

## ***Interactive comment on “Evaluating the influence of laser wavelength and detection stage geometry on optical detection efficiency in a single particle mass spectrometer” by Nicholas Marsden et al.***

**Anonymous Referee #2**

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Review 2

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Evaluating the influence of laser wavelength and detection stage geometry on optical detection efficiency in a single particle mass spectrometer.

The scientific approach is sound and the contribution important. However, the paper is really not easy to read, it is indeed a technical paper, but I think the flow should be improved. After major reorganization, it surely can be accepted for publication.

Reference list. I found the introduction and the overall reference list very poor. Given

C1

the >20 years of SPMS, I would have hoped for a more sound reference review. Papers like Prather and Moffet (PNAS 2009) should be included. I would make a short review of ATOFMS-SPMS studies (San Diego, Birmingham, recent Canada-Ireland work, Germany) on detection efficiencies and particle matrix effect and so on. It would definitely help this paper.

The paper needs some bullets point or a better flow. Page 4 line 110-120, page 6 line 140-170, section 3.3 for example.

Figure 2. Perhaps explain better the original setting and the modified settings, and the consequences?

I am not sure I follow the result section, especially section 4.1 and 4.2. Perhaps a paragraph introducing the results and the sections?

Figure 11. Is it appropriate at the end of the discussion?

In summary, I am convinced of the new improvement of the instrument and the results are sound. I think they can be better presented, both in the introduction (state of the art of SPMS), and a better organization of the scattered results difficult to follow. Scientific context is sound and accepted, a better presentation of the results is needed. The paper at this stage is very difficult to follow and is not the easiest read.

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C2