



Stable carbon isotope ratio analysis of anhydrosugars in biomass burning source aerosol

X. F. Sang (1,2), I. Gensch (1), W. Laumer (1), B. Kammer (1), C. Y. Chan (2), G. Engling (3), A. Wahner (1), H. Wissel (4), and A. Kiendler-Scharr (1)

(1) IEK-8: Troposphäre, Forschungszentrum Jülich, Jülich, Germany (i.gensch@fz-juelich.de), (2) SunYat-sen University, Guangzhou, China, (3) National Tsing Hua University, Hsinchu, Taiwan, (4) IBG-3: Agrosphere, Forschungszentrum Jülich, Jülich, Germany

Compound specific isotopic measurements of levoglucosan, mannosan and galactosan were performed by employing ThermoDesorption – Two Dimensional Gas Chromatography – Isotopic Ratio Mass Spectrometry (TD-2DGC-IRMS). The $\delta^{13}C$ measured in a standard mixture showed good agreement with isotopic measurements of the bulk anhydrosugars, carried out by Elemental Analysis - Isotope Ratio Mass Spectrometry (EA-IRMS). Isotope ratios of levoglucosan, mannosan and galactosan from source samples, collected during combustion of hard wood, softwood and crop residues, were determined. $\delta^{13}C$ values of levoglucosan were found to vary between -25.6 and -22.2 ‰ being higher for the softwood samples. In this presentation, the observed $\delta^{13}C$ for levoglucosan will be compared to the carbon isotopic composition of the parent fuel, holocellulose. The potential of using compound specific $\delta^{13}C$ measurements of anhydrosugars for improved source apportionment will be discussed.