

Surface Areas and Morphology of Thin Ice Films

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Abstract

Thin ice films formed by deposition from the vapor phase in a fast flow-tube reactor have been used to simulate polar stratospheric cloud surfaces in order to obtain laboratory data on uptake and heterogeneous reaction rates. Surface areas are determined from BET (Brunauer, Emmett, and Teller) analysis of gas adsorption isotherms. The results for ices prepared at 196 K or 77 K are consistent with previous data on thicker ice films. Environmental scanning electron microscopy is used to obtain particle sizes and shapes, and to investigate the morphology of the ices on borosilicate or silicon windows. In addition, the uptake of HCl on ice films prepared at 196 K is investigated. The results suggest that the layer model we have previously developed for analysis of uptake and heterogeneous reaction rates on ice films is valid. Detailed information will be presented at the conference.