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Atmospheric Measurement Techniques Discussions

Interactive comment on "Fluorescence calibration method for single-particle aerosol fluorescence instruments" *by* Ellis Shipley Robinson et al.

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This journal article presents a method for calibrating the response of fluorescence instruments against a known standard. The work is very timely, with an increase in the availability of commercial instruments and the increased attention biological material is receiving in the research community. The article is well written and describes very clearly the steps required to perform the calibration. I have a few comments below, but otherwise I think this article is well suited for AMT and should be published.

Figure 1. I agree that performing the calibration at the operating flow rate is the way forward, but I think a recommendation of the paper should be that figure 1 is generated/ checked at regular intervals (start and end of campaigns maybe) with the fluorescent material. This would give you an operational baseline to check the instrument perfor-

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mance over time. It would also be something that is easily included in supplementary material in publications so different groups can compare sensitivities, if required.

Figure 3a. You have calibration data you are not using. If you know where the Q1 peaks are, you therefore know the location of the Q2 peaks. This is most noticeable at the smaller sizes. You have additional masses from the single mobility diameter. This feature of DMAs is often used when calibrating OPCs with oil drops.

I have read the comments of the other reviewer regarding the Q- and T- equivalent mass. I tend to agree that it potentially over simplifies the measurement, but this approach is used elsewhere in science. For example, the Aerodyne Aerosol Mass Spec community report nitrate equivalent mass, which assumes everything has the same ionisation efficiency as nitrate. If they want the mass of a specific compound, they need to apply a relative ionisation efficiency correction. I think caveating the use of the Q- and T- with other factors that can affect it is required, but it is still a useful quantity to report. Maybe as more research is done, a database of Relative Fluorescent Factors (RFR) will be generated for different materials.

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