SUBLIMATION TEMPERATURES OF ICES RELATED WITH CATASTROPHIC EVENTS

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Objects as those called TNOs (Trans Neptunian Objects) have ices as important constituents. Molecules as CH_4 or H_2O have been identified (see Barucci et al, 2006) and others as CO_2 (Satorre et al, 2006) have been suggested.

Catastrophic events can produce variations in temperature, causing volatile molecules sublime depending on the temperature that finally it is reached and the mixture of ices present in/on the object.

The ejection of sublimated molecules from the surface could dynamically be important. If the sublimated molecules are inside a fragment, the increase in pressure produced by the sublimation of volatile molecules can produce cracks and ejections or explosions into the fragments, producing additional breakage than that produced directly from the impact (see Holsapple & Housen,2007).

Our contribution will present some physical characteristics (measured in our laboratory) of ices present in objects of the Solar System.

References

Barucci, M.A., et al, 2006; Astronomy and Astrophysics, 455, 725.
Satorre, M.A., et al, 2006; International workshop "Trans Neptunian Objects. dynamical and physico-chemical properties", Catania (Italy).
Holsapple, K.A. and Housen, K.R., 2007; Icarus, 187, 345.