

## ***Interactive comment on “Volatility of mixed atmospheric Humic-like Substances and ammonium sulfate particles” by Wei Nie et al.***

### **Anonymous Referee #1**

Received and published: 24 December 2016

This manuscript presents the first study to my knowledge of the volatility of humic-like substances (HULIS) in atmospheric aerosols. The results ultimately link HULIS, which has been observed ubiquitously in atmospheric aerosols using filter collection and extraction, with low and extremely low volatility organic material (ELVOC), which has been observed to be similarly common using AMS and thermal denuder-type techniques. The authors also demonstrate that interactions between HULIS and inorganic salts such as sulfate can greatly decrease the already low volatility of the HULIS. This is a very significant contribution to the field, and should be published after a few issues are addressed.

- Another reviewer commented on the relatively few filter samples that were used in this study. Can the authors make an argument to justify this, for example, were the properties of the HULIS on these filters representative of other samples taken at the

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same location?

- My main concern is the extensive chemical processing of the HULIS during isolation before analysis. Is there a way for us to know how this may have impacted the volatility or other properties of the material as compared to the real state in ambient aerosols? A discussion of this point in the manuscript is needed.

- Related to my last point, since the HULIS extraction process removes inorganic ions from the sample, are we to understand that the samples in which salts have been re-introduced are more representative of the true volatility of HULIS in atmospheric aerosols? If so, this should be emphasized.

- Some language editing is necessary in places, for example, lines 42-43

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Interactive comment on Atmos. Chem. Phys. Discuss., doi:10.5194/acp-2016-839, 2016.

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