

PROCESSING OF AEROSOLS

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Tropospheric aerosols containing organic material are subject to continuous processing. This presentation will highlight two areas where particle processing might be important and is linked to solution chemical processes. In the first part of the presentation results from studies indicating the production of condensation products from reactive carbonyl compounds in acidic particles will be reviewed and discussed. Several mechanisms have been suggested based upon studies from the laboratories of Kamens, Noziere, Puxbaum and others. Results from our own IfT aerosol chamber experiments will be discussed in this context. The meaning of the processes discussed in 'locking away' organic material originating from the gas phase and needs for further investigations will be treated.

In the second part of the contribution a combined field and modelling effort performed within the ongoing German atmospheric research programme AFO 2000 (projects FEBUKO and MODMEP) on aerosol-cloud interaction with special emphasis on the processing of organic particle constituents is presented and first results are discussed. Here, the chemical The complex aqueous phase radical mechanism CAPRAM 2.4 (MODAC mechanism) with the gas phase mechanism RACM has been coupled to a detailed microphysical model to describe aerosol-cloud interaction processes occurring in a cloud passage in the Thuringian forest. By means of SPACCIM (Spectral Aerosol Cloud Chemistry Interaction Model) simulations were carried out with an air parcel moving from the village of Goldlauter (luff site) to the Schmücke mountain top. The aerosol chemical composition in Goldlauter is initialized according to measurements made in Goldlauter within the joint project FEBUKO. Simulation results will be compared to measured data at the summit station.

An outlook on tropospheric aerosol processing research will be given.