

Wednesday, April 26, 2017

ORIGIN AND EVOLUTION OF LIFE: PREBIOTIC GEOCHEMISTRY:

ORIGIN OF LIFE: HYPOTHESIS I: SALT WATER (OCEAN VENTS)

10:15 a.m. Arizona Ballroom A-C

Chairs: Bruce Damer
David Deamer

- 10:15 a.m. McGown L. B. * Burcar B. T. Barge L. M. Russell M. J. Watson E. B.
[*Exploring Alkaline Hydrothermal Vent Environments for Abiotic RNA Polymerization*](#) [#3294]
Abiotic RNA polymerization was investigated in simulated hydrothermal vent systems formed under conditions consistent with our understanding of early Earth.
- 10:30 a.m. Barge L. M. * Steinbock O. Cartwright J. H. E.
[*Prebiotic Chemistry in Chemical Garden Structures at Hydrothermal Vents: The Importance of Gels and Gradients*](#) [#3477]
Chemical gardens form precipitates in gradients and contain gels within their interiors, providing environments suitable for prebiotic organic chemistry.
- 10:45 a.m. Sojo V. * Moeller F. McGlynn S. Nakamura R. Braun D.
[*Microscopic pH Gradients and the Potential for Carbon Fixation at Alkaline Hydrothermal Vents*](#) [#3263]
Challenges for the alkaline vent theory include whether multi-unit pH gradients remain at the microscale. We will show they do and implications for CO₂ fixation.
- 11:00 a.m. Herschy B. * Lim S. Whicher A. Camprubi E. Lane N.
[*A Route to Inorganic Carbon Fixation in Alkaline Hydrothermal Vents*](#) [#3276]
This looks at a prebiotic pathway for the reduction and fixation of inorganic carbon using a natural proton gradient found in alkaline hydrothermal vents.
- 11:15 a.m. Maurer S. E. * Monnard P.-A. Hanczyc M.
[*Vesicle Formation Under Ocean-Like Conditions from Prebiotically Plausible Amphiphiles*](#) [#3669]
We demonstrate the ability of simple amphiphiles to form bilayers in high ionic strength solutions using fluorescence microscopy along with other techniques.
- 11:30 a.m. Dalai P. * Ustriyana P. Sahai N.
[*Dissolved Magnesium as an Environmental Selection Pressure in Mixed Lipid Vesicles: Evolving Protocell Membranes to Modern Membranes*](#) [#3122]
Mg²⁺ selectively abstracts OA from mixed lipid (oleic acid, OA/palmitoylcholine, POPC) membranes thus relatively enriching the phospholipid.
- 11:45 a.m. Damer B. F. * Deamer D. W.
[*An Origin of Life in Terrestrial Fresh Water Hydrothermal Pools*](#) [#3220]
Chemical and geological evidence in support of an origin of life on land in fluctuating fresh water hydrothermal pools driven by hydration/dehydration cycles.
- 12:00 p.m. Van Kranendonk M. J. * Djokic T. Campbell K. A. Deamer D. Damer B. Walter M. R. Steller L. Ota T. Nakamura E. Tadbiri S.
[*An Origin of Life at Terrestrial Hot Springs: Support from Early Earth and Implications for the Search for Life on Mars*](#) [#3020]
An origin of life at terrestrial hot springs is supported by recent discoveries from an early Earth analogue in the Pilbara, with astrobiological implications.
- 12:15 p.m. *Lunch*