Friday, March 23, 2012
YOUNG SOLAR SYSTEM CATACLYSM
1:30 p.m. Waterway Ballroom 6

Chairs: **Catherine Corrigan**
Marc Norman

1:30 p.m. Norman M. D. * Nemchin A. A.
Heavy Bombardment of the Moon at ~4.2 Ga: Evidence from Ages of Lunar Melt Breccias and Zircons **[#1368]**
U-Pb ages of apatite and zirconalite in 67955 confirm an age of 4.2 Ga followed by a thermal overprint at 3.9 Ga. Lunar zircon ages imply episodic bombardment of the Moon between 3.8 and 4.4 Ga. Some lunar basins are likely older than 3.9 Ga.

1:45 p.m. Crow C. A. * McKeegan K. D. Gilmour J. D. Crowther S. A. Taylor D. J.
Are Apollo Zircons Witness to a Lunar Cataclysm? **[#1639]**
To investigate the proposed lunar cataclysm, we obtained preliminary U-Pu-Xe analyses for lunar zircons with Pb-Pb crystallization ages pre-dating the 3.9 Ga cataclysm. We find no contribution from ^{244}Pu and little or no contribution from ^{235}U.

2:00 p.m. Cohen B. A. *
The Vestal Cataclysm **[#1265]**
Heavy bombardment / Stoked the hearth of the goddess / Now frozen in time.

2:15 p.m. Abramov O. * Mojzsis S. J.
Modeling of Impact Ejecta Temperatures on the Earth and the Moon **[#2723]**
We model the thermal state of impact ejecta deposited on the surface to further understand the mechanism(s) behind impact-induced modifications of radiogenic systems. The ultimate aim of this work is to constrain the LHB duration and intensity.

2:30 p.m. Liu J. G. * Galenas M. G. Puchtel I. S. Walker R. J.
Late Heavy Bombardment of the Moon: Evidence from Os Isotope and Highly Siderophile Element Characteristics of Lunar Impact-Melt Breccias **[#2366]**
New HSE results for lunar impact melt breccias, in combination with previously published data, show the variable, chemical, and isotopic nature of impactors that contributed to basin-forming events on the Moon.

2:45 p.m. Robbins S. J. * Hynek B. M.
Impact History of Large Bolides at Mars: Implications for the Late-Heavy Bombardment and Isochron Uncertainties **[#1649]**
We have age dated 78 large craters and basins on Mars using multiple chronologies and found no evidence for a late heavy bombardment event since ~4.0 Ga on Mars. We also illustrate many of the internal disagreements between chronology systems.

3:00 p.m. Michael G. G. * Platz T. Kneissl T. Schmedemann N.
Planetary Surface Dating from Crater Size-Frequency Distribution Measurements: Spatial Randomness and Clustering **[#2486]**
We suggest the routine use of a spatial randomness analysis when making crater counts to ensure that the populations used for assessing ages or assessing the impactor flux are consistent with the uniformity and independence assumptions.

3:15 p.m. Richardson J. E. * Minton D. A. Thomas P. C. Kirchoff M.
Uncovering the Impactor Population for the Outer Solar System from Saturnian Satellite Cratering Records **[#2585]**
We use crater counts for seven saturnian satellites to constrain the outer solar system impactor population, showing the Kuiper Belt as the most likely source, and that impactor flux levels 2–3 decades higher than current are needed to model the records.

3:30 p.m. Minton D. A. * Richardson J. E. Thomas P. Kirchoff M. Schwamb M. E.
Combining Saturnian Craters and Kuiper Belt Observations to Build an Outer Solar System Impactor Size-Frequency Distribution **[#2669]**
Using Cassini mission imagery of the icy satellites of Saturn, numerical simulations, and telescopic observation data we produce a model size frequency distribution for outer solar system impactors spanning tens of meters to thousands of kilometers.

3:45 p.m. Nimmo F. * Korycansky D. G.
Impact-Driven Ice Loss in Outer Solar System Satellites: Consequences for the Late Heavy Bombardment **[#1580]**
The Nice model late heavy bombardment (LHB) was sufficient to completely strip Enceladus, Mimas, and Miranda of ice. Either these bodies formed after the LHB was complete, or the LHB delivered ~10 times less mass than the standard model.

4:00 p.m. *Panel Discussion*