

Monday, April 24, 2017
**ORIGIN AND EVOLUTION OF LIFE: PREBIOTIC CHEMISTRY:
 MINERALOGY AND THE ORIGIN OF LIFE**
 10:15 a.m. Arizona Ballroom A-C

**Chair: Steven Benner
 Elisa Biondi**

- 10:15 a.m. Hazen R. M. * Eleish A. Liu C. Morrison S. M. Keck Deep-Time Data Collaboration
[*Minerals and the Origins of Life: Insights from Big Data Mineralogy*](#) [#3090]
 Recent advances in “big data mineralogy” reveal trends in Earth’s mineralogy at the time of life’s origins.
- 10:30 a.m. Morrison S. M. * Liu C. Eleish A. Prabhu A. Fox P. Ralph J. Golden J. J.
 Downs R. T. Hazen R. M.
[*Mineral Network Analysis Applications in Comparative Planetology*](#) [#3214]
 Mineral network analysis visualization and statistical techniques applied to HED (Vesta) meteorites, martian meteorites, and lunar (Apollo) samples.
- 10:45 a.m. Hammer A. C. * Corbit B. C. Doloboff I. J. Barge L. M.
[*Mineralogy, Morphology, and Organic Modifications of Iron-Based Hydrothermal Chimney Simulants*](#) [#3036]
 Iron-based hydrothermal chimney simulants show compositional gradients, and some functionalized organic compounds become embedded within their walls.
- 11:00 a.m. Furukawa Y. * Nitta A. Kakegawa T. Benner S. A.
[*Clay Mineral Assists Borate to Stabilize Ribose*](#) [#3261]
 Our data shows that kaolinite does not interfere with the stabilization of ribose, but helps borate to stabilize ribose.
- 11:15 a.m. Biondi E. * Furukawa Y. Howell L. Benner S. A.
[*Interactions Between RNA and Minerals. Addressing the Next Paradox in the RNA First Model for the Origin of Life*](#) [#3088]
 Parallel adsorption experiments on natural and synthetic minerals revealed Periodic Table trends in the binding of RNA to carbonate and sulfate minerals.
- 11:30 a.m. Stephenson J. D. Popovic M. Bristow T. F. Ditzler M. A. *
[*Ribozyme Evolution in an RNA-Mineral World*](#) [#3562]
 Interactions between RNA and clay minerals may play an important role in the emergence of life. We use in vitro evolution to examine these interactions.
- 11:45 a.m. Sahai N. * Kaddour H. Dalai P.
[*Predicting Model Protocell Membrane Self-Assembly and Survival Based on Mineral Surface Chemistry*](#) [#3093]
 We found that model protocell membrane formation rates correlate with mineral surface charge. The relationship helps predict protocell survival on rocky worlds.
- 12:00 p.m. Mojzsis S. J. *
[*Evolved Crustal Melts in Dynamically hot Planetary Embryos: The First Felsic Minerals of the Solar System*](#) [#3392]
 What constraints can be made on the number and size of planetary embryos that produced granitic crusts and felsic minerals in the first 30 Myr of the solar system?
- 12:15 p.m. *Lunch*