

Interactive comment on “Potential of needle trap microextraction – portable gas chromatography – mass spectrometry for measurement of atmospheric volatile compounds” by Luís Miguel Feijó Barreira et al.

Anonymous Referee #3

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Referee comments

1. General comments

This paper introduces the development and the application of an analytical technique based on a needle trap micro extraction coupled with a portable gas chromatography to the determination of organic gaseous compounds in the atmosphere. The advantages of needle trap micro extraction to the sampling of VOCs compared to a solid phase micro extraction has been described. Portable GC/MS instrumentation can achieve fast separation, identification and quantification of sample on site without the need

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for transport to the laboratory. This minimizes the effects of volatiles lost and sample degradation during storage time. The results presented by the authors, demonstrated the successful applicability of this method for a semi quantitative approach. Indeed a quantification with the method developed in this manuscript requires additional studies. The manuscript is very interesting and the experiments seem to have been performed with rigor.

2. Specific comments

- I would add some references in the introduction, in particular page 3 – line 1 after “. . .since the sorbent particles are protected inside the needle” - Would it be possible to use a continuous analyzer of BTEX to compare the concentrations of this compounds founds by your method? - Section 2.2, page 3 – line 25: add some indications about the typical emission on the city of Tampere, allow to understand the situation around your sampling site. - Section 2.3, page 4 – line 13: I understand the need of a high sampling volume however are you certain not to saturate the adsorbents in needle trap. - Section 2.3, page 4 – line 22 : you use a DVB/PDMS for the solid phase micro extraction step, have you tested other fibers ? - Section 2.3, page 4 – line 32: the temperature program started from 50°C for 10 seconds and was increased to 270°C at 2°C/s. You write the total run time was 180 seconds, is there a problem in the total time? - Section 2.3, page 5 – line 4: after every analysis are you sure that all the compounds is totally desorbed? - Section 2.3,page 4: why didn't you use an internal standard for the quantification. - Section 3, page 5 – line 15: are the measurement of temperature and particle number concentration co- located with the sampling site? - Section 3.1, page 6 – line 3: have you tested the difference in fragmentation found between a conventional GC-MS and portable GC-MS or it's an observation from a bibliography? - Figure 1, 2,3 and 4: are these the average temperature during the day or during the period of sampling ? - Figure 3 : you quantified separately the ethylbenzene and the p/m- xylene, these two compounds that are well separated on your column ? (Tr = 0,70 min and Tr = 0,72 min). Which is the factor of resolution between these two compounds? Maybe you can

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considered changing your column to improve the resolution.

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