

Supplement of Atmos. Meas. Tech., 8, 2945–2959, 2015
<http://www.atmos-meas-tech.net/8/2945/2015/>
doi:10.5194/amt-8-2945-2015-supplement
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Supplement of

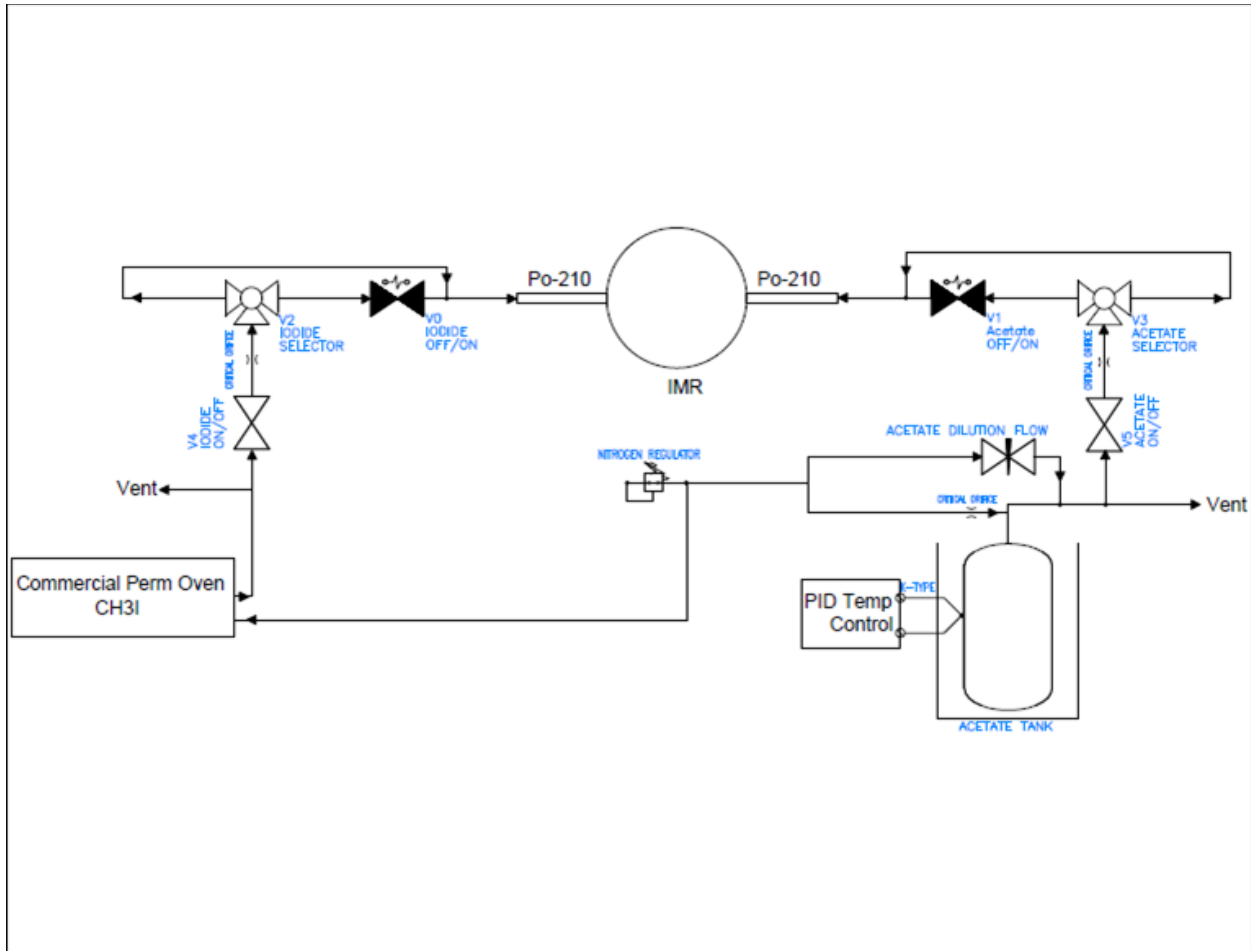
A switchable reagent ion high resolution time-of-flight chemical ionization mass spectrometer for real-time measurement of gas phase oxidized species: characterization from the 2013 southern oxidant and aerosol study

P. Brophy and D. K. Farmer

Correspondence to: D. K. Farmer (delphine.farmer@colostate.edu)

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29 SI 1: Schematic diagram showing the setup for reagent switching with selectable flow path for
30 automatic switching driven by solenoid valves or manual control.

