol loading: 287 μg/m^3, flow=1 lpm, by-pass tube length=2 m). HS*:* heating section output thermogram. w/o DS: output thermogram of cooling section without denuder. Error bars indicate the uncertainty in measurements by Saleh et al. (2011). Re-condensation is negligible in this particular case due to the short residence time of the fluid in the by-pass tube without denuder (3.74 s) and the low accommodation coefficient of the aerosol sample (γ=0.1). (data provided correspond to upper estimate for re-condensation)

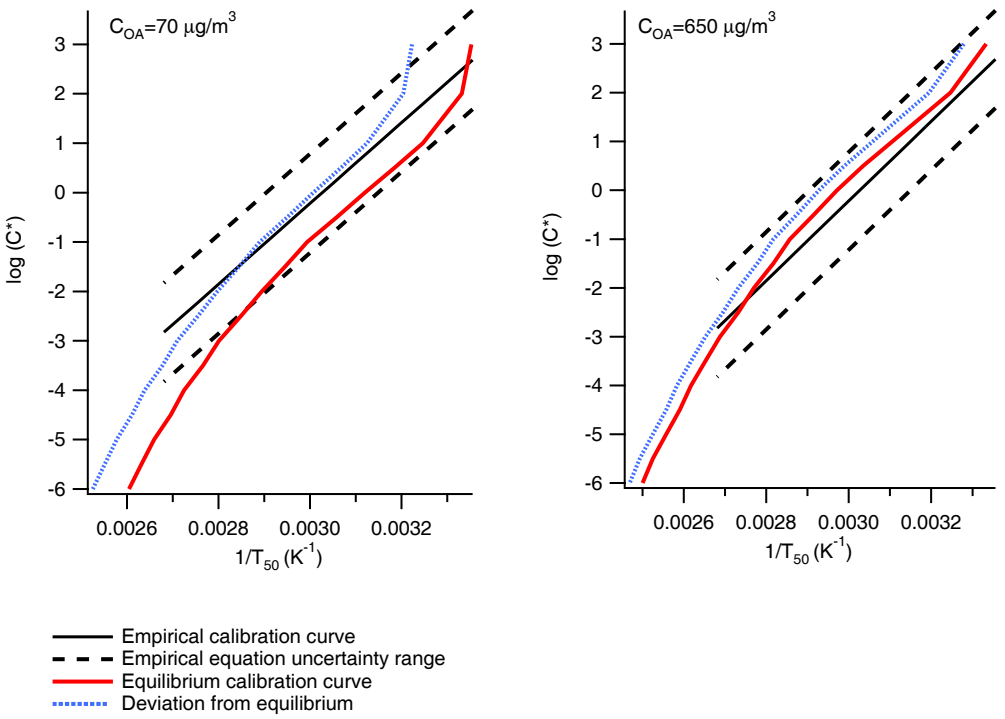

Fig S7. Deviation of calibration curve from the equilibrium and empirical curves in experiments with lubricating oil aerosol at 70 and 650 µg/m^3 mass loading.

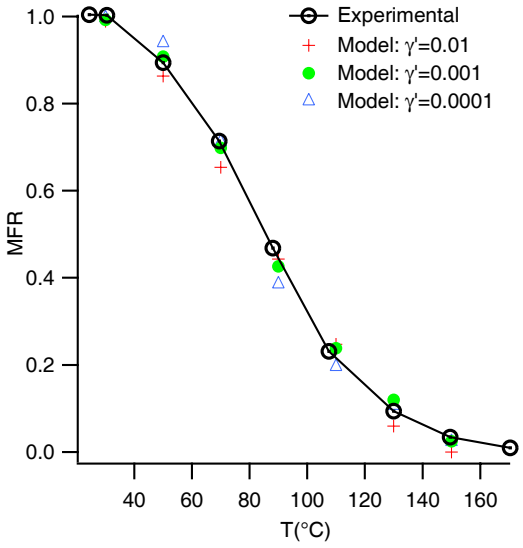

Fig S8. Kinetic model fitting to experimental thermogram of α-pinene SOA at 500 µg/m^3 initial aerosol loading (Cappa and Wilson, 2011). A good agreement between the model and experimental data is achievable for different accommodation coefficient values.