Atmos. Meas. Tech. Discuss.,
doi:10.5194/amt-2018-326-RC3, 2018

Atmospheric Measurement Techniques Discussions

Interactive comment on "Ultrasonic Nebulization for the Elemental Analysis of Microgram-Level Samples with Offline Aerosol Mass Spectrometry" *by* Rachel E. O'Brien et al.

Anonymous Referee #1

Received and published: 28 November 2018

This is an interesting paper by developing a small volume nebulizer for elemental analysis with aerosol mass spectrometer. The major advantage of this technique is the volume of samples needed for analysis. This manuscript is generally well written, and I recommend it for publication after addressing the following comments.

1. The future applications of this technique can be expanded, particularly compared with previous AMS offline analysis. In general, the volume of DI-water extracted solutions from filter samples collected with high-volume samplers are not an issue for elemental analysis with AMS. Then why we need such a technique for offline AMS analysis?

2. The authors didn't show any high resolution mass spectra of compounds or samples analyzed in this study. For example, North Pacific Ocean sample in Figure 5d. Clear signals of m/z 78 ($CH_2SO_2^+$) and 79 ($CH_3SO_2^+$) are expected, which were not. Another question is the minimum concentration used for the SVN-AMS analysis. Because "fast MS" mode was used for discrete samples, signal-to-noise ratio could can be an issue for high resolution peak fitting.

3. It is not recommended to directly compare the mass spectra between ACSM and AMS. ACSM often presents much higher m/z 44 than AMS [Fröhlich et al., 2015], and O/C estimated with f44 can also have a large uncertainty.

4. Typos of "FIGERO-CIMS"(line 82) and "Figure 3d" (line 356).

Fröhlich, R., et al. (2015), ACTRIS ACSM intercomparison – Part 2: Intercomparison of ME-2 organic source apportionment results from 15 individual, co-located aerosol mass spectrometers, Atmos. Meas. Tech., 8(6), 2555-2576, doi:10.5194/amt-8-2555-2015.

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