iFAST: The International Forum on Advanced Environmental Sciences and Technology

A series of distinguished seminars by eminent scientists

8 a.m. CST; 9 a.m. EST; 2 p.m. GMT; 10 p.m. Beijing

Wednesday, Dec. 1, 2021

Donald E. Canfield

UNIVERSITY OF SOUTHERN DENMARK

https://portal.findresearcher.sdu.dk/en/persons/donald-e-canfield

D. E. Canfield is professor of ecology and Villum investigator at the University of Southern Denmark, having received a bachelor's degree in chemistry from Miami University in Oxford, Ohio, and a doctoral degree in geochemistry from Yale University. Canfield has worked at understanding the modern and ancient cycles of iron, sulfur, carbon and oxygen, and the interaction of these cycles with the evolution of life. His basic scientific approach is based on exploring modern ecosystems and organisms, including organismal physiology, in interpreting geochemical signals from the geologic record. He is a member of the National Academy of Sciences of the United States and a foreign member of the Royal Societies of Denmark and Sweden as well a fellow of the Geochemical Society, the American Association of Microbiology, American Geophysical Union and American Association for the Advancement of Science. Canfield recently was awarded the Vladimir Vernadsky Award from European Geosciences Union and the Urey Prize from European Association of Geochemistry as well as an Honorary Doctorate from the University of Poitiér. Recently Don was awarded the title Knight of the Dannebrog.

The Oxygen in Oxygen Minimum Zones

Oxygen depletion typifies deep waters of the global ocean, where in some instances, oxygen becomes depleted beyond our ability to measure it. In these instances, anaerobic nitrogen cycling leads to a globally important loss of fixed nitrogen as nitrogen gas. In other instances, oxygen is exquisitely poised at low levels, likely reflecting a quasi-stable state regulated by oxygen-dependent biological feedbacks. In the Bay of Bengal, and the outer edges of "anoxic" OMZs, the oxygen levels attained by these feedbacks place the nitrogen cycle at a tipping point, where small additional reductions of oxygen would lead to massive fixed-nitrogen loss. The nature of these feedback will control fixed nitrogen loss in a warming ocean undergoing expanding deoxygenation. I will also discuss a newly discovered microbial metabolism driving ammonium oxidation under "anoxic" conditions through non-photosynthetic microbial oxygen production. This metabolism bleads oxygen into the environment and reflects a novel source of N_2 production.

INSTITUTE FOR ENVIRONMENTAL GENOMICS *The* UNIVERSITY *of* OKLAHOMA

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Zoom webinar ID: 934 8142 2012 (https://zoom.us/j/93481422012)

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