Abstract Submitted
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Could Life Originate between Mica Sheets? HELEN HANSMA, University of California at Santa Barbara — Muscovite mica has many advantages as a site for the origins of life. Some of these advantages are: A. Spaces between mica sheets serve as cell-like compartments. B. K^+ ions bridge Muscovite mica sheets, providing a high K^+ environment, as found in all living cells. C. Mica's hexagonal 0.5-nm clay crystal lattice is comparable to the length of the amino acids, sugars, and nucleotides that polymerize to form life's major biological macromolecules. D. Mechanical energy from mica sheets, moving in response to water flows and temperature changes, provide an endless energy source for forming chemical bonds, rearranging polymers, and blebbing off protocells in a primitive form of cell division. [1-3] How might fluid dynamics in the planar nanometer- to micron-high spaces between mica sheets affect the processes involved in the origins of life?

[1] Hansma, H G (2009) In *Probing Mechanics at Nanoscale Dimensions.* N. Tamura, A. Minor, C. Murray and L. Friedman.Warrendale, PA, Materials Research Society. **1185:** II03-15.
[2] Hansma, H G (2010) *Journal of Theoretical Biology* **266**(1): 175.
[3] Hansma, H G (2013) *J. Biol. Struct. Dynamics* **31**(8): 888.

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