

Interactive comment on “Hygroscopic growth and activation of HULIS particles: experimental data and a new iterative parameterization scheme for complex aerosol particles” by M. Ziese et al.

M. Ziese et al.

Received and published: 11 February 2008

We first repeat the review here, and then give our comments below:

Review: The manuscript shows laboratory results on activation and hygroscopic growth (up to 99.75% relative humidity) of aerosol particles made by HULIS and HULIS plus other species. These experimental data are further used to derive parameterizations for HULIS hygroscopicity and activation. The work is interesting and worth publication with some modifications. 1) I suggest to the authors to discuss whether their parameterizations derived for HULIS is valid only for urban aerosol or in general. 2) I also suggest to the authors to better explain in the Introduction why they use the Aerosol-Water-Extract in this study. 3) In addition, the results will be better understood and

Full Screen / Esc

Printer-friendly Version

Interactive Discussion

Discussion Paper



explained by showing the chemical composition of the Aerosol-Water-Extract.

Thank you for your comments on our manuscript! We addressed them as follows:

to 1): We changed the manuscript by adding some more data analysis, based on data published previously by Dinar et al. (2006) and Dinar et al. (2007) (new section 5.3). These literature data comprised atmospheric HULIS from different sources and ages (fresh smoke, aged smoke and summer-daytime in Israel). The parameterization worked out for these data, too. Referring to these data, we added a discussion of the results, hinting towards the influence of age and source of the HULIS on the coefficients of the parameterization.

to 2): We added the following motivation to the Introduction: 'The Aerosol-Water-Extract was included in the study to compare the influence of pure HULIS on hygroscopic growth and activation with the influence of HULIS mixed with the additional soluble compounds of the atmospheric aerosol, i.e., to detect if effects of HULIS and soluble inorganic matter is solely additive, or if other effects come into play.'

to 3): We did add the data on the amount of HULIS and sulfate that we obtained from analysis of the sample in the Experimental set-up-section: 'For the second HULIS sample, concentration of carbon in HULIS was measured by a Multi N/C 2100S total carbon analyzer (Analytik Jena, Germany). The mean atmospheric concentrations of HULIS was 4.7 microg/cubicm using the organic matter-to-organic carbon mass conversion factor of 1.81 derived especially for HULIS. The Aerosol-Water-Extract sample investigated was prepared from a quarter (25.4%) section of the filter. In total, it contained 6.0mg of HULIS, compared to 2.0mg of sulfate. The atmospheric concentration of sulfate in the original sample was determined to be 1.7 microg/cubicm.'

Interactive comment on Atmos. Chem. Phys. Discuss., 7, 13773, 2007.

Full Screen / Esc

Printer-friendly Version

Interactive Discussion

Discussion Paper

