

***Interactive comment on “Online determination of levoglucosan in ambient aerosols with Particle-into-Liquid Sampler – High-Performance Anion-Exchange Chromatography – Mass Spectrometry (PILS–HPAEC–MS)” by K. Saarnio et al.***

**Anonymous Referee #1**

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The paper describes a new application of particle-into-liquid sampler for the semi on-line determination of levoglucosan in PM1. PILS is an excellent device which provides liquid flow of aerosol sample giving opportunity for on-line determination of water soluble organics by various techniques. As it is explained in the introduction part, PILS was previously coupled with several instruments, such as IC, HPLC-MS, TOC etc. However, application range of PILS is still small, regardless to its potential. This research

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shows that PILS can and should be utilized more in aerosol research. The disadvantage of PILS, however, is particle size of aerosols that can be sampled, and the second one being the sampling flow. These two "problems" can be easily solved by changing the design. This research is well designed and performed, the paper is well written and I see no reason why it shouldn't be published. The only thing that concerns me is that the set-up is quite huge for only one compound, which can be, after couple of assumptions, measured by e.g. AMS. Why part of the sample was discarded to the waste? when it can be directed to other analysis. Even if concentrations are too low, this "waste" could be collected to a longer loop or to a trap and analyzed with lower time resolution, for example by HPLC-MS. I understand that this can't be done anymore, so, authors can at least speculate about this issue. few technical comments: 5500, 15-20: no need for such precise explanation section 2.3.1.- could sample loop be larger? how size was affecting the analysis? 5504, 1-5: simultaneously? how? explain, because it seems that the whole sample was continuously analyzed on-line. Or was it stopped during the collection of off-line samples? 5506, 5-10: it's not a problem at all, labelled compound is always a better choice.10-15: levoglucosan is still added to PILS as standard addition,so, I don't understand statement in 5-10 about suppression. section 3.2. 25-26 February seems odd. see fig. 4. you should discuss it as well. Fig. 8. about 68% is represented by one SD, two perhaps?

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