

Interactive comment on “Method for determination of stable carbon isotope ratio of methylnitrophenols in atmospheric PM” by S. Moukhtar et al.

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Received and published: 16 August 2011

We like to thank the referees for their useful comments which will help to improve readability and clarity of the manuscript. With one minor exception all suggested changes and additions are reasonable and will be implemented.

Referee # 1 points out that the manuscript contains phrases and sentences which lack clarity and make the manuscript difficult to read. We appreciate the referee's openness and will check the entire manuscript for phrases and sentences which may lack clarity.

Referee # 2 suggests that we should mention secondary organic aerosols (SOA).
C1396

We used the term particulate matter (PM) or particulate organic matter (POM) since aerosol, strictly speaking, refers to the combined system of particulate phase and gas phase. Our method is based on collection of PM and what we analyze is PM. Nevertheless, the referee is correct in pointing out that the overall purpose of our research is to study formation of SOA and we will add some brief statements clarifying this point in the introduction.

Another suggestion from referee #2 is to expand the explanation of specific differences between the presented method and existing procedures. We will explain the specific requirements for GC-IRMS measurements (sample mass, peak separation, and absence of isotope fractionation) in more detail in order to clarify our rationale for developing a new method for readers who are not experts in isotope ratio measurements.

Referee # 2 also provides some specific suggestions which we find very useful.

Page 4 line 2 The interest in PM is not recent; perhaps change sentence to “PM receives much interest because of its significant impact on human health ...”

Will be changed.

Page 4 line 11 Change compounds to VOCs

Will be changed.

Page 5 line 2 “Phenols and related substances are of interest not only due to their toxicity, but also due to the fact that they can be formed in the atmosphere from VOCs in the gas phase” this sentence requires a reference

This part of the introduction will be expanded based on the editor's comment. In addition to the toxicity and general importance of atmospheric aerosols (climate, health effects, visibility) the study also aims at better understanding formation processes of SOA including testing applicability of laboratory studies for predictions of SOA formation potential. Isotope ratio measurements are a newly emerging tool for this. A paragraph, including references, will be added.

Page 5 line 17 replace heads with size-selective inlets

Will be changed.

Page 7 line 7 specify purity

Supplier as well as purity (if available) for all reagents used is provided in Chapter 2.2. We think that there is no need to repeat or summarize this information.

Page 10 line 4 define V-PDB

Will be done.

Page 15 line 23 “The concentrations of PM with a diameter of less than 2.5_μm generally ranges from several μg m⁻³ in remote rural areas to 100 μg m⁻³ or more for heavily polluted urban and industrialized locations. Consequently the mass of PM accumulated on the filter is in the range of several 10 mg and some 100 mg. The mass of methylnitrophenols in the samples is in the range of 10 ng to 500 ng, for truly remote regions most likely less”. Is this in general or for the samples collected here? If in general then you should provide a reference.

The expectation of lower concentrations for remote regions is based on a combination of observations (this work as well as publications cited in the introduction), identified sources of methylnitrophenols, and the atmospheric residence times for PM. We will modify and expand this part of the conclusions to clarify our reasoning and identify literature used.

A revised manuscript which includes these changes is presently prepared.

Interactive comment on Atmos. Meas. Tech. Discuss., 4, 3199, 2011.

C1398