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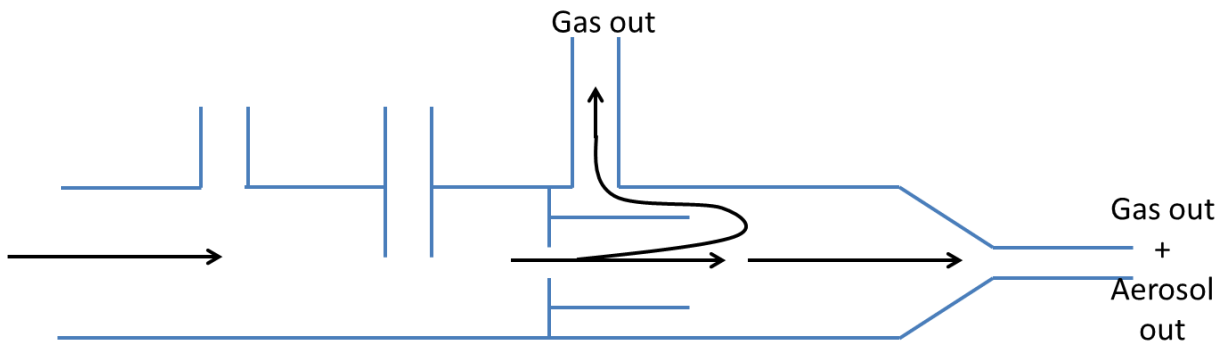
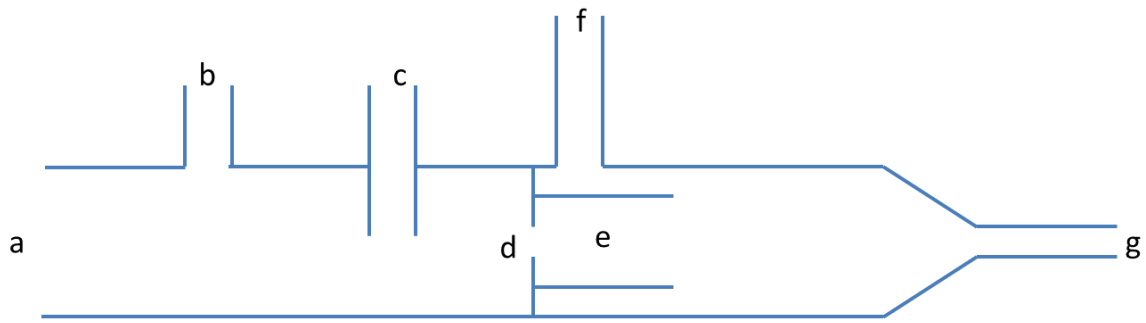
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41 SI 2: Glass inlet design (a) aerosol and gas inlet; (b) zero air overflow port; (c) calibration port
42 (not used in this study); (d) critical orifice; (e) glass particle skimmer and flow director; (f) gas
43 sampling port at reduced pressure; (g) bypass line at reduced pressure

