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The Applicability of Artificial Snow for Environmental Studies

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The freezing of aqueous solutions of most of the organic (and inorganic) compounds causes ice and solute molecules to separate. It results in their increased local concentrations in a liquid (or quasi-liquid) phase covering the ice crystal surface or residing in a limited volume, referred to as micropockets, at the boundary of solid ice. Contrary to this, a shock freezing preparation technique can produce artificial snow grains which grow freely without the physical restrictions. Recently we investigated the surface coverage of artificial snow grains by organic contaminants in relation to their surface self-association, diffusion, and bimolecular reactions. Our study revealed that hydrophobic organic molecules can be located on the surface of snow grains in associations rather than as isolated species even at very low concentrations. It is demonstrated that snow represents a readily available study matrix that can be used to emulate the natural chemical processes of trace contaminants occurring in natural snow and stratospheric cloud particles.

Please list some keywords

Ice; artificial snow; photochemistry; radical recombination; self-association.

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