

Interactive comment on “Resonance-Enhanced Detection of Metals in Aerosols using Single Particle Mass Spectrometry” by Johannes Passig et al.

Anonymous Referee #2

Received and published: 18 April 2020

The authors present a manuscript that describes the investigation of enhanced resonance ionisation as a means of improving the detection of metals in aerosol particles with single-particle mass spectrometry (SPMS). This is a very worthwhile objective, as such a technique could improve the online study of the distribution and sources of important metal species in the atmosphere. The authors focus on the resonance enhancement of Iron using laser desorption ionisation (LDI) at 248nm, which coincides with a major absorption line of Fe, which is an element of relevance in the study of micronutrients to the oceans and anthropogenic aerosol pollution. The physical basis for the techniques is sound and the work represents a substantial investment in resources to achieve a demonstrable improvement in detection of Fe along with Zn and Mn.

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With the acceptance of some minor improvements in the reporting of the results, the technical merits of the manuscript is good. However there are some major concerns about the atmospheric relevance of the field study presented. Whilst this field data supports the technical development, it does not offer insight into the atmospheric implications of the presence of Fe in the environment in which it was measured. As this is a key requirement of this journal, the authors are requested to provide this discussion or consider submitting to a technical journal such as AMT.

Please also note the supplement to this comment:

<https://www.atmos-chem-phys-discuss.net/acp-2020-25/acp-2020-25-RC2-supplement.pdf>

Interactive comment on Atmos. Chem. Phys. Discuss., <https://doi.org/10.5194/acp-2020-25>, 2020.

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