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Cloud droplet activation and surface tension of mixtures of slightly soluble organics and inorganic salt

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Abstract. Critical supersaturations for internally mixed particles of adipic acid, succinic acid and sodium chloride were determined experimentally for dry particles sizes in the range 40-130nm. Surface tensions of aqueous solutions of the dicarboxylic acids and sodium chloride corresponding to concentrations at activation were measured and parameterized as a function of carbon content. The activation of solid particles as well as solution droplets were studied and particle phase was found to be important for the critical supersaturation. Experimental data were modelled using Köhler theory modified to account for limited solubility and surface tension lowering.

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