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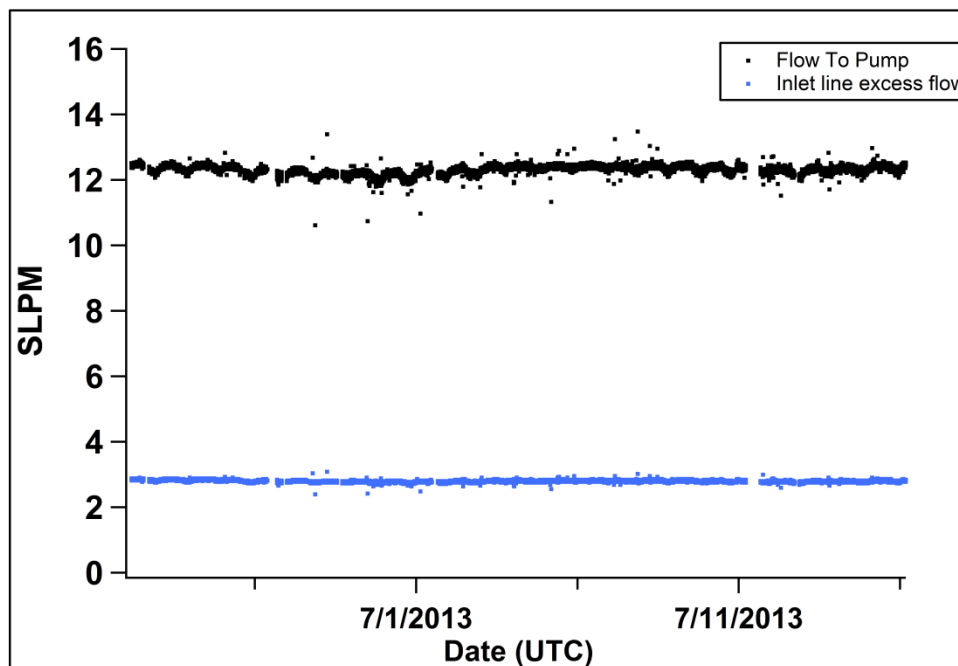
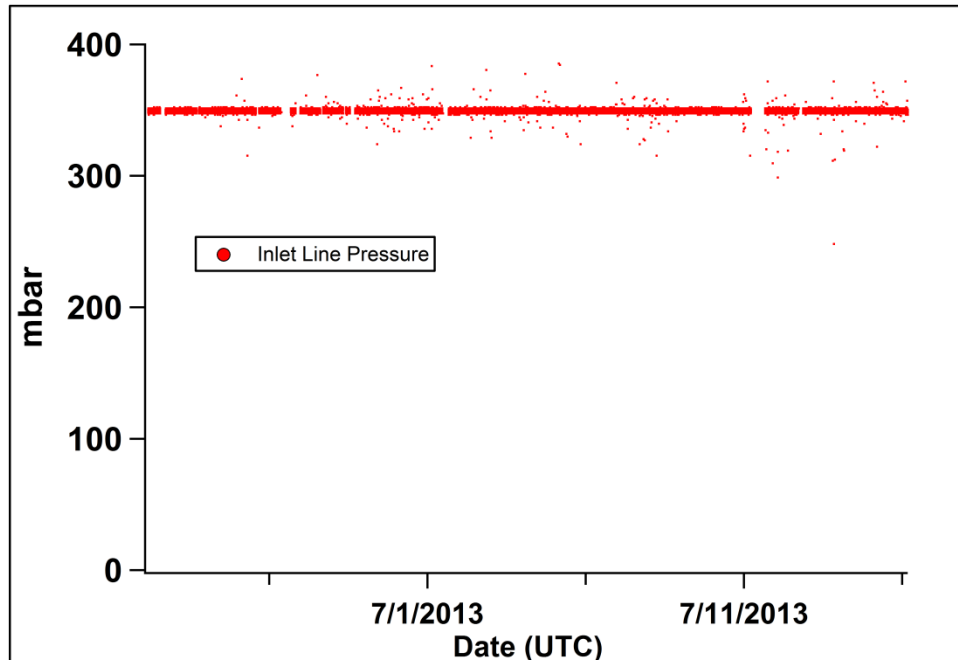
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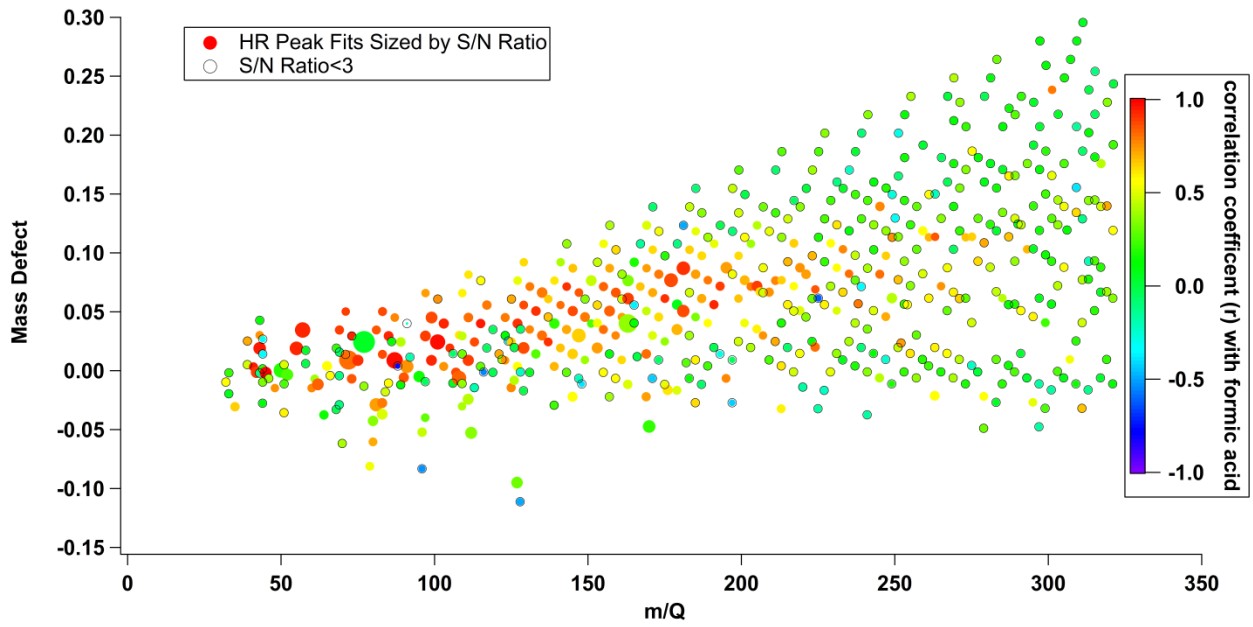
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57 SI 3: Diagnostic inlet performance showing the pressure stability, the total flow through the gas
58 sampling line, and the total flow to the pump during SOAS.

