Wednesday, March 14, 2007
ENCELADUS
1:30 p.m. Marina Plaza Ballroom

Chairs: **W. B. McKinnon**
T. A. Hurford

1:30 p.m. Castillo-Rogez J. C. * Matson D. L. Vance S. D. Davies A. G. Johnson T. V.
The Early History of Enceladus: Setting the Scene for Today's Activity **[#2265]**
We consider different possible scenarios, as functions of the initial conditions (composition, heat budget, etc.), leading to the formation and the long-term evolution of a rocky core inside Enceladus.

1:45 p.m. Bland M. T. * Beyer R. A. Showman A. P.
The Ancient Heat Flow and Elastic Thickness on Enceladus: Constraints from Photoclinometry and Numerical Modeling **[#1653]**
Comparison of photoclinometry with numerical modeling suggests that the heat flow in Diyar/Sarandib Planitia was 30–60 mW/m^2 at the time of their formation. These high heat flows are consistent with the former existence of a now-inactive diapir.

2:00 p.m. Barr A. C. * McKinnon W. B.
Can Convection Start in Enceladus' Ice Shell? **[#2325]**
Convection can start in the ice I shell of a differentiated Enceladus if the ice grain size is less than 1 mm, which may be realistic if non-water-ice impurities keep grains small.

2:15 p.m. Bills B. G. * Nimmo F.
Forced Obliquity Variations for the Major Satellites of Saturn **[#1770]**
We estimate forced obliquity variations for the seven largest satellites of Saturn, under the assumption that tidal dissipation has damped all initial conditions. Measurements of these angles will provide information about internal density structure.

2:30 p.m. Mitri G. * Showman A. P.
Tidal Dissipation in the Ice Shells of Enceladus and Europa **[#1785]**
To determine whether concentrated dissipation can occur in convective plumes of Enceladus and Europa, we develop a two dimensional model to compute the volumetric dissipation rate for a Maxwellian viscoelastic compressible material.

2:45 p.m. Collins G. C. * Goodman J. C.
A South Polar Sea on Enceladus? **[#1504]**
By considering the effect of internal melting, we can reconcile the shape of Enceladus with the anomalous south polar heat flow and a differentiated internal structure. Isolated seas may be stable for long time periods beneath the ice on Enceladus.

3:00 p.m. Roberts J. H. * Nimmo F.
Stability of a Subsurface Ocean on Enceladus **[#1429]**
We find that tidal heating in the core of Enceladus must be small and that a convecting ice shell is inconsistent with a liquid ocean in thermal equilibrium. We suggest that the south polar thermal anomaly is the result of a regional process.

3:15 p.m. Smith D. E. * Turtle E. P. Melosh H. J. Bray V. J.
Viscous Relaxation of Craters on Enceladus **[#2237]**
The reasons behind Enceladus' significant amount of geologic activity are still a mystery. By studying craters that have undergone different degrees of viscous relaxation, we can constrain Enceladus' subsurface rheologic and thermal properties.

3:30 p.m. Schenk P. M. * Moore J. M.
Impact Crater Topography and Morphology on Saturnian Mid-Sized Satellites **[#2305]**
New topographic mapping of Saturn's icy satellites reveal a wealth of detail. Relaxed impact crater topography is evident on Enceladus, Dione, and Tethys, but not the largest moons, Rhea and Iapetus. Central peaks up to 10 km high tower above surrounding plains.

3:45 p.m. Kirchoff M. R. * Schenk P. Seddio S.
Cratering Records of Enceladus, Dione and Rhea — Results from Cassini ISS Imaging **[#2089]**
We will present size-frequency distributions for selected regions of Enceladus, Dione, Rhea and Tethys, and discuss similarities and differences. Absolute ages and implications for geologic histories will also be presented.