

Interactive comment on “Concept for an electrostatic focusing device for continuous ambient pressure aerosol concentration” by Joseph L. Woo et al.

Anonymous Referee #2

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The paper presents an approach to enhance the aerosol concentration in a continuous flow, similar to virtual impactors that are commonly used in the aerosol science field. Theoretical calculations are performed. A concept is designed, and a prototype based on this design is developed and tested. Size-selected stearic acid particles are used to test the performance, and it was shown that up to 15% enhancement can be achieved.

The paper fits within the scope of AMT. It provides a concept of using electric fields to enhance the concentration, and results from one test experiment is presented to show that the concept is working. My primary concern is that these only one test experimental data is not sufficient to conclude that concept can actually be used for general

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aerosol studies where enhancement is necessary for aerosol detection. One cannot reach the conclusions that enhancement is possible with just one test experiment. I would like to refer to the paper in AMTD by Saarikoski et al. (2019), which focuses on the exact problem the current paper is focused, although the technique is different. The presented concept needs to be tested using different aerosol systems, and validation should be confirmed from understanding size-distribution and chemical composition of aerosol (minor flow output). Such aerosol properties should be reported. Also, note that Saarikoski et al. (2019) paper shows the concept and numerous lab and field data to show that submicron aerosol enhancement is possible without electrostatic focusing. For all these reasons the paper is not ready for the publication and rated poor in terms of scientific significance. I recommend adding more results and resubmit.

Saarikoski, S., Williams, L. R., Spielman, S. R., Lewis, G. S., Eiguren-Fernandez, A., Aurela, M., Hering, S. V., Teinilä, K., Croteau, P., Jayne, J. T., Hohaus, T., Worsnop, D. R., and Timonen, H.: Laboratory and field evaluation of the Aerosol Dynamics Inc. concentrator (ADlc) for aerosol mass spectrometry, *Atmos. Meas. Tech. Discuss.*, <https://doi.org/10.5194/amt-2019-74>, in review, 2019.

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