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Atmospheric Measurement Techniques Discussions



# *Interactive comment on* "Physicochemical analysis of individual atmospheric fine particles based on effective surface-enhanced Raman spectroscopy" *by* Zhenli Sun et al.

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This work reports Ag foil as an efficient SERS substrate for individual atmospheric fine particles study. The enhancement factor is better than previous works (Craig, 2015ïijŻ Fu, 2017). The use of SERS technique as a method for individual atmospheric fine particle study is of scientific interest and importance. The conclusion is well supported by the data, and the work is well organized. It can be accepted after addressing the following issues: 1. It is arbitrary to exclude the formation of chemical bonds between the analyte and substrate by simply comparing the enhancement factor with the EM simulation result. This needs further discussion. 2. The EF calculation for the aerosol



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Discussion paper

samples is not accurate. In this work, the calculation is done by comparing the Raman intensity of NO3 with the previous work (Craig, 2015ïijŻ Fu, 2017). The Raman intensity is closely related with the laser and operation parameter during measurement, such as the laser intensity, laser wavelength, microscope objective and so on. Since different operation parameters were used in these reports, it is not suitable to calculate the EF by comparing the Raman intensity. Further discussion is required. 3. Some language errors, for example: page 3, line 24: which widely used –> which are widely used Page 5, line 20: 0.7 um –> 0.7 micrometer

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