

Monday, April 24, 2017

## SOLAR SYSTEM SITES: ICE AND OCEAN WORLDS:

## BIOCHEMICAL STRATEGIES FOR SEARCHING FOR SIGNS OF LIFE ON AND WITHIN OCEAN WORLDS

10:15 a.m. Arizona Ballroom E-G

**Chairs:** Andrew Pohorille  
Cynthia Phillips

- 10:15 a.m. Cronin L. \*  
[\*A Probabilistic Intrinsically Calibrated Framework for Recognizing Complex Molecules as Biosignatures\*](#) [#3520]  
We discuss the boundary of complexity and molecular weight above which it would be improbable for a substance to be created by simple sequences of reactions.
- 10:30 a.m. Hoehler T. M. \*  
[\*Biosignatures in the Context of Low Energy Flux\*](#) [#3556]  
Impacts of low energy flux on the nature, abundance, and quality of “biosignatures” are quantified.
- 10:45 a.m. Benner S. A. \*  
[\*Detecting Life Universally in Ocean Worlds, Icy Moons, and Enceladus Plumes\*](#) [#3105]  
A device, theory, and data to universally detect life in water, assuming only that Darwinism is needed for biology and a biopolymer is needed for Darwinism.
- 11:00 a.m. Hand K. P. \* Murray A. E. Garvin J. Horst S. Brinkerhoff W. Edgett K. Hoehler T. Russell M. Rhoden A. Yingst R. A. German C. Schmidt B. Paranicas C. Smith D. Willis P. Hayes A. Ehlmann B. Lunine J. Templeton A. Neelson K. Christner B. Cable M. Craft K. Pappalardo R. Hofmann A. Nordheim T. Phillips C.  
[\*Science Goals, Objectives, and Investigations of the 2016 Europa Lander Science Definition Team Report\*](#) [#3473]  
Results from the Europa Lander SDT Report will be presented.
- 11:15 a.m. Cable M. L. \* Postberg F. Lang S. Q. Aluwihare L. Huber J. Clark B. Spilker L. J. Lunine J. I.  
[\*Mechanisms for Enrichment of Organics in the Enceladus Plume\*](#) [#3639]  
About 3% of Enceladus plume particles are enriched in complex organics. Bubbles bursting, anoxic conditions, and/or nutrient accumulation might explain this.
- 11:30 a.m. Monroe A. A. \* Glein C. R. Anbar A. D. Shock E. L. Lunine J. I.  
[\*Amino Acid Destruction Considerations for In Situ Measurements of Enceladus and Other Ocean Worlds\*](#) [#3319]  
Detection of amino acids sensitive to destruction can indicate recent synthesis and contribute to construction of a chronology for a given temperature range.
- 11:45 a.m. Willis P. A. \* Mora M. F. Creamer J. S. Kehl F. Tavares da Costa E. Bramall N. Ricco A. J. Quinn R.  
[\*The State-of-the-Art in Capillary Electrophoresis and Microchip Electrophoresis Instrumentation for Ocean Worlds Missions Seeking Signs of Life\*](#) [#3425]  
We summarize the state-of-the-art in capillary-electrophoresis-based instrumentation and motivate how it can be used to search for biosignatures on ocean worlds.
- 12:00 p.m. Creamer J. S. \* Mora M. F. Willis P. A.  
[\*Enhanced Resolution of Chiral Amino Acids with Capillary Electrophoresis for Detection of Biosignatures in Extraterrestrial Samples\*](#) [#3739]  
Two capillary electrophoresis methods capable of resolving 17 chiral and achiral amino acids with detection limits down to 5 nM.
- 12:15 p.m. *Lunch*