ADDITIONAL MATERIALS AVAILABLE ON THE HEI WEBSITE

Research Report 197

Cellular and Acellular Assays for Measuring Oxidative Stress Induced by Ambient and Laboratory-Generated Aerosols

Ng et al.

Additional Materials 6
Appendix F: Chamber Reaction Profiles

Note: Additional Materials may appear in a different order than in the original Investigators' Report, and some remnants of their original names may be apparent. HEI has not changed the content of these documents, only their numeric identifiers. Additional Materials 6 was originally Appendix F.

These Additional Materials were not formatted or edited by HEI. This document was part of the HEI Review Committee's review process.

Correspondence may be addressed to Dr. Nga Lee (Sally) Ng, School of Chemical and Biomolecular Engineering and School of Earth and Atmospheric Sciences, Georgia Institute of Technology, 311 Ferst Dr. NW, Atlanta, GA 30322; e-mail: ng@chbe.gatech.edu.

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Appendix F: Chamber reaction profiles

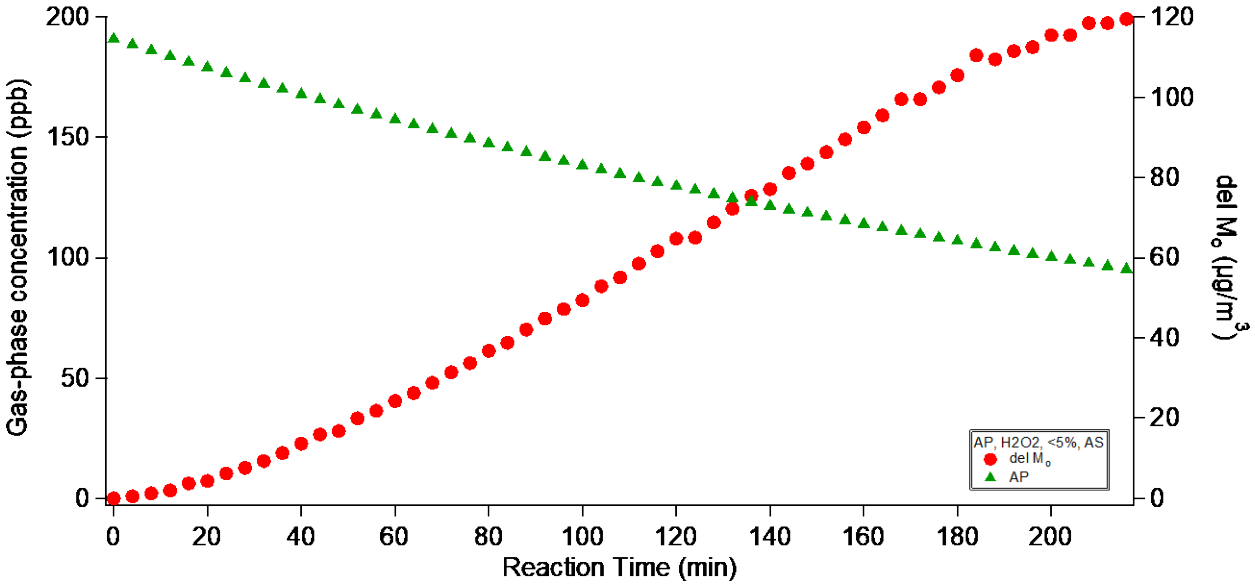

Figure F1. Reaction profile for chamber experiment conducted under dry, RO_2 + HO_2 dominant conditions (no NO_x added) with α-pinene and ammonium sulfate seed. NO concentrations were monitored by chemiluminescence NO_x monitor. Aerosol mass concentrations were determined using SMPS volume concentrations assuming an aerosol density of 1 g cm^{-3}.

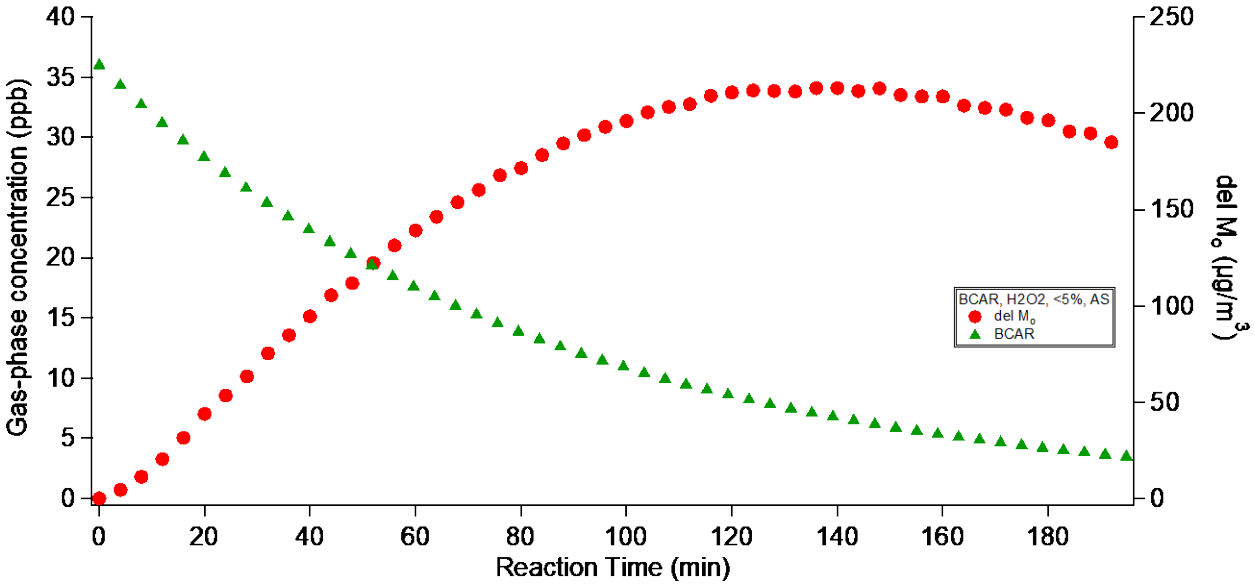

Figure F2. Reaction profile for chamber experiment conducted under dry, RO_2 + HO_2 dominant conditions (no NO_x added) with β-caryophyllene and ammonium sulfate seed. NO concentrations were monitored by chemiluminescence NO_x monitor. Aerosol mass concentrations were determined using SMPS volume concentrations assuming an aerosol density of 1 g cm^{-3}.

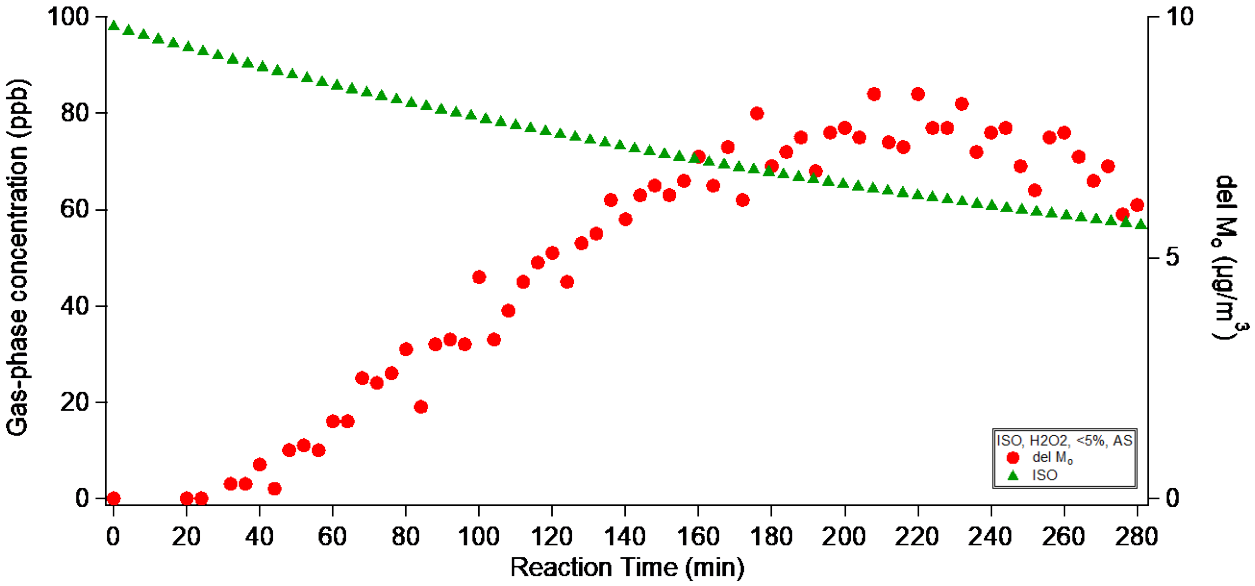

Figure F3. Reaction profile for chamber experiment conducted under dry, RO_2 + HO_2 dominant conditions (no NO_x added) with isoprene and ammonium sulfate seed. NO concentrations were monitored by chemiluminescence NO_x monitor. Aerosol mass concentrations were determined using SMPS volume concentrations assuming an aerosol density of 1 g cm^{-3}.

