Contribution ID: **164** Type: **keynote**

Ice surface chemistry studied by core level spectroscopy

Tuesday 9 January 2018 16:55 (45 minutes)

Ice surfaces play a major role in many environmental processes and heterogeneous chemical reactions in the atmosphere. The properties of ice surfaces under environmental and atmospheric conditions, in particular the presence of a liquid-like layer at the ice surface at temperatures close to the melting point, are still far from being understood. For instance, reported thicknesses of the liquid-like layer at temperatures close to the melting point vary widely. This might partly be due to the influence of adsorbates, which most likely alter the onset temperature for pre-melting. The interaction of trace gases with ice has also attracted considerable attention over the past decades due its relevance for atmospheric and polar chemistry. Core level spectroscopies such as X-ray photoelectron spectroscopy (XPS) and near-edge X-ray absorption fine structure (NEXAFS) spectroscopy are promising tools to investigate simultaneously the surface chemistry and premelting transition at ice surfaces. While NEXAFS is highly sensitive to small changes in the structural order at the ice surface, XPS is well suited for the characterization of the chemical composition of the ice surface, including the presence of adsorbates and reaction products. In this presentation we will discuss the current status of XPS and NEXAFS measurements of ice surfaces and give an outlook on future opportunities for core-level spectroscopy-based research of the heterogeneous chemistry of ice.

Significance statement

empty

Author: BLUHM, Hendrik (Lawrence Berkeley National Laboratory)

Presenter: BLUHM, Hendrik (Lawrence Berkeley National Laboratory)