

Thursday, October 22, 2015
IN SITU RESOURCE UTILIZATION
8:30 a.m. USRA Conference Center

*In Situ Resource Utilization is one of the key factors to a sustainable human spaceflight program.
 Concepts are presented, including the economic implications of ISRU.*

Chairs: Kurt Klaus
Rob Kelso

- 8:30 a.m. Taylor L. A. *
[Status of Lunar Regolith Simulants - An Update](#) [#2012]
 LEAG-CAPTEM Simulant Working Group performed a study of lunar simulants in 2010 at the instruction of NASA-NAC. However, it was lost in the gray literature. Improper simulants continue. A proposal will be put forth for a remedy to this enigma.
- 8:45 a.m. Miller C. E. * Wilhite A. Kelso R. Chevront D. McCurdy H.
[Economic and Technical Assessment of an Evolvable Lunar Architecture Leveraging Commercial Partnership](#) [#2005]
 PI will present results of NASA-funded economic assessment of an evolvable lunar architecture that leverages commercial partnership. Analysis suggests that a lunar industrial base to mine propellant can be established within NASA's existing budget.
- 9:00 a.m. Cordova S. * Delgado A. Shafirovich E.
[Fabrication of Construction Materials from Lunar and Martian Regolith Using Thermite Reactions with Magnesium](#) [#2029]
 The paper summarizes the results of studies on combustion of lunar and martian regolith simulants with magnesium conducted in 2010–2015 at the University of Texas at El Paso.
- 9:15 a.m. Kelso R. M. *
[Planetary Basalt Construction of a Launch/Landing Pad – PISCES Project Update](#) [#2002]
 Provide a briefing on the progress of a joint project between the PISCES and NASA to develop and demonstrate technologies associated with planetary robotic construction using basalt: called “Additive Construction with Mobile Emplacement” (ACME).
- 9:30 a.m. Lawrence S. J. * Stopar J. D. Jolliff B. L. Speyerer E. J. Robinson M. S.
[Lunar Surface Traverse and Exploration Planning: What Makes a “Good” Landing Site?](#) [#2074]
 As part of a campaign to determine landing site locations for science and ISRU activity, we develop a defensible morphometric envelope for landed missions using LRO data to analyze the morphometric parameters of historical lunar landing locations.
- 9:45 a.m. Thornton J. Huber S. Peterson K. Hendrickson D. *
[Astrobotic: Commercial Service for Lunar Resource Payload Delivery](#) [#2066]
 This paper describes how commercial delivery is enabling access to the Moon for resource payloads. Topics addressed: impediments to resource development, commercial approaches to delivering resource payloads, and traction seen with the market.
- 10:00 a.m. Cowley A. * Haefner T. Beltzung J. C. Meurisse A.
[Spaceship EAC – Fostering Activities Relevant to Lunar Exploration and ISRU](#) [#2037]
 This presentation would cover the Spaceship EAC initiative, which aims to foster activities within ESA that are relevant to future human spaceflight and lunar exploration. We present our work in the area of regolith processing to date.

10:15 a.m. West W. Heldmann M. Scull T. Samplatsky D. Gentry G. J. Duggan M. Klaus K. *
[Comparative Assessment of Delivering Consumable Resources Versus In-Situ Resource Utilization for Moon and Mars Habitats Life Support Systems](#) [#2020]

Life support consumables are a significant mass driver in human spacecraft and exploration surface habitats. Utilization of local resources could further reduce resupply needs. We quantify the resupply needs of habitats on the Moon and Mars.

10:30 a.m. DISCUSSION