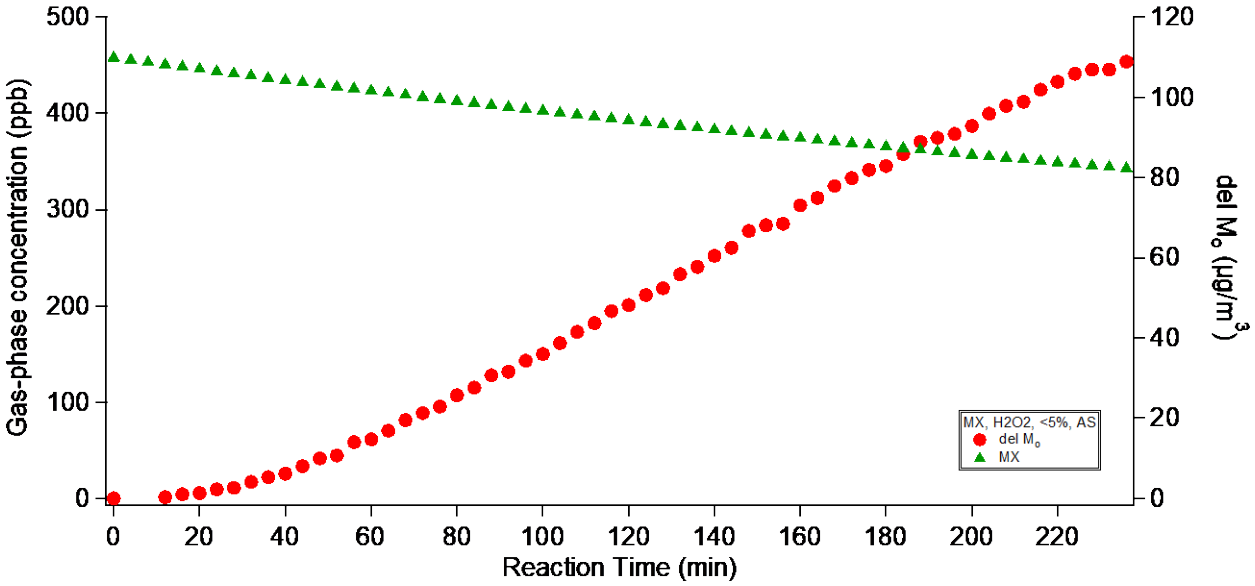

Figure F4. Reaction profile for chamber experiment conducted under dry, RO_2 + HO_2 dominant conditions (no NO_x added) with *m*-xylene and ammonium sulfate seed. NO concentrations were monitored by chemiluminescence NO_x monitor. Aerosol mass concentrations were determined using SMPS volume concentrations assuming an aerosol density of 1 g cm^{-3}.

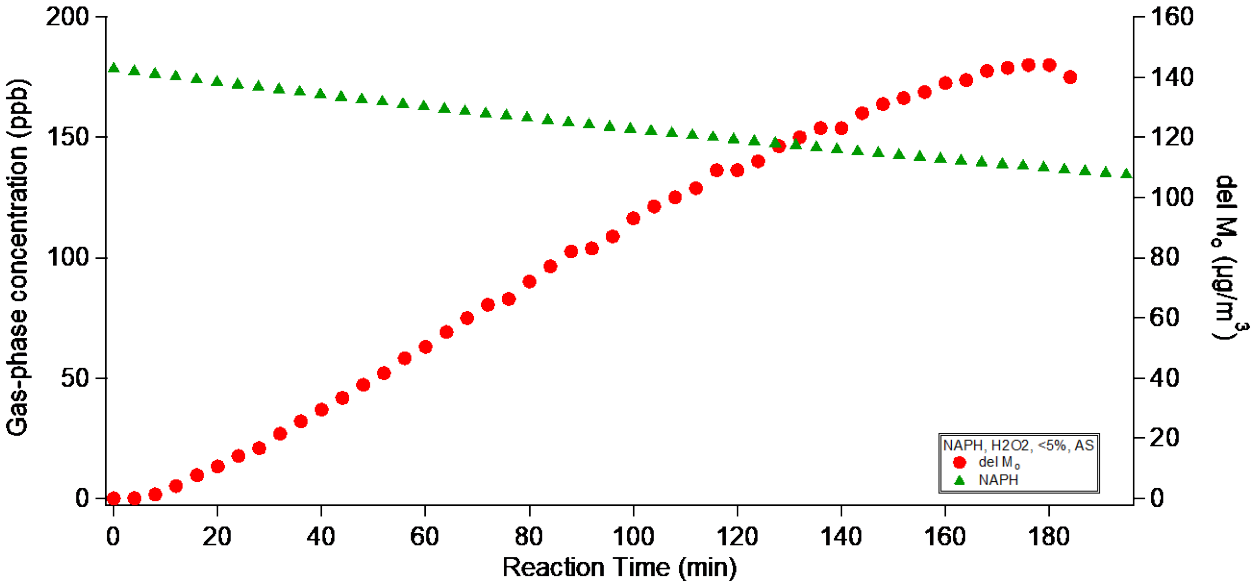

Figure F5. Reaction profile for chamber experiment conducted under dry, RO_2 + HO_2 dominant conditions (no NO_x added) with naphthalene and ammonium sulfate seed. NO concentrations were monitored by chemiluminescence NO_x monitor. Aerosol mass concentrations were determined using SMPS volume concentrations assuming an aerosol density of 1 g cm^{-3}.

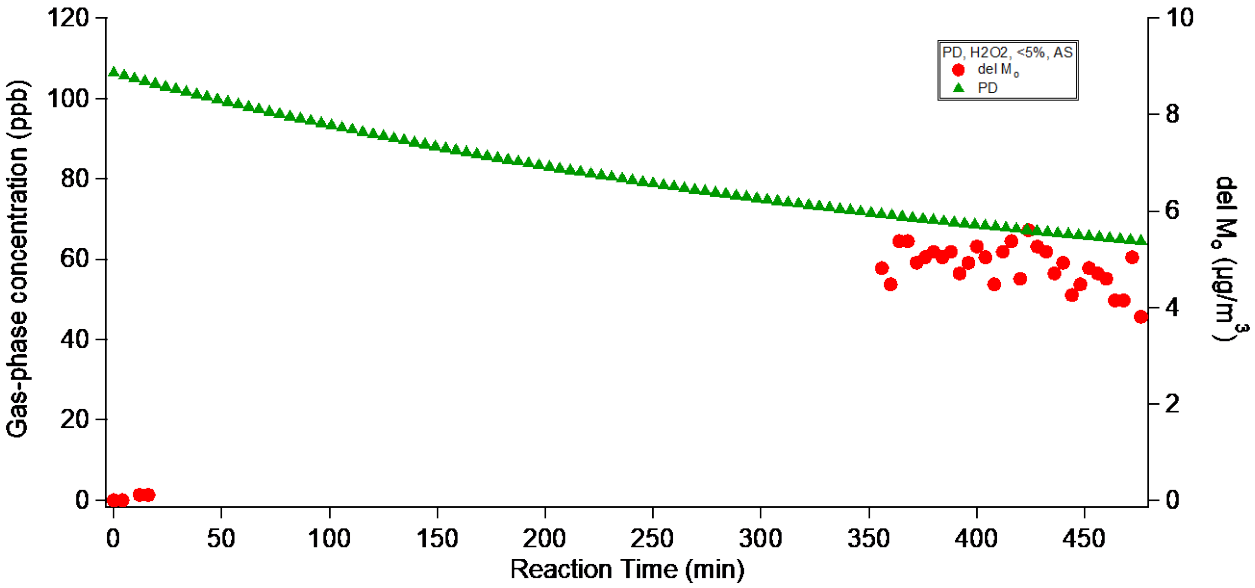

Figure F6. Reaction profile for chamber experiment conducted under dry, RO_2 + HO_2 dominant conditions (no NO_x added) with pentadecane and ammonium sulfate seed. Aerosol mass concentrations were determined using SMPS volume concentrations assuming an aerosol density of 1 g cm^{-3}. Staggered instrument operation was employed to conserve chamber volume for this experiment.

