

Tuesday, March 11, 2008
POSTER SESSION I: ICE IS NICE: MOSTLY OUTER PLANET SATELLITES
6:30 p.m. Fitness Center

Porter S. B. Desch S. J. Cook J. C.

Micrometeorite Annealing of Outer Planet Icy Satellite Surfaces [#2102]

We examine the ability of micrometeorite impacts to anneal ice by transient deposition of heat on the surfaces of the satellites of Saturn, Uranus, and Neptune. We find this process to be more effective than amorphization by galactic cosmic rays.

Palguta J. Schubert G. Travis B. J.

The Role of Hydrothermal Circulation in the Evolution of Icy Satellites [#1370]

We investigate the role of hydrothermal processes in controlling the currently observed thermal and physical activity of both Enceladus and Europa.

McCarthy C. Cooper R. F. Goldsby D. L.

Dynamic Attenuation Measurements of Polycrystalline Ice at Planetary Conditions [#2512]

We use cyclic loading experiments to measure attenuation and explore the physical nature of mechanical dissipation in polycrystalline ice. Results show that direct measurements of $1/Q$ in ice are much greater than that predicted by a Maxwell rheology.

Barmatz M. Zhong F. Castillo-Rogez J. C. Engelhardt H. Sotin C.

Ice Response to Cyclic Loading for Low Stresses and Frequencies — Application to Icy Satellites [#2281]

We report on the first cycling loading experiments that we have performed on ice single crystals at frequencies approaching satellite tidal forcing frequencies.

Barmatz M. Johnson P. V. Castillo J. C. Choukroun M. Engelhardt H. Goguen J. D. Hays C. C. Hodyss R. Kanik I. Lane A. L. Mitchell K. L. Orzechowska G. E. Sotin C. Zhong F. Gonzalez B. Mielke R. Kargel J. S. Lopes R. M. C. Lunine J. I. Matson D. L. Neish C. Pappalardo R. T. Robshaw L. E. Smythe W.

New Experimental Facilities for Characterizing the Mechanical, Rheological, Thermophysical, and Chemical Properties of Icy Compositions with Application to Solar System Ices [#1950]

We present new facilities that offer the capability to experimentally determine the thermophysical, rheological, mechanical, and chemical properties of icy materials at cryogenic temperatures that are applicable to outer solar system objects.

Zhong F. Barmatz M. Englehardt H.

New Technique for Measuring Thermal Conductivity of Icy Materials Under Pressure [#2343]

We have developed a method for measuring the thermal conductivity of icy compositions simultaneously with compression measurements over a broad range of cryogenic temperatures and elevated pressures along the same heat flow direction.

Dalton J. B. III

Determination of Icy Satellite Surface Composition from Spacecraft Observations: Mission-Critical Cryogenic Laboratory Spectral Measurements [#2395]

Visible to near-infrared spectra of candidate surface materials, measured under appropriate conditions, are desperately needed in order to interpret spacecraft observations from missions to the icy bodies of the outer solar system.