

Heterogeneous reaction of HO₂ radical: HO₂ uptake to aqueous and crystalline aerosols for NaCl and (NH₄)₂SO₄

Fumikazu Taketani[1]; Yugo Kanaya[1]; Hajime Akimoto[1]

[1] FRCGC/JAMSTEC

HO_x(OH+ HO₂) radical plays a central role in the tropospheric chemistry. HO₂ radical acts as a reservoir for HO_x radical and interconversion between OH and HO₂ radicals controls tropospheric chemistry. The total concentration HO_x radicals is determined by the balance of sources and sinks. Recently, the heterogeneous loss of HO₂ to aerosol presents a potentially important HO_x sink in the troposphere. However, there have been few studies for loss of HO₂ by aerosols. In this work, we reported the uptake of HO₂ radicals to submicron aerosol was measured using instrument of aerosol flow tube coupled to a laser induced-fluorescence technique at room temperature. Under low concentration of HO₂ (10⁸ molecules/cm³), aqueous and crystalline aerosols for NaCl and (NH₄)₂SO₄ were examined at various relative humidity(RH). Measured uptake coefficients on crystalline aerosols for NaCl and (NH₄)₂SO₄ were less than 0.01 and 0.05, respectively at RH 20%. On the other hand, measured uptake coefficients on aqueous aerosols for NaCl and (NH₄)₂SO₄ were 0.05 and 0.1, respectively at RH 45%. This is first report for HO₂ uptake to aqueous aerosol of NaCl.