

Interactive
Comment

Interactive comment on “A method for stable carbon isotope ratio and concentration measurements of ambient aromatic hydrocarbons” by A. Kornilova et al.

Anonymous Referee #2

Received and published: 28 February 2015

General Comments:

This paper introduces a new sampling technique for ambient VOC that allows concentration and carbon isotope measurements to be performed at low-pptV to ppbV levels. The use of cartridges packed with Carboxene 569 is a convenient alternative to other methods (if sampling over long time periods is desired), and its coupling to tested and accepted analysis techniques (TD-GC-IRMS) demonstrates its efficacy for aromatic hydrocarbons. Quality control methods are thorough and sound. Expansion to other compound classes may be possible and can broaden the use of this technique. This measurement technique is novel and the manuscript addresses the need for better

Full Screen / Esc

Printer-friendly Version

Interactive Discussion

Discussion Paper



atmospheric sampling techniques at low mixing ratios.

Specific Comments:

-Page 1370, Line 10: "Selective VOC sampling from volumes between 20 and 80 L of ambient air was done on adsorbent filled cartridges." Please clarify how the ambient air sample volume was determined. Is there a known capacity limit for these cartridges? Would reaching or exceeding the capacity of the cartridge cause sampling bias?

-Page 1376, Lines 8-11: I would not expect n-alkanes to be more reactive than aromatics inside of the stainless steel canister. Please elaborate on why this is a viable explanation for the bias in n-alkane measurements.

-Figure 4: Can you comment on the apparent positive artifacts for n-hexane and benzene recovery with storage?

Technical Corrections:

-Page 1366, Line 18: Replace "Volatile Organic Compounds" with "Volatile organic compounds".

-Section 2.3.2: Including a reference for the origin of the two-stage pre-concentration technique would be preferable; for example, Rudolph, J., Lowe, D. C., Martin, R. J., & Clarkson, T. S. (1997), *Geophysical Research Letters*, 4(6), 659–662 (which is also referenced in the companion field study paper, Kornilova et al., 2013).

-Figure 3 contains two identical plots for p,m-xylene. The final figure is likely meant to be for o-xylene, based upon the content of other figures and tables.

-Table 2: Provide some type of separation between Duration/Temperature/Flow Rate rows and recovery percent results of the listed compounds.

-Table 3: Why is hexane omitted, when it is present in Figures 4 and 5?

-Figures 4 and 5: Please note the difference between white circles and black diamonds.

Full Screen / Esc

Printer-friendly Version

Interactive Discussion

Discussion Paper



Which represents ambient/freezer storage?

-Figure 6: Labeling the chromatograms "A" and "B" (or similar) may expedite identification of test mixture and ambient sample for the reader.

-Figure 6: Are peaks 2 and 3 correctly labeled? The difference in retention time from test mixture to ambient is substantial.

Interactive comment on Atmos. Meas. Tech. Discuss., 8, 1365, 2015.

Full Screen / Esc

Printer-friendly Version

Interactive Discussion

Discussion Paper