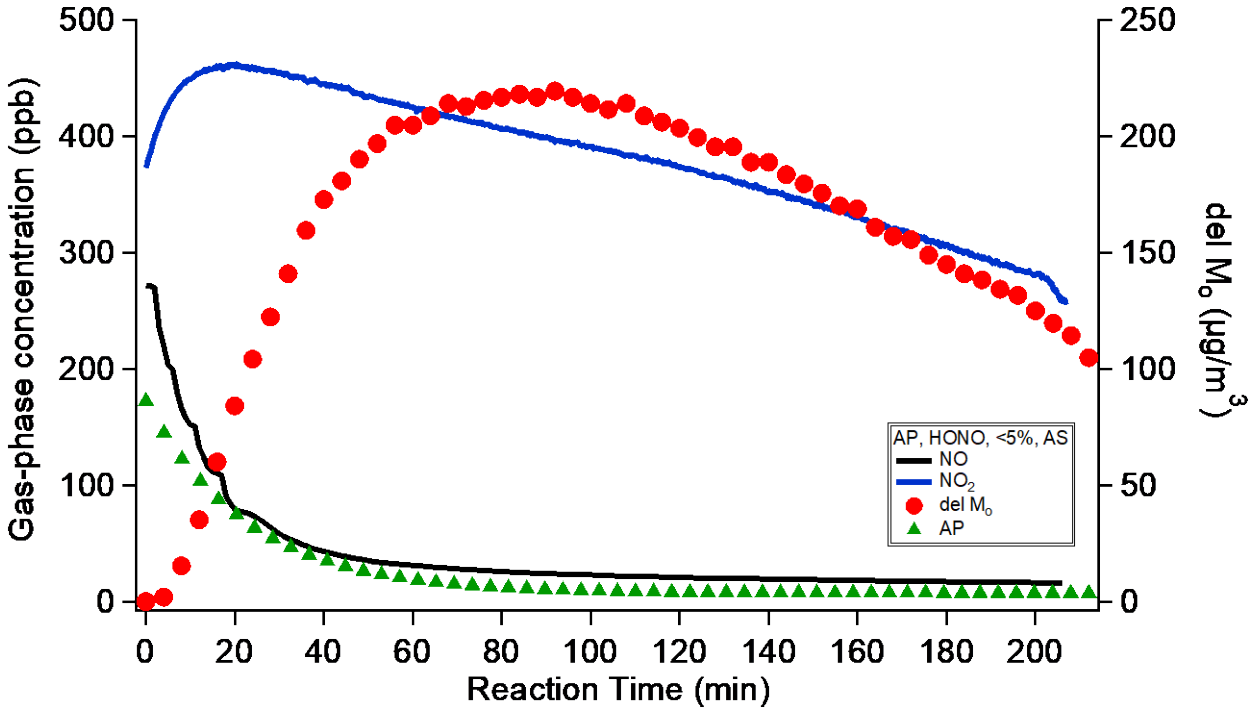

Figure F7. Reaction profile for chamber experiment conducted under dry, RO_2 + NO dominant conditions with α-pinene and ammonium sulfate seed. NO and NO_2 concentrations were monitored by CAPS NO_2 and chemiluminescence NO_x monitors, respectively. Aerosol mass concentrations were determined using SMPS volume concentrations assuming an aerosol density of 1 g cm^{-3}.

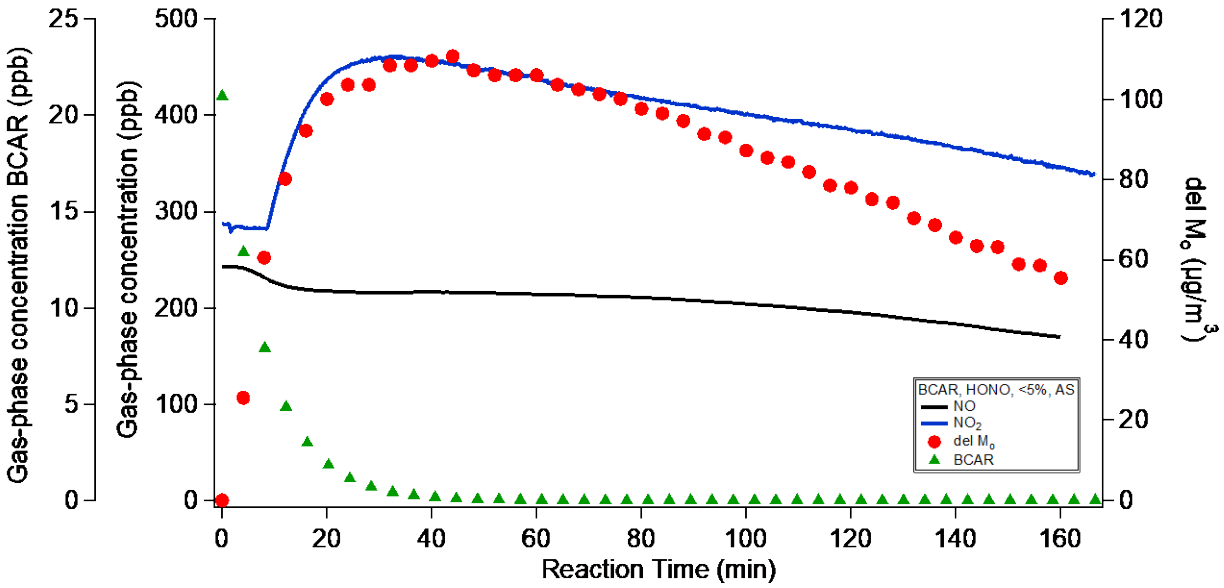

Figure F8. Reaction profile for chamber experiment conducted under dry, RO_2 + NO dominant conditions with β-caryophyllene and ammonium sulfate seed. NO and NO_2 concentrations were monitored by CAPS NO_2 and chemiluminescence NO_x monitors, respectively. Aerosol mass concentrations were determined using SMPS volume concentrations assuming an aerosol density of 1 g cm^{-3}.

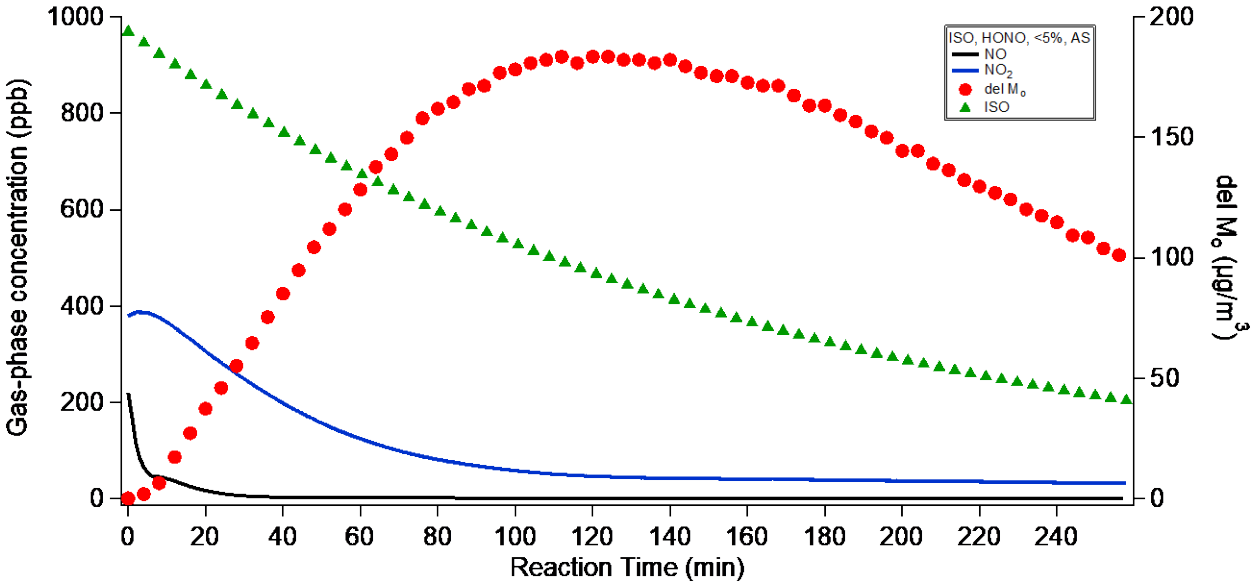

Figure F9. Reaction profile for chamber experiment conducted under dry, RO_2 + NO dominant conditions with isoprene and ammonium sulfate seed. NO and NO_2 concentrations were monitored by CAPS NO_2 and chemiluminescence NO_x monitors, respectively. Aerosol mass concentrations were determined using SMPS volume concentrations assuming an aerosol density of 1 g cm^{-3}.

