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

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This study presents a useful approach to the estimation of the contribution of organosulfates to the organic mass in ambient fine aerosol. Organosulfates have recently received a lot of attention mainly because it is now possible to analyze them at the molecular level using advanced mass spectrometric (MS) techniques (i.e. tandem MS and accurate mass measurements using high resolution MS) based on electrospray ionization in the negative ion mode. In this respect, it is worth mentioning that the cited paper by Surratt et al. ES&T 2007 (title: Evidence for organosulfates in secondary organic aerosol) was selected by Thomson Scientific as the February 2008 fast breaking paper in the broad field of environment/ ecology, indicating that organosulfates are indeed a very actual topic (see: www.sciencewatch.com/dr/fbp/2008/08febfbp/). Meth-

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ods for the estimation of their contribution to the organic mass such as the one reported in the present study nicely complement the characterization efforts that are currently going on in different laboratories, both in Europe and the United States.

Detailed specific comments on this manuscript will be provided at a later stage. At present, I mainly would like to draw attention to the fact that not only semi-volatile carbonyl compounds result in organosulfate formation. Note that in the cited paper by Surratt et al. ES&T 2007 organosulfates are reported for isoprene and alpha-pinene secondary organic aerosol constituents containing hydroxyl or carbonyl groups. In the case of hydroxy compounds organosulfates are formed by esterification with sulfuric acid, while in the case of carbonyl compounds esterification occurs after gem-diol formation.

Chemical characterization data also recently became available for PM2.5 aerosol collected from K-puszta, the same site as for the present study, which show that the major organosulfates are sulfate esters of hydroxy compounds, including the 2-methyltetrols (MW 216), their nitrate derivatives (MW 261), and pinanediol nitrate derivatives (MW 295). With respect to organosulfates of carbonyl compounds, sulfate esters of the gem-diol form of the following compounds could be identified or were structurally elucidated: glyoxal (MW 156) and methylglyoxal (MW 170), which are photooxidation products of isoprene; and 2-hydroxy-1.4-butanedialdehyde (MW 200), which is structurally related to malic acid and likely arises through photooxidation of unsaturated fatty acids. Ref: Gómez-González et al. J. Mass Spectrom. 43, 371-382, 2008; published online 29 October 2007 in Wiley Interscience (www. Interscience.wiley.com); doi: 10.1002/jms.1329 This study should be cited.

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