



Analytical method development for to analysis of polar organic compounds in sea spray particles and the oceans surface microlayer

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Seventy percent of the Earth's surface is covered by the ocean. As interface between ocean and atmosphere, a thin film, which is enriched in organic and inorganic matter, can be formed under special meteorological conditions. This film is only a few micrometers thick, but the biological, chemical and physical properties of this film significantly influence atmosphere-ocean interactions such a gas or particulate transport processes.

To clarify the chemical composition of polar organic compounds found in the ocean surface film, ocean surface layer samples from the Baltic Sea were analysed with different coupled techniques such as CE/ESI-MS, HPLC/ESI-TOFMS and GC/MS. Main classes of analysed polar compounds were amino acids, fatty acids, smaller carboxylic acids, carbohydrates, aldehydes/ketones and nitrogen containing organic compounds.

Analysis of the ocean surface layer samples is challenging due to the low concentrations of the target compounds, high salinity and complex matrix effects of the samples. In order to overcome such problems, sample pre-treatment techniques such as solid phase extraction (SPE) and dialysis were used. In this work, we discuss a strategy for the sample pre-treatment and analytical techniques as well as present a first result from the analysis of an ocean microlayer sampled from the Baltic Sea.

The analytical techniques being developed will also be applied to better understand the organic composition of marine aerosol particles.