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The Adsorption of HO2NO2 on Ice

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Nitrogen peroxides, such as peroxynitric acid (HO2NO2) act as reservoir for atmospheric NOx and HOx species and thus impact the oxidative capacity of the atmosphere. Mixing ratios of HO2NO2 in the range of 76 pptV have been measured in the upper troposphere. The presence of ice in cirrus clouds there may represent a major sink for HO2NO2, yet little is known about the partitioning to ice particles of this trace gas. In this study, the partitioning of HO2NO2 between the atmosphere and ice was investigated by coated wall flow tube experiments in the temperature range of -45 ℃ to - 20 ℃. The detection was done with a chemical ionization mass spectrometer, using SF6- as ionizing species, allowing for mixing ratios of HO2NO2 of around 2-3 ppbV during the experiments.
The temperature dependence of the equilibrium partitioning constant of HO2NO2 between air and ice was determined. The partitioning of HO2NO2 between air and ice is compared to the IUPAC recommendations for HNO3; the partitioning coefficients of HO2NO2 were found to be orders of magnitude lower than the ones for HNO3. The adsorption of HO2NO2 on ice proved to be fully reversible, as determined by desorption experiments. Further, the atmospheric implications are discussed.

Please list some keywords

HNO4

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