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Interactive comment on "Non-target and suspect characterisation of organic contaminants in ambient air, Part I: Combining a novel sample clean-up method with comprehensive two-dimensional gas chromatography" *by* Laura Röhler et al.

Anonymous Referee #2

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This manuscript details an analytical methodology to characterise semi-volatile organic (SVOCs) contaminants in air samples. The novelty here is that it uses a bespoke sample clean-up procedure coupled to final-extract analysis using 2-dimensional GC and mass spectrometry for pseudo- (suspect) and non-target chemical identification. The result is a very high level of chemical data acquisition through unique levels of compound resolution resulting in vastly improved identification of SVOCs in air samples. This method lends itself to sensitive, non-target screening of chemicals in environ-

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Discussion paper

mental samples and the authors use HRMS to assure chemical identification in some cases, which is useful. The method also addresses a major issue of 'which analytical technique' given the growing lists of priority pollutants with widely varying physical-chemical properties, as well as finding 'unknowns'. The authors introduce a hierarchy of chemical grouping based on the confidence of chemical identification, which is a pragmatic approach and is also discussed in some detail with regards to the identification of 'unknowns' for select air samples taken in southern Norway. The concluding statements provide some very useful recommendations regarding the use (or drawbacks) of polyurethane foam as a sampling matrix for SVOCs, and the use of HRMS to qualify/confirm chemical candidates.

I don't see any drawbacks or weaknesses to this manuscript. It's nice to see a comprehensive SI which provides considerable detail to allow other lab groups to reproduce this method. Figure 1 is useful in that it provides a stylised overview to people not familiar with 2-dimensional chromatography, however it would be helpful if the authors could also supply an annotated 2-d chromatogram(s) of their actual air samples (this could be added to the SI).