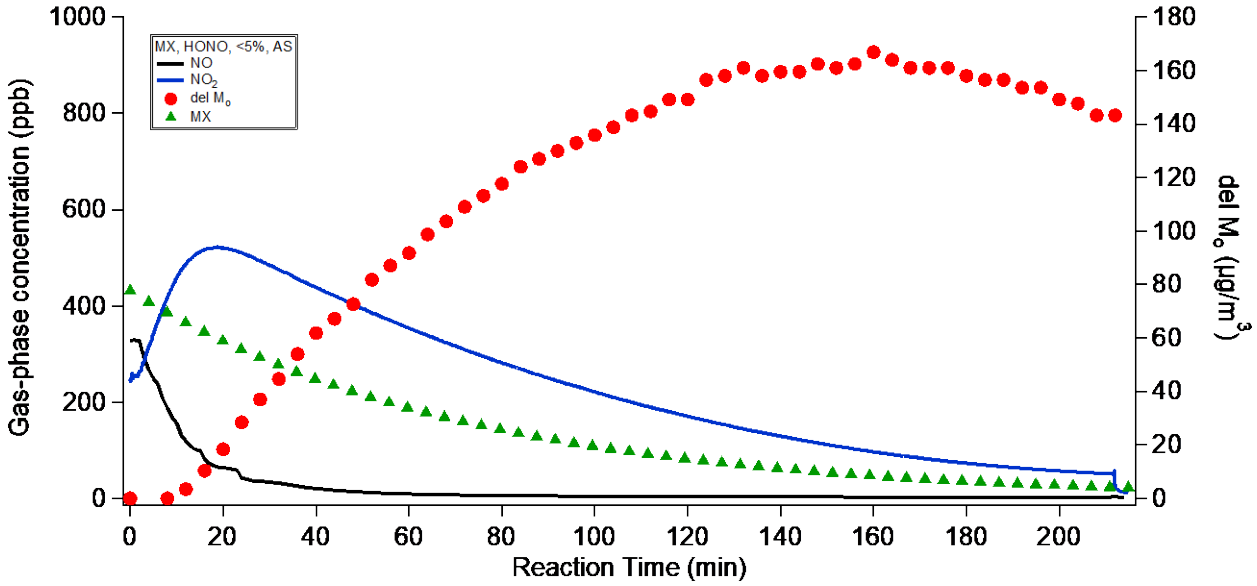

Figure F10. Reaction profile for chamber experiment conducted under dry, RO_2 + NO dominant conditions with *m*-xylene and ammonium sulfate seed. NO and NO_2 concentrations were monitored by CAPS NO_2 and chemiluminescence NO_x monitors, respectively. Aerosol mass concentrations were determined using SMPS volume concentrations assuming an aerosol density of 1 g cm^{-3}.

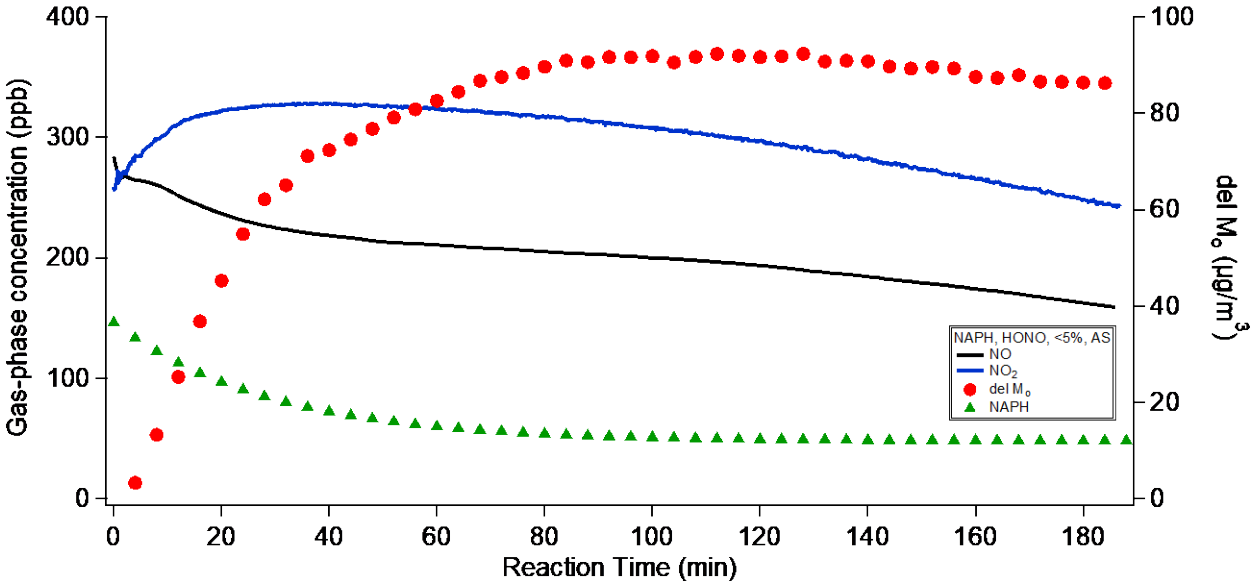

Figure F11. Reaction profile for chamber experiment conducted under dry, RO_2 + NO dominant conditions with naphthalene and ammonium sulfate seed. NO and NO_2 concentrations were monitored by CAPS NO_2 and chemiluminescence NO_x monitors, respectively. Aerosol mass concentrations were determined using SMPS volume concentrations assuming an aerosol density of 1 g cm^{-3}.

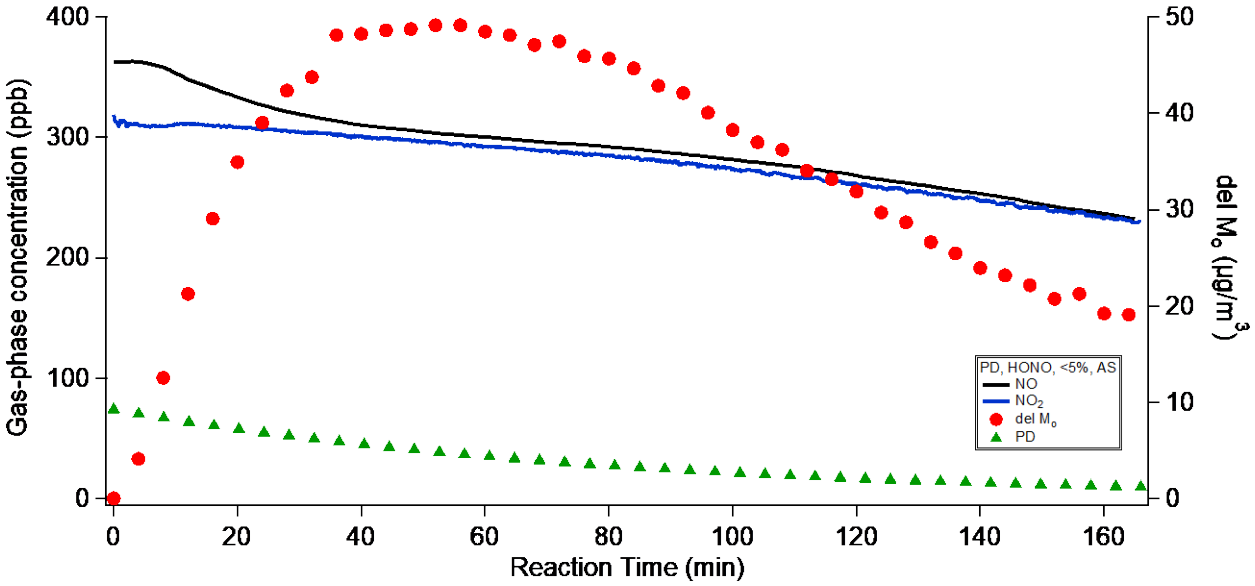

Figure F12. Reaction profile for chamber experiment conducted under dry, RO_2 + NO dominant conditions with pentadecane and ammonium sulfate seed. NO and NO_2 concentrations were monitored by CAPS NO_2 and chemiluminescence NO_x monitors, respectively. Aerosol mass concentrations were determined using SMPS volume concentrations assuming an aerosol density of 1 g cm^{-3}.

