

# **Aerosol-halogen interaction: Processing of secondary organic aerosols by naturally released halogens**

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The release of reactive halogen species from sea-salt aerosol offers a class of reactants for heterogeneous reactions of utmost importance. These heterogeneous reactions have been overlooked so far, although they may occur with internal and external mixtures of sea-salt aerosol and organic aerosol and organic matter in soil. Such reactions might constitute sources of gaseous organohalogen compounds or halogenated organic aerosol in the atmospheric boundary layer. Recent smog-chamber experiments in our laboratory demonstrate halogen release from salt-pans.

To study the interaction of organic aerosols with released halogen species, secondary organic aerosol (SOA) from  $\alpha$ -pinene, catechol and guaiacol was produced and characterized. Those aerosols were exposed to molecular halogens in the presence of UV/VIS irradiation and to halogens, released from simulated natural halogen sources like salt-pans or sea-salt aerosols, to study the halogen-SOA interaction process.

The heterogeneous reaction of reactive halogen species with those model aerosols leads to small reactive molecules like phosgene. Methyl groups (and possibly other C-H containing groups) on the aerosol particles are destroyed to form HCl and HBr. Also carbon-oxygen bonds are affected by the reaction with these halogens, and a significant formation of C-Br bonds could be verified in the particle phase.