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Atmospheric Measurement Techniques Discussions

Interactive comment on "Quantitative single particle analysis with the Aerodyne aerosol mass spectrometer: development of a new classification algorithm and its application to field data" *by* F. Freutel et al.

Anonymous Referee #2

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The publication presents new classification algorithm for single particle analysis with aerosol mass spectrometer with light scattering probe (LSP). Using LS and ensemble mass analysis parallel, the LS gives extra information on particle phase that is not reached straight for instance with MS or pToF modes, because of limitations of single particle detection and hence in the fragmentation table used in the IGOR analysis tool. LS modes straight information from the case of nitrate partitioning into particle phase during the night time mentioned in the publication gives new important information on aerosol particle chemistry and aging process. Single particle analysis at laboratory ex-

periments with different mixtures and ambient measurements were deal diversely. The used methods, calculations, results and other relevant information were represented technically well, understandably and in fluent language. For the future the used instrument hopefully will be integrated to HR-TOF mass spectrometer to achieve more sensitive and higher resolution data to produce elemental information of mass peaks from single particles.

Divide of organics into OOA and HOA according to percentage of organic content was interesting. It would be interesting to see the PMF method derived factors from ensemble data from the same device compared to different groups found from single particle classification (mass spectrum, single peaks, time series or diurnal cycles) from ambient data.

Volume measured by AMS and compared to a mobility particle analyzers (DMPS or SMPS) one could be interesting to be shown or mentioned for understanding the overall wellness of the used TOF-AMS ensemble mass data in ambient measurements.

Figure 1 is confusing and needs background information from the text, before the reader is able to follow it. Simplification of the figure in this kind of paragraphs might useful for the reader point-of-view in the future publications.

Interactive comment on Atmos. Meas. Tech. Discuss., 6, 5653, 2013.