

Reaction Mechanism of Sea Salt Particle with NO₂

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Abstract

It was suggested that gas-phase chlorine and bromine species could be emitted from chloride and bromide in sea salt particle and play a role in tropospheric chemistry, particularly of the ozone depletion. Reaction of sea salt particle with NO₂ sufficiently goes on about 100% into droplet produced by deliquescence under high humidity condition. However solid particle of sea salt could be reacted with NO₂ under low humidity condition and the reaction conversion would be strongly depend on the humidity, morphology of particle and sea salt composition. In this study, we focus on the quantitative evaluation for reactions of the sea salt particle of NaCl and NaBr with NO₂ using electrodynamic balance (EDB) coupled with a Raman spectrometer. The changes in weight and the chemical composition of the single droplet were measured by following the DC levitation voltage applied to EDB and recording Raman spectra, respectively.