

OLLI Winter 2020 Syllabus: *Life Makes Rock*

Mondays, 3:30-4:50 pm, Suite 201, M2 Bldg., 301 N. Neil St., Champaign, IL 61820

Instructor

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Overview

This expansively provocative and thoroughly unconventional course will consider a wholly new perspective on how the successful coevolution of Life and Earth (~4 billion years to date) has resulted from the natural combination of non-biological (*abiotic*) and biological (*biotic*) processes that were evolved to control the formation of crystalline mineral deposits (*rock and skeleton*). These **biomineralization** processes, in which **life makes rock** during Life-Water-Mineral interaction, are an essential, unavoidable and ubiquitously distributed force of nature at all scales of time and space. We will therefore see how biomineralization has profound practical implications for all of Life on the ancient and modern-day Earth, ranging from being the key to survival to the cause of extinction.

Week 1 - 01/27/2020: A review of the newly revised basics of scientific discovery, including scientific inquiry methodology, scales of time and space and geological time, and how these have revolutionized our understanding of the Universal Tree of Life.

Week 2 - 02/03/2020: Key biomineralization challenges facing global society in the sectors of energy recovery, environmental impact and change, and new frontiers in both space exploration and human medicine.

Week 3 - 02/10/2020: Mammoth Hot Springs as a window on the universe.

Week 4 - 02/17/2020: Geobiology of human kidney stones and dissolving them *in vivo*.

Week 5 - 02/24/2020: Unlocking the deep biosphere and its role in unconventional energy.

Week 6 - 03/02/2020: The last flow of water through the aqueducts of ancient Imperial Rome.

Week 7 - 03/09/2020: Coral reefs as silent sentinels of past and future climate change.

Week 8 - 03/16/2020: Universal Biomineralization – where do we go from here?