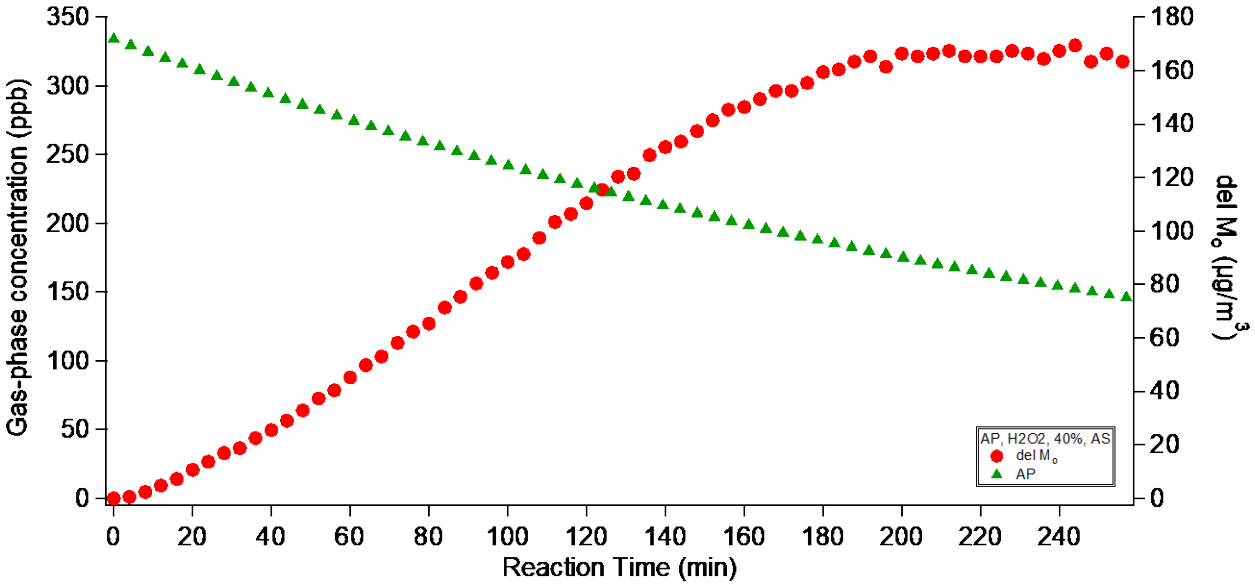

Figure F13. Reaction profile for chamber experiment conducted under humid, RO_2 + HO_2 dominant conditions (no NO_x added) with α-pinene and ammonium sulfate seed. NO concentrations were monitored by chemiluminescence NO_x monitor. Aerosol mass concentrations were determined using SMPS volume concentrations assuming an aerosol density of 1 g cm^{-3}.

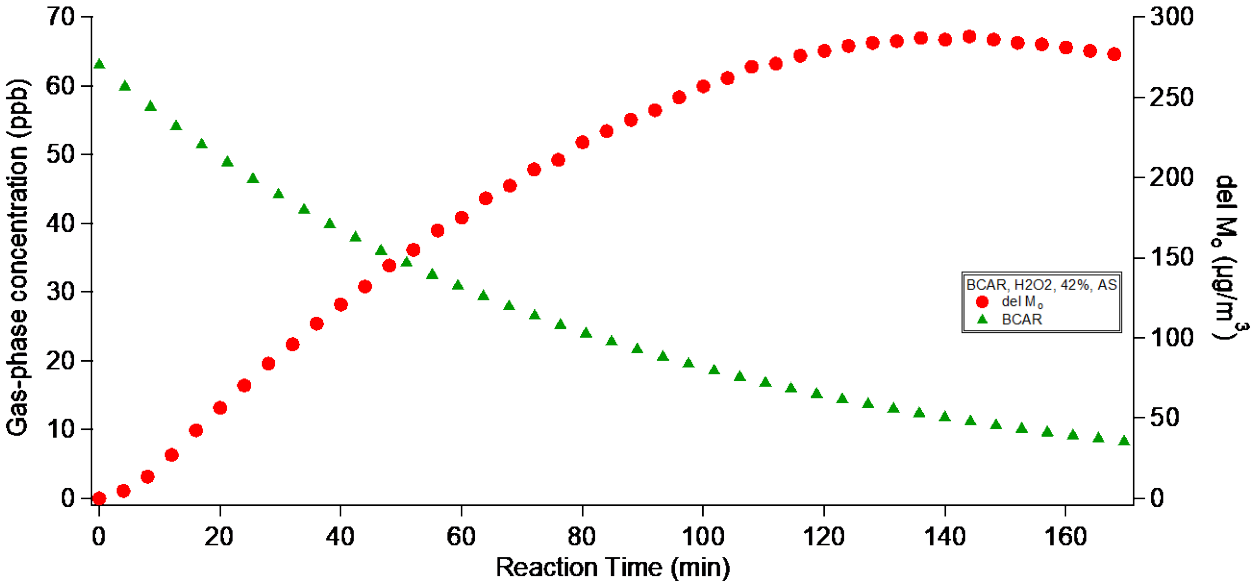

Figure F14. Reaction profile for chamber experiment conducted under humid, RO_2 + HO_2 dominant conditions (no NO_x added) with β-caryophyllene and ammonium sulfate seed. NO concentrations were monitored by chemiluminescence NO_x monitor. Aerosol mass concentrations were determined using SMPS volume concentrations assuming an aerosol density of 1 g cm^{-3}.

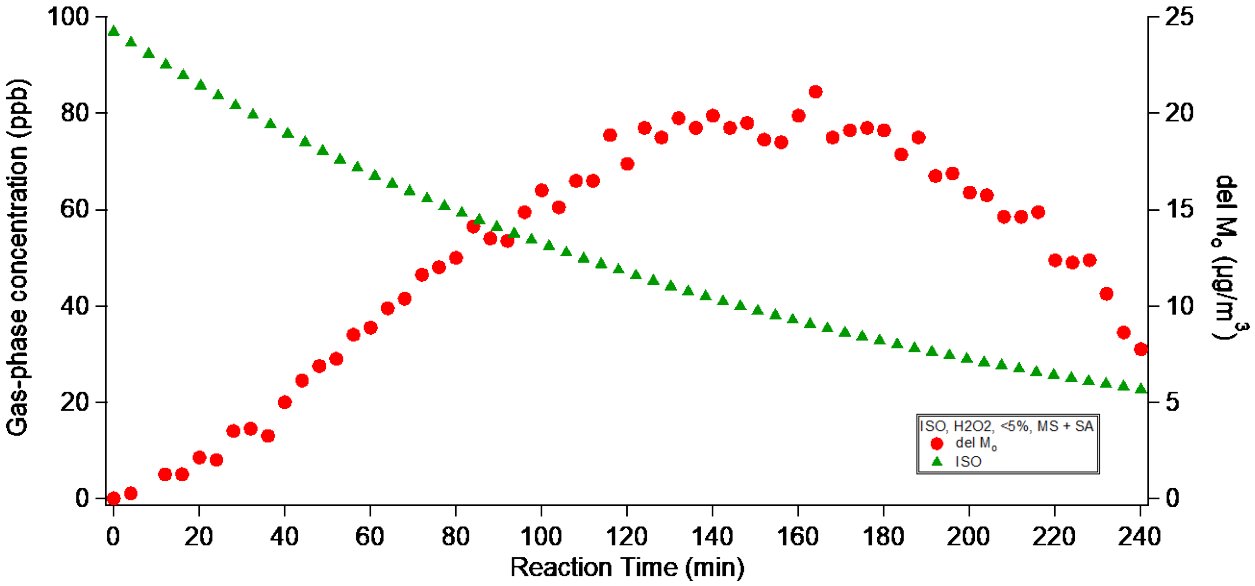

Figure F15. Reaction profile for chamber experiment conducted under humid, RO_2 + HO_2 dominant conditions (no NO_x added) with isoprene and ammonium sulfate seed. Aerosol mass concentrations were determined using SMPS volume concentrations assuming an aerosol density of 1 g cm^{-3}.

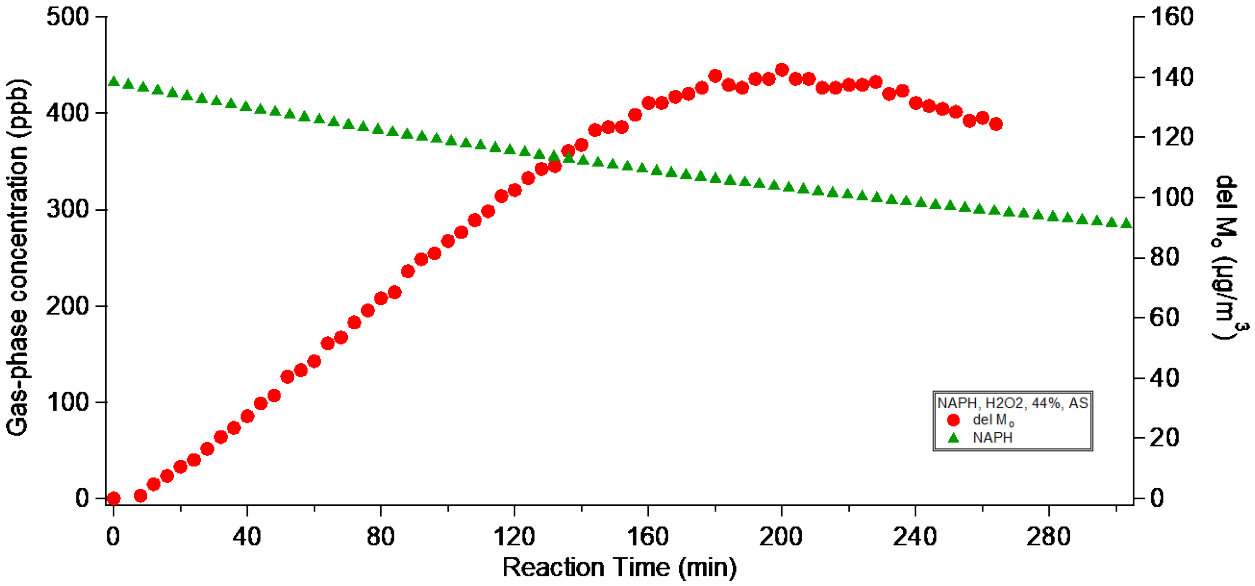

Figure F16. Reaction profile for chamber experiment conducted under humid, RO_2 + HO_2 dominant conditions (no NO_x added) with naphthalene and ammonium sulfate seed. NO concentrations were monitored by chemiluminescence NO_x monitor. Aerosol mass concentrations were determined using SMPS volume concentrations assuming an aerosol density of 1 g cm^{-3}.