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63 SI 4: Mass defect plot showing all HR ion fits. Each ion fit is colored by the correlation
64 coefficient with formic acid and sized by S/N ratio. Ions with a S/N < 3 are marked with a black
65 circle outline.

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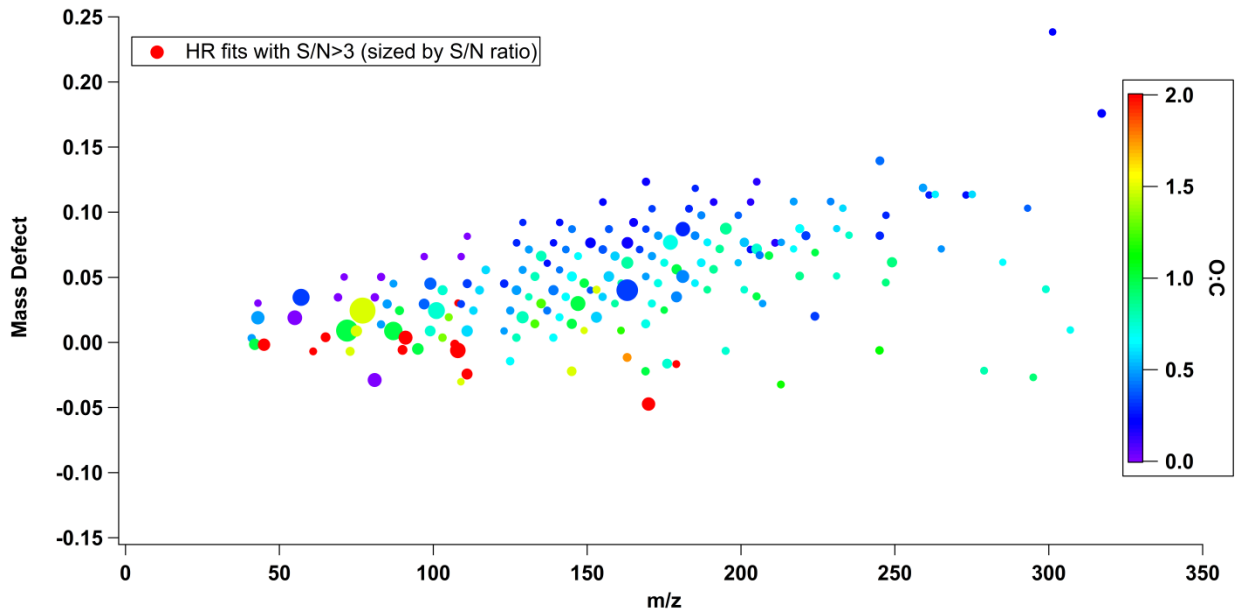
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80 SI 5: Mass defect enhancement plot showing all species with S/N>3 and colored by
81 oxygen:carbon ratio as determined from the HR ion fits.

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