

Thursday, March 10, 2011
POSTER SESSION II: ICY SURFACES AND INTERIORS
6:00 p.m. Town Center Exhibit Area

Stryk T.

[Recovering Lost Pioneer 10 and 11 Image Data: A Project Status Update](#) [#1267]

The digital scans of Jupiter and Saturn returned by Pioneers 10 (Jupiter only) and 11 have been mostly missing for some time. This poster will present the status of attempts to recover this dataset.

Marion G. M. Kargel J. S. Catling D. C. Lunine J. I.

[Modeling Ammonia-Ammonium Chemistries in the Outer Planet Regions](#) [#1220]

This abstract will add ammonia-ammonium chemistry to the FREZCHEM model and then explore the prospects for life on outer planet satellites.

Emery J. P. Grundy W. M. Lunsford A. Hibbitts C. A. Phillips C. B. Mastrapa R. M. E.

[New Horizons/LEISA Observations of the Icy Galilean Satellites](#) [#2163]

We present compositional characterization of the surfaces of Europa, Ganymede, and Callisto using data from the Linear Etalon Imaging Spectral Array (LEISA) on the New Horizons spacecraft, which flew through the Jupiter system in early 2007.

Dougherty A. J. Avidon J. A. Hogenboom D. L. Kargel J. S.

[Volumetric and Optical Studies of High Pressure Phases of Sodium Sulfate Hydrates with Applications to Europa](#) [#1242]

We use optical images of high-pressure phases of the Na₂SO₄-H₂O system, coupled with measurements of pressure, temperature, and volume changes, to report eutectic transitions for pressures up to 375 MPa, with implications for modeling Europa's ocean.

Myszka J. A. Mastrapa R. M. Curry A. S.

[Methanol and Methanol in Water: Exploring the Spectra](#) [#2561]

We have observed spectra of methanol and methanol in water ices at high (100 K) and low (15 K) temperature deposits in the near- to mid-infrared wavelength range (1–20 μm).

Shi J. Baragiola R. A.

[Suppressed Radiolysis of Hydrogen Peroxide in Water Ice-Hydrogen Mixtures](#) [#2681]

Inspired by the H₂O₂ formation process in water ice, we tried to enrich hydrogen in the ice films by growing an ice-H₂ mixture at low temperatures. Then study the H₂O₂ production under bombardment of 100 keV H⁺ with H₂ ambient pressures.

Curry A. S. Mastrapa R. M. Myszka J. A.

[Infrared Spectra of C₂H₆ and C₂H₆-H₂O](#) [#2690]

Spectra presented here show the shifts in bands of pure ethane, and a water ethane mixture in both the mid infrared, and overlap range.

Jamieson C. S. Noe Dobrea E. Z. Dalton J. B. Pitman K. M. Abbey W. J.

[Grain Size Effects on the Diffuse Reflectance Spectrum of Kieserite](#) [#2801]

Hydrated magnesium sulfate salts are considered to be important components of the martian and euroman surfaces. In order to model their distributions we spectrally investigate kieserite (MgSO₄•H₂O) and note the spectral difference at different grain sizes.

Cox R. Mikell T.

[Geomorphology of Chaos Areas on Europa](#) [#1128]

Large chaos areas have more complex boundary shapes than small ones. Chaos areas are strongly concentrated at low latitudes. Both observations match predictions for impact-penetration features.

Bunte M. K. Thompson D. R. Castaño R. Chien S. Greeley R.

[*Enabling Europa Science Through Onboard Feature Detection in Hyperspectral Images*](#) [#1888]

An automatic endmember detection algorithm applied to the Galileo NIMS catalog identified regions of interest over icy plains and dark linear features. Retrieved spectra captured the full range of diversity and at least one subtle anomaly for Europa.

Stillman D. E. MacGregor J. A. Barr A. C. Grimm R. E. Blankenship D. D. Winebrenner D. P.

[*A Foundation for Orbital Radar Sounding of Europa from New Measurements of the Broadband Dielectric Properties of Terrestrial Polar Ice Cores*](#) [#2193]

We combine new measurements of the temperature-dependent, broadband dielectric properties of terrestrial ice cores with three-dimensional thermomechanical modeling of the European ice shell, in order to improve constraints on the radar attenuation through the shell.

Blackburn D. G. Buratti B. J. Ulrich R. Mosher J. A.

[*The Directional Scattering Properties of Iapetus' Surface*](#) [#1217]

We calculated the phase integrals for the leading and trailing hemispheres of Iapetus and compared them to the geometric albedo of the surface using data from the Cassini VIMS instrument.

Galuba G. G. Denk T. Neukum G.

[*Analysis of Processes of Iapetus' Terrain Darkening*](#) [#1928]

In images of the trailing side of Iapetus, dark crater bottoms are common at low latitudes. The typical length of a drop-off in albedo is below Cassini ISS' resolution limit. To determine the threshold necessary for the process, we simulated different crater characteristics.

Bauer A. W. Cox R.

[*Hydrocode Modeling of Impacts at Europa*](#) [#1123]

Simulations using iSALE indicate that multiring basin Tyre could represent full crustal melt-through following impact of a 2-km impactor into 20-km crust; and further indicate that more energetic impacts could punch holes directly through the crust.

Korycansky D. G. Nimmo F.

[*Outer-Planet Satellite Survival During the Late Heavy Bombardment*](#) [#1283]

We carried out Monte Carlo simulations of outer planet satellite impacts during the interval associated with the late heavy bombardment. Several present-day satellites (Mimas, Enceladus, Hyperion, and Miranda) would have had low survival probabilities during such an event.

McKinnon W. B. Bland M. T.

[*Core Evolution in Icy Satellites and Kuiper Belt Objects*](#) [#2768]

The possible structures and compositions of icy satellite cores, including that of Titan, are carefully assessed.

Muro G. D. Nimmo F.

[*Modeling the Coupled Thermal and Orbital Evolution of Mimas*](#) [#1560]

If Mimas' current eccentricity is primordial, it implies that tidal dissipation has been small and that the interior has remained cold throughout its evolution. To investigate this scenario, we have modeled Mimas' thermal and orbital evolution.

Schenk P. M. Murphy S. W.

[*The Rayed Craters of Saturn's Icy Satellites \(Including Iapetus\): Current Impactor Populations and Origins*](#) [#2098]

Rayed craters DO exist on Saturn's icy satellites. We have mapped more than 100 of them on all the major saturnian icy satellites except Hyperion. They may tell us what the current impactor population is. See my presentation.

Wagner R. J. Neukum G. Wolf U. Schmedemann N. Denk T. Stephan K. Roatsch T. Porco C. C.

[*Bright Ray Craters on Rhea and Dione*](#) [#2249]

In this paper we discuss geology, stratigraphy and ages of bright ray craters on the saturnian satellites Rhea and Dione and constrain the origin of potential impactors.