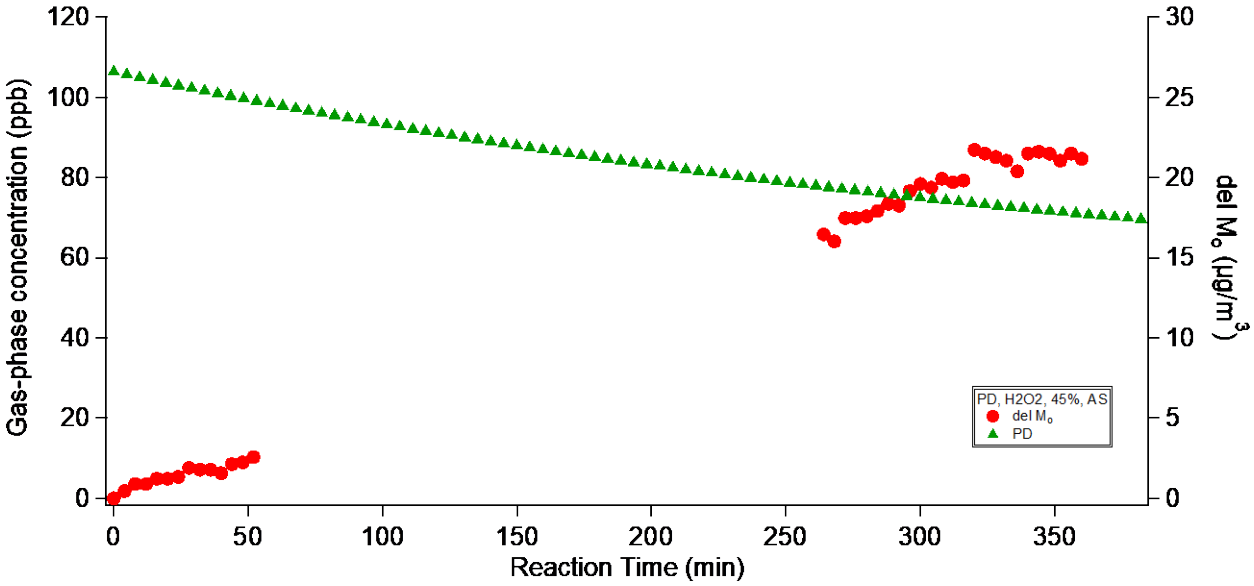

Figure F17. Reaction profile for chamber experiment conducted under humid, RO_2 + HO_2 dominant conditions (no NO_x added) with pentadecane and ammonium sulfate seed. NO concentrations were monitored by chemiluminescence NO_x monitor. Aerosol mass concentrations were determined using SMPS volume concentrations assuming an aerosol density of 1 g cm^{-3}. Staggered instrument operation was employed to conserve chamber volume for this experiment.

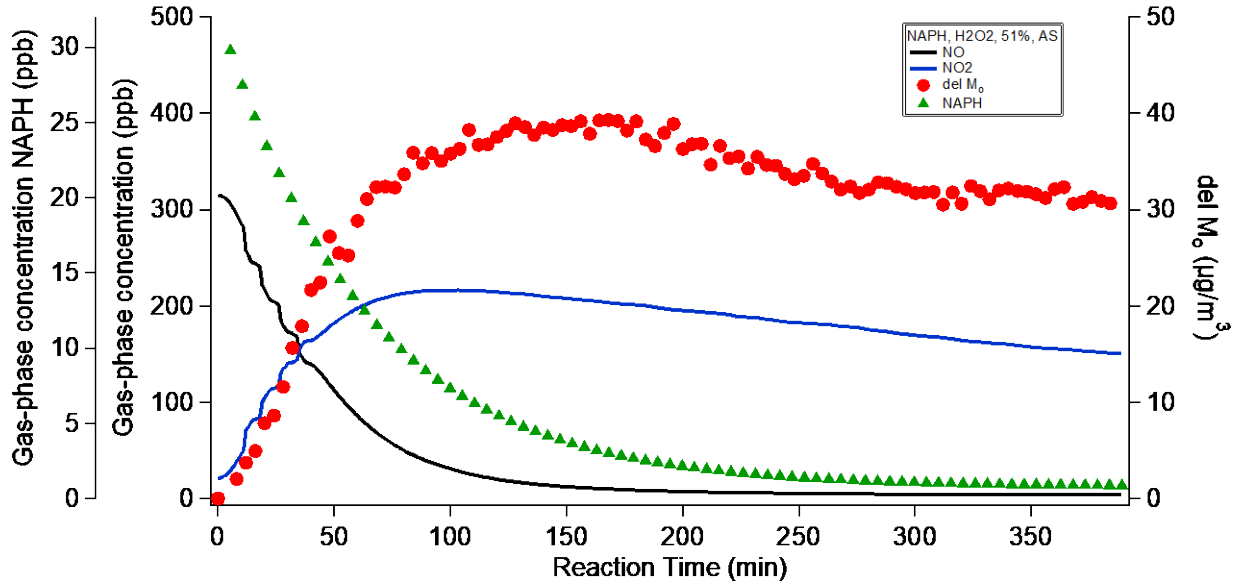

Figure F18. Reaction profile for chamber experiment conducted under humid, RO_2 + NO dominant conditions with naphthalene and ammonium sulfate seed. NO concentrations were monitored by chemiluminescence NO_x monitor. NO_2 concentrations were determined as the difference between NO and NO_x concentrations. Aerosol mass concentrations were determined using SMPS volume concentrations assuming an aerosol density of 1 g cm^{-3}. Seed concentrations were extrapolated due to low mass loadings.

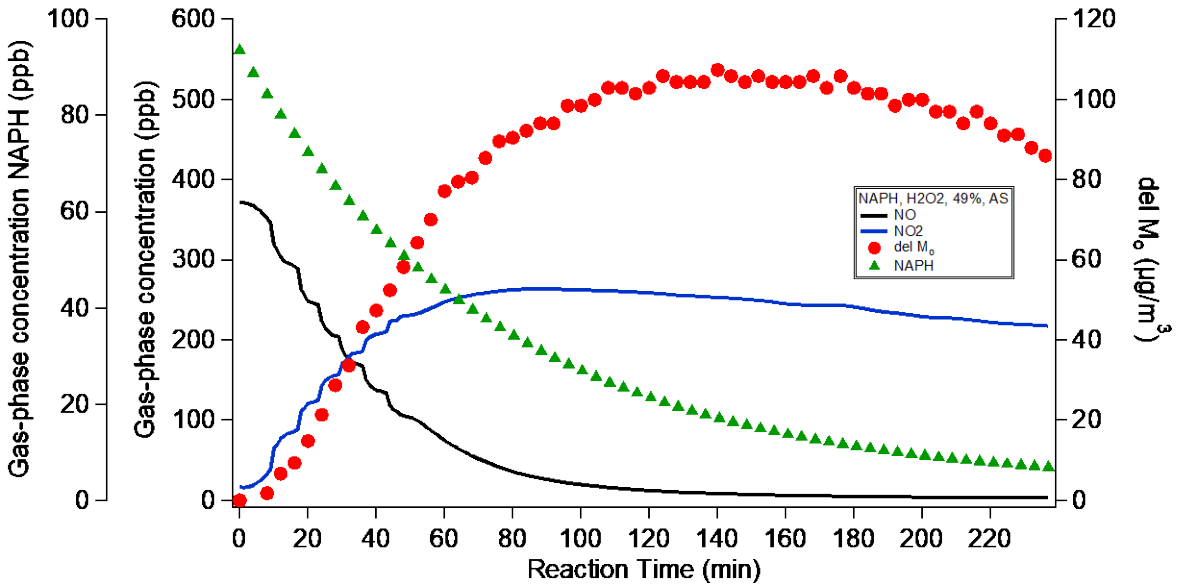

Figure F19. Reaction profile for chamber experiment conducted under humid, RO_2 + NO dominant conditions with naphthalene and ammonium sulfate seed. NO concentrations were monitored by chemiluminescence NO_x monitor. NO_2 concentrations were determined as the difference between NO and NO_x concentrations. Aerosol mass concentrations were determined using SMPS volume concentrations assuming an aerosol density of 1 g cm^{-3}.

