Atmos. Meas. Tech. Discuss., 4, C1990–C1992, 2011
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Atmospheric Measurement Techniques Discussions

Interactive comment on "

Airborne observations of formic acid using a chemical ionisation mass spectrometer" *by* M. Le Breton et al.

Anonymous Referee #1

Received and published: 5 November 2011

General Comments This paper describes the measurement of formic acid by chemical ionization mass spectrometry using iodide ion as the reagent ion. This is a useful addition to the literature on these techniques since many groups are starting to use I- for the measurement of a range of other compounds. It is good to know that formic could potentially be measured as a cluster ion. There are a number things that need to be corrected or explained further for the paper to be acceptable for publication in AMT.

There are numerous missing references; Granby 1997; Jacob 1986; Keene and Gal-

loway 1983 (is this actually Keene et al., 1983?); Keene et al., 2006; Roberts et al., 2010; Roberts et al., 2011; Slusher et al., 2004; Taatjes et al., 2008; Talbot et al., 1988; Talbot et al., 1995

Specific Comments;

Page 5808, Line 8. Carboxylic acids are not necessarily slow reacting with OH and NO3, take for example acrylic and methacrylic acids, their OH rate constants are actually quite high.

Section 2. Instrument description. It is customary in the description of CIMS instruments to quote typical reagent ion count rates. Then, subsequent comparisons of sensitivities make more sense if that parameter is provided (and accounted for). The ion chemistry involves cluster ions. It would be very useful if the authors could give us an idea of the de-clustering conditions in their system; specifically what was E/N for the CDC and the ocotupole ion guide regions?

Page 5811, Line 28. What was the composition of the CH3I/H2O/N2 mixture and how as it produced?

Page 5813, Lines 16-17. What is an Apel_Reimer standard?

Page 5814, Lines 6-23. These paragraphs would seem more appropriate for a results or discussion section.

References; In addition to missing references, there are number that are out of alphabetical order.

Fig 2. The peak at m/z 173 is more than 20,000 cts, give or take a bit, backgrounds shown on Fig 3 were less than 1000 cts. At more than 30 cts/pptv sensitivity, I make that about 600 pptv, yet the maximum reported was only 350 pptv or so. Something doesn't make sense.

Fig 3. Please label the relevant sections.

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Fig 4. Are we to assume the lefthand scale should be ppbv?

Fig 8. Comparing the information content of Fig 4 and Fig 8, it appears only one is needed.

Interactive comment on Atmos. Meas. Tech. Discuss., 4, 5807, 2011.