Wednesday, March 15, 2006
MARS: VOLATILES AND INTERIOR
8:30 a.m. Crystal Ballroom A

Chairs: E. M. Parmentier
J. S. Kargel

8:30 a.m. Kargel J. S. * Rodruiguez J. A. P. Baker V. R.
Volatile-rich Upper Crust of Mars Constructed During the Impact Cataclysm **[#2052]**
A global Noachian crustal unit, several kilometers thick, consists of intercalated sedimentary rocks, impact breccia, volcanic rocks, and volatile condensation deposits produced during the impact cataclysm 3.8–3.9 billion years ago.

8:45 a.m. McGovern P. J. * Morgan J. K. Higbie M. A.
Structure and Evolution of the Olympus Mons Volcanic Edifice and Basal Escarpment, Mars **[#2329]**
Topographic profiles of Olympus Mons are compared to Distinct Element Method models of volcanic spreading, to evaluate the effects of spreading on the volcano's structure and to infer the spatially varying boundary conditions (i.e., high- or low-friction) at the base of the edifice.

9:00 a.m. Elkins-Tanton L. T. * Parmentier E. M.
Water and Carbon Dioxide in the Martian Magma Ocean: Early Atmospheric Growth, Subsequent Mantle Compositions, and Planetary Cooling Rates **[#2007]**
The volatile content of a magma ocean has significant effects on planetary evolution. Calculations are presented for water and carbon dioxide degassing to form a planetary atmosphere, cooling of the magma ocean, and subsequent mantle composition.

9:15 a.m. Johnson S. S. * Zuber M. T. Grove T. L. Mischna M. A.
Sulfur-related Greenhouse Warming on Early Mars **[#2094]**
We present a model for sulfur delivery to the early martian atmosphere and its potential warming effects. We obtain a high sulfur solubility in martian melts, ~1400 ppm, and find an up to 20K greenhouse effect due to sulfur-related absorption following large, discrete volcanic events.

9:30 a.m. Médard E. * Grove T. L.
Andesites in the Primitive Martian Crust: Products of Hydrous Melting? **[#1762]**
Experiments show that basaltic-andesitic and andesitic surface-types 1 and 2 could be explained by hydrous melting of the primitive Martian mantle and/or by hydrous fractional crystallization, but not by anhydrous magmatic processes.

9:45 a.m. Agee C. B. *
Static Compression of Hydrous Fe-rich Ultrabasic Liquid and Density Crossovers in the Martian Mantle **[#2147]**
High pressure sink/float experiments have been performed on a komatiite/fayalite liquid mixture with 5 wt% added H_2O in order to investigate the effect of water on magma density at high pressure and to determine if density crossovers can exist in a FeO-rich martian mantle.

10:00 a.m. Parmentier E. M. * Elkins-Tanton L. Hess P. C.
Melt-Solid Segregation and Fractional Magma Ocean Solidification with Implications for the Evolution of Mars **[#1995]**
Fractional solidification of magma oceans which can occur with efficient separation of solid and its residual liquid may significant influence longterm planetary evolution. We examine the retained melt fraction and how this depends on the rate of magma ocean solidification.