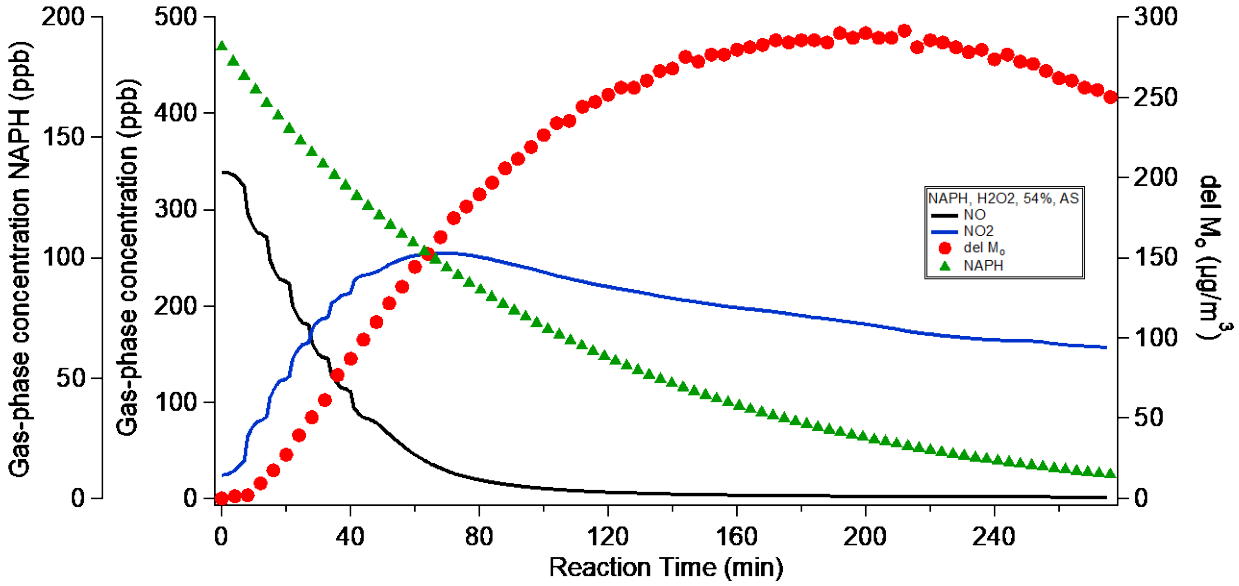

Figure F20. Reaction profile for chamber experiment conducted under humid, RO_2 + NO dominant conditions with naphthalene and ammonium sulfate seed. NO concentrations were monitored by chemiluminescence NO_x monitor. NO_2 concentrations were determined as the difference between NO and NO_x concentrations. Aerosol mass concentrations were determined using SMPS volume concentrations assuming an aerosol density of 1 g cm^{-3}.

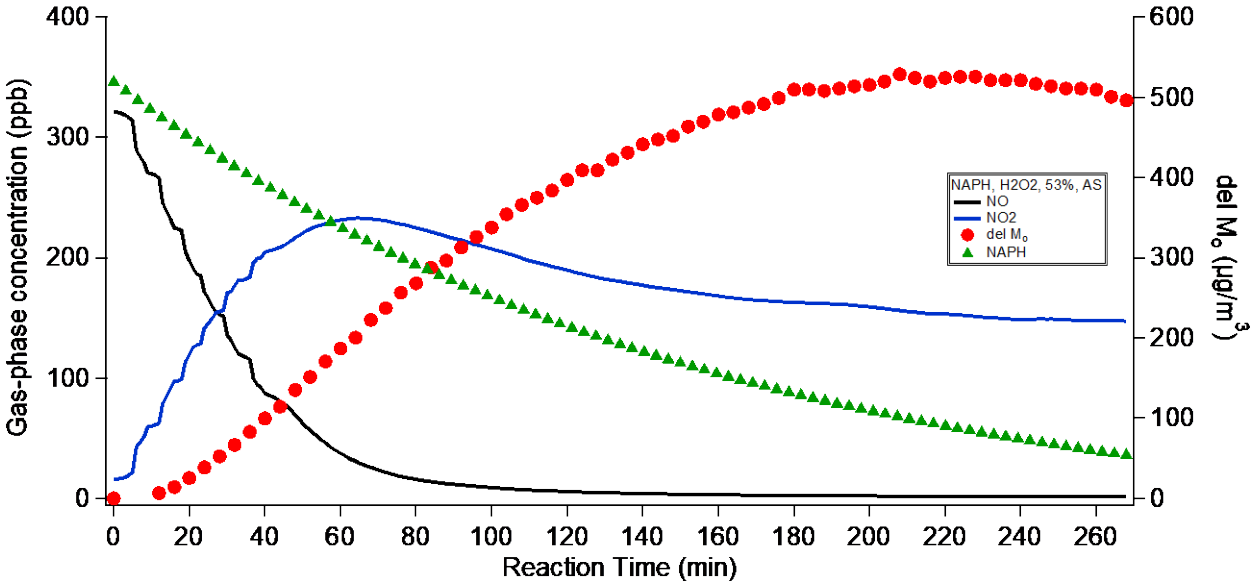

Figure F21. Reaction profile for chamber experiment conducted under humid, RO_2 + NO dominant conditions with naphthalene and ammonium sulfate seed. NO concentrations were monitored by chemiluminescence NO_x monitor. NO_2 concentrations were determined as the difference between NO and NO_x concentrations. Aerosol mass concentrations were determined using SMPS volume concentrations assuming an aerosol density of 1 g cm^{-3}.

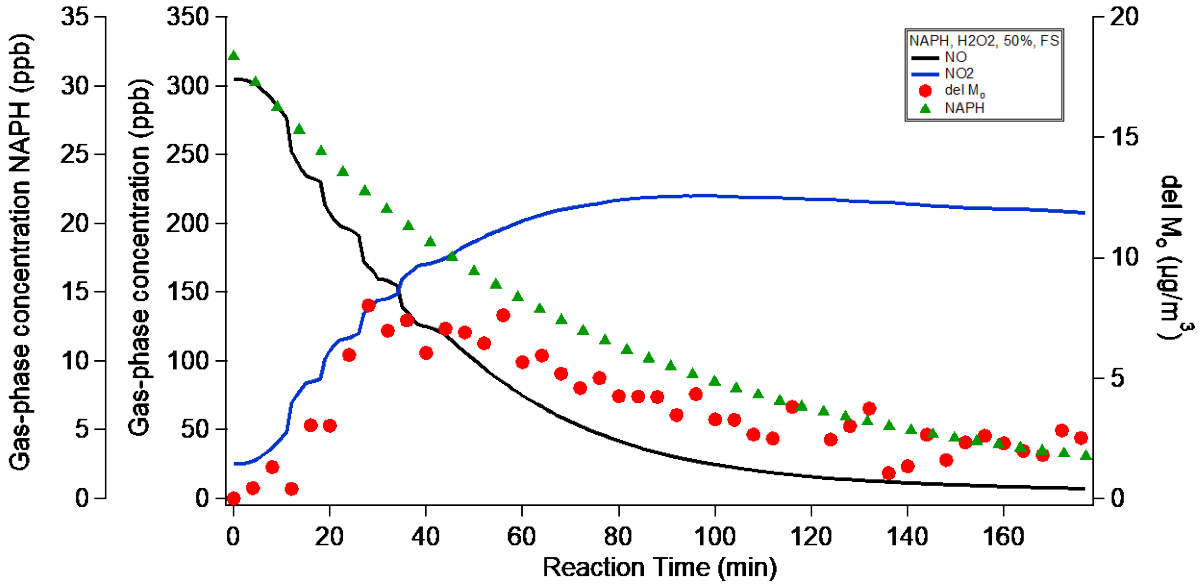

Figure F22. Reaction profile for chamber experiment conducted under humid, RO_2 + NO dominant conditions with naphthalene and iron sulfate seed. NO concentrations were monitored by chemiluminescence NO_x monitor. NO_2 concentrations were determined as the difference between NO and NO_x concentrations. Aerosol mass concentrations were determined using SMPS volume concentrations assuming an aerosol density of 1 g cm^{-3}. Seed concentrations were extrapolated due to low mass loadings.

