Atmos. Chem. Phys. Discuss., 8, S2856–S2858, 2008
www.atmos-chem-phys-discuss.net/8/S2856/2008/
© Author(s) 2008. This work is distributed under
the Creative Commons Attribute 3.0 License.

Atmospheric Chemistry and Physics Discussions

Interactive comment on "Quantitative assessment of organosulfates in size-segregated rural fine aerosol" *by* H. Lukács et al.

Y. Iinuma (Referee)

yoshi@tropos.de

Received and published: 20 May 2008

Review on "Quantitative assessment of organosulfates in size-segregated rural fine aerosol" by Lukács et al.

General Comments

This manuscript presents an interesting and useful method to estimate the amount of organosulphates in ambient aerosol. Various aerosol chamber studies on the oxidation of biogenic VOCs in the presence of sulphate seed aerosol have shown the presence of organosulphates in formed SOA. The importance of these findings are also strengthened by various field studies in the United States and Europe, providing a further piece of evidence that organosulphates are relevant to ambient aerosol and they may be important constituents in ambient aerosol. These studies utilize

advanced mass spectrometric techniques such as tandem mass spectrometry and high resolution mass spectrometry for the identification of organosulphates in SOA though none of the studies have provided quantitative information of organosulphates due to lack of authentic standards or surrogate compounds which are required for quantification. In this manuscript the authors have demonstrated a relatively simple method for the estimation of mass concentrations of total organosulphate in ambient aerosol. The quantification is achieved by subtracting the concentrations of inorganic sulphur species determined by ion chromatography from the concentration of total sulphur species determined by X-Ray fluorescence spectrometry. Using this method, the authors report that organosulfates contribute approximately 6 to 12% to total sulphur concentrations, indicating the significance of the organosulphates to summer-time rural ambient aerosol in K-puszta. This manuscript should be published in ACP after addressing several minor errors/comments as the method presented here will allow others to obtain quantitative information on the bulk organosulfates in ambient aerosol using a relatively simple approach.

Specific Comments

Page 6835 lines 5-7: It is not clear from the manuscript how the smoothing of the size distributions was performed to obtain Fig 2. Presumably, the authors have performed inversion of some kinds from the (S-total) and (S-sulfate + S-MSA) concentrations determined for each Berner impactor stage. This information should be given.

Page 6385 lines 13-16: It should be noted that semi-volatile carbonyls aren't the only compound group yielding organosulphates from reactive uptake, condensation or partitioning. In the case of beta-pinene organosulphates, recent work by Iinuma et al (2007b) has shown that beta-pinene oxide and pinanediol play an important role in organosulphate formation.

Citations

Following citations need to be corrected:

ACPD

8, S2856–S2858, 2008

Page 6827 line 12: Iinuma et al., 2004 should be Iinuma et al., 2007a.

Page 6828 line 15: Iinuma et al., 2007 should be Iinuma et al., 2007b.

Page 6834 line 20: Gao et al., 2006; Surratt et al., 2007 should be Gao et al., 2006; Surratt et al., 2007a; Iinuma et al., 2007ab.

Interactive comment on Atmos. Chem. Phys. Discuss., 8, 6825, 2008.

ACPD

8, S2856–S2858, 2008

Interactive Comment