Thursday, March 20, 2014 **[R401]**
PROTOLUNAR DISK AND MAGMA OCEAN:
MODELS AND SAMPLE CONSTRAINTS
8:30 a.m. Waterway Ballroom 1

Chairs: **Kaveh Pahlevan**
Erik Hauri

8:30 a.m. Burkhardt C. * Dauphas N.
Formation Scenarios of the Moon: The Message from Tungsten Isotopes **[#1433]**
From a W isotope perspective, making the Moon mainly out of impactor material is as likely as making it primarily out of proto-Earth mantle material.

8:45 a.m. Akram W. M. * Schönbächler M.
Constraints on the Zirconium Isotope Composition of Theia and Current Moon Forming Theories **[#2201]**
Identical Zr-isotope compositions for Earth and the Moon are used to place constraints on different giant impact models, and infer the composition of Theia.

9:00 a.m. Pahlevan K. * Morbidelli A.
The Lunar Inclination as a Dosimeter for Terrestrial Late Stage Accretion **[#2738]**
We identify a new mechanism to excite the lunar inclination and use the observed smallness of its value to set constraints on post-Moon-formation accretion.

9:15 a.m. Nakajima M. * Stevenson D. J.
Hydrodynamic Escape does not Prevent the "Wet" Moon Formation **[#2770]**
We suggest that the giant impact hypothesis is consistent with the "wet (water abundant)" Moon formation because hydrogen loss by hydrodynamic escape is minor.

9:30 a.m. Salmon J. * Canup R. M.
Lunar Accretion from Disks Produced by Non-Canonical Impacts **[#2768]**
We use a numerical model to investigate the accretion of the Moon from protolunar disks generated by non-canonical giant impacts.

9:45 a.m. Petaev M. I. * Jacobsen S. B. Huang S.
Testing Models of Moon Origin: Condensation of Impact-Vaporised Bulk Silicate Earth Material **[#2316]**
We extended thermodynamic database of the GRAINS code up to 5000 K and use it to model condensation of vapor generated by the Earth-Moon forming giant impact.

10:00 a.m. Huang S. * Petaev M. I. Jacobsen S. B.
Testing Models for the Origin of the Moon: Stable Isotopic Fractionation **[#2246]**
We explore the chemical and isotopic effects during condensation of a silicate atmosphere, and constrain the origin of the Moon.

10:15 a.m. Kleine T. * Kruijer T. S. Sprung P.
Lunar ^{182}W and the Age and Origin of the Moon **[#2895]**
We show that a small ^{182}W excess of the Moon requires a late formation of the Moon predominantly from terrestrial mantle material.

10:30 a.m. Sprung P. * Kleine T. Scherer E. E.
Evidence for a Common Initial $^{176}Hf/^{177}Hf$ of the Earth, Moon, and Chondrites **[#2821]**
Model ages from KREEP-rich rocks and Lu-Hf systematics of Hadean terrestrial and lunar zircons imply chondritic lunar and terrestrial bulk Lu-Hf parameters.

10:45 a.m. McLeod C. L. * Brandon A. D. Armytage R. M. G.
Constraints on the Formation Age and Evolution of the Moon from ^{142}Nd-^{143}Nd Systematics of Apollo 12 Basalts **[#1490]**
New high-precision Nd-isotope data for Apollo basalts are used to evaluate early lunar differentiation timescales and assess mare basalt source reservoirs.

11:00 a.m. Nyquist L. E. * Shih C-Y. Yamaguchi A. Mittlefehldt D. W. Peng Z. X. et al.
A Comparison of Anorthositic Lunar Lithologies: Variations on the FAN Theme **[#1125]**
We will report min-pet, in situ trace element studies, Nd/Sr-isotope studies, and Ar-Ar chronology of the 64435 anorthosite and troctolitic anorthosites.

11:15 a.m. Gaffney A. M. * Borg L. E.
Evidence for Magma Ocean Solidification at 4.36 Ga from ^{142}Nd-^{143}Nd Variation in Mare Basalts **[#1449]**
Neodymium-142 and ^{143}Nd isotopic compositions of mare basalts indicate that the mare basalt sources formed around 4.36 Ga.

11:30 a.m. Neal C. R. * Davenport J. D.
Trace Element Evolution of the Lunar Magma Ocean, the Origin of KREEP, and the Influence of Garnet **[#1181]**
The trace-element evolution of the lunar magma ocean to form KREEP is modeled to investigate if garnet is a primary crystallization product and is present in the mantle below 500 km.

11:45 a.m. Rapp J. F. * Draper D. S.
The Lunar Magma Ocean: Sharpening the Focus on Process and Composition **[#1527]**
We discuss experiments simulating lunar magma ocean crystallization, and their implications for lunar bulk composition and magma ocean crystallization processes.