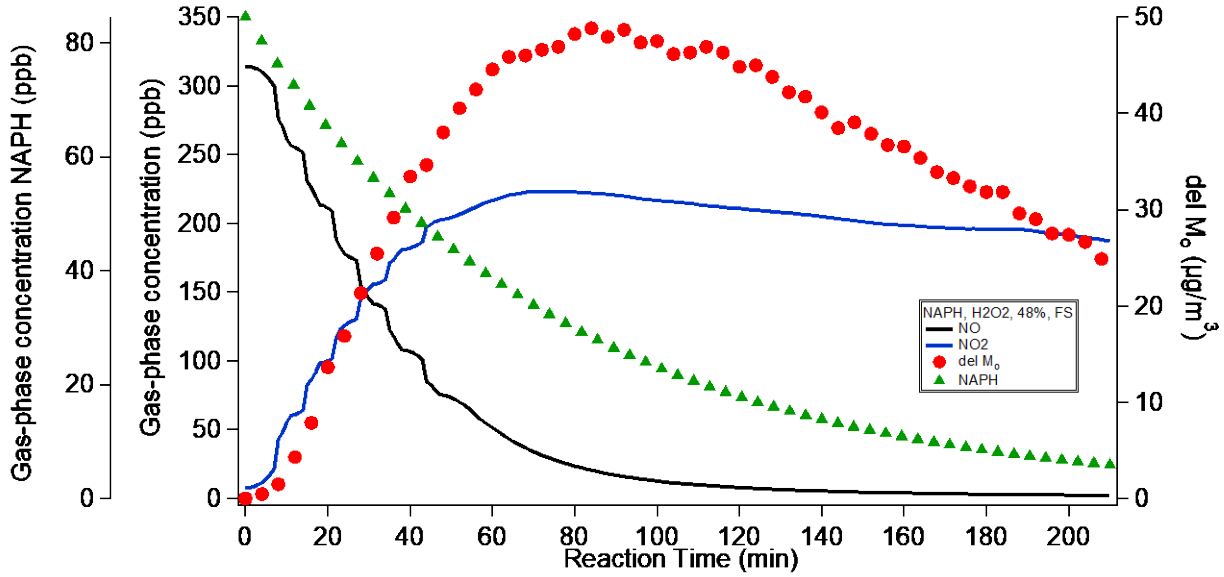

Figure F23. Reaction profile for chamber experiment conducted under humid, RO_2 + NO dominant conditions with naphthalene and iron sulfate seed. NO concentrations were monitored by chemiluminescence NO_x monitor. Aerosol mass concentrations were determined using SMPS volume concentrations assuming an aerosol density of 1 g cm^{-3}. NO_2 concentrations were determined as the difference between NO and NO_x concentrations. Aerosol mass concentrations were determined using SMPS volume concentrations assuming an aerosol density of 1 g cm^{-3}.

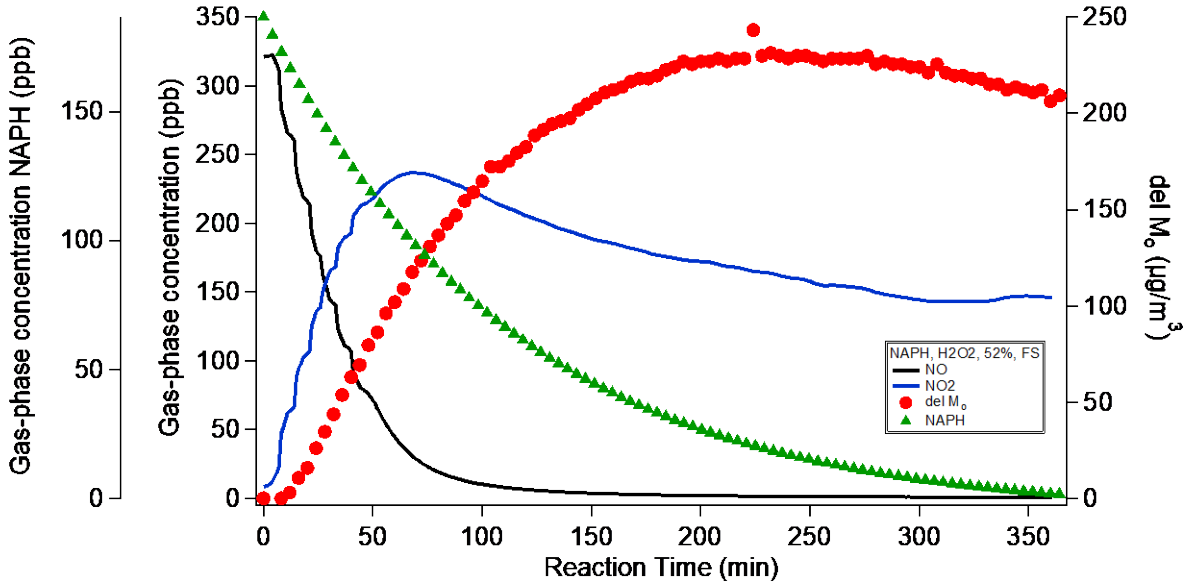

Figure F24. Reaction profile for chamber experiment conducted under humid, RO_2 + NO dominant conditions with naphthalene and iron sulfate seed. NO concentrations were monitored by chemiluminescence NO_x monitor. NO_2 concentrations were determined as the difference between NO and NO_x concentrations. Aerosol mass concentrations were determined using SMPS volume concentrations assuming an aerosol density of 1 g cm^{-3}.

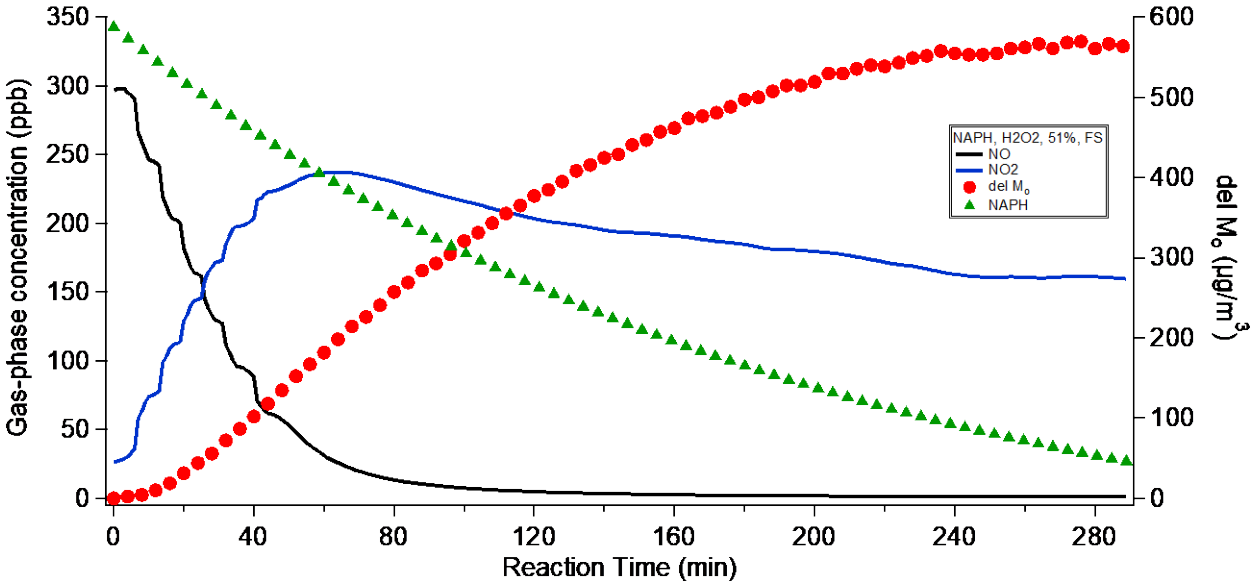

Figure F25. Reaction profile for chamber experiment conducted under humid, RO_2 + NO dominant conditions with naphthalene and iron sulfate seed. NO concentrations were monitored by chemiluminescence NO_x monitor. NO_2 concentrations were determined as the difference between NO and NO_x concentrations. Aerosol mass concentrations were determined using SMPS volume concentrations assuming an aerosol density of 1 g cm^{-3}.

References

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Pope CA, Burnett RT, Turner MC, Cohen A, Krewski D, Jerrett M, et al. 2011. Lung cancer and cardiovascular disease mortality associated with ambient air pollution and cigarette smoke: Shape of the exposure–response relationships. Environmental Health Perspectives 119:1616-1621.