

Interactive comment on “Hyphenation of a EC / OC thermal-optical carbon analyzer to photo ionization time-of-flight mass spectrometry: a new off-line aerosol mass spectrometric approach for characterization of primary and secondary particulate matter” by J. Diab et al.

Anonymous Referee #1

Received and published: 2 March 2015

In the manuscript by Diab et al. (2014), different types of aerosol samples (including ambient samples collected at a rural site in Italy, biomass burning source emissions and chamber-generated SOA) were measured by a hyphenated thermal/optical analyzer-photo ionization time of flight mass spectrometer (PI-TOFMS) system. This manuscript is not new in terms of either the measurement system development or the data analysis procedure, both of which have been presented by Grabowsky et al. (Anal. Bioanal.

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Chem., 2011). As pointed by the Anonymous Referee # 2 during the quick review process, this manuscript reads like an application report rather than a research paper. Although lack of originality, I think the manuscript is not completely meaningless, because it, to some extent, provides useful information for the evaluation and development of the hyphenated EC/OC-PI-TOFMS technique. In addition, the manuscript is well-written and easy to follow. My detailed comments are listed below.

1. The manuscript should be submitted as a technique note after revision.
2. The manuscript title should be re-considered. In the current title, the phrase that “a new off-line aerosol mass spectrometric approach” makes the readers misunderstand that the hyphenated EC/OC-PI-TOFMS system is developed by this study.
3. I am afraid that advantages of the hyphenated EC/OC-PI-TOFMS system are exaggerated. First, in addition to the composition/source of carbonaceous components, evolution of particulate carbon during the thermal-optical analysis is also influenced by the co-existing inorganic species such as minerals and trace metals. Second, pyrolysis OC, which is typically evolved off the filter during the EC1 step, can contribute significantly to total OC defined by the thermal-optical method (e.g., Chow et al., Comparison of IMPROVE and NIOSH carbon measurements, Aerosol Sci. Tech., 34, 23-34, 2001). The authors are suggested to add a paragraph discussing limitations of the hyphenated EC/OC-PI-TOFMS technique, and meanwhile, tone down the statements about advantages of the technique.

Some minor comments

Page 272, Line 22, a right parenthesis is missing after “Nuclear magnetic resonance NMR”.

Page 272, Line 26, a right parenthesis is missing after “LDI”.

Page 281, Line 3 to 5, The authors should be careful about the statement that “In the OC4 and EC steps, a negligible amount of gaseous species evolve because almost all

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organic species have been released during the first three OC fractions”.

Interactive comment on Atmos. Meas. Tech. Discuss., 8, 269, 2015.

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