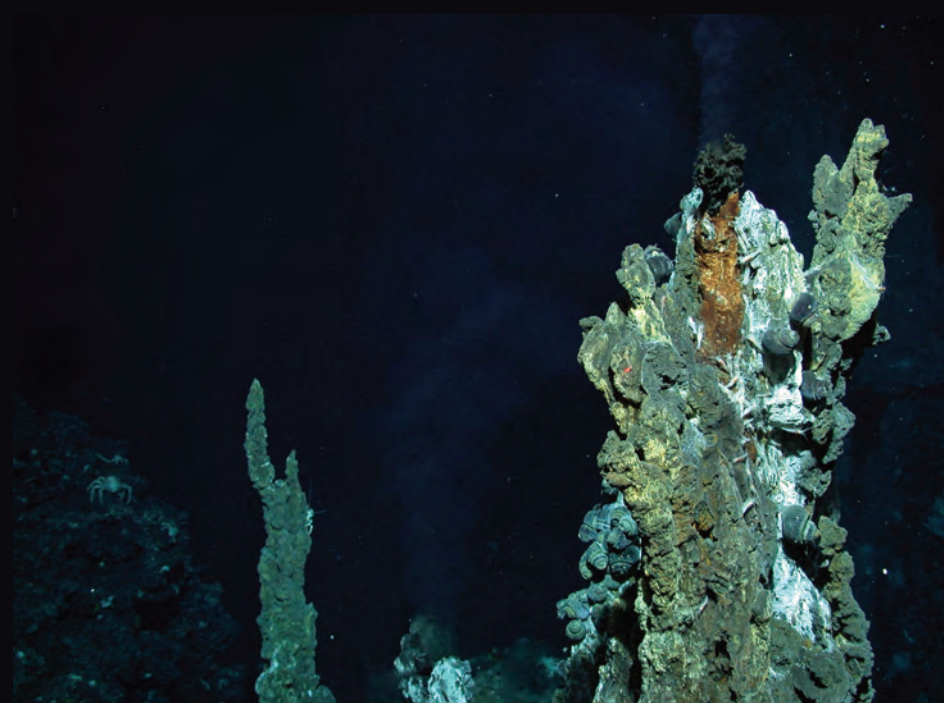


Brandy Toner

Ocean Science and Synchrotrons, a Multi-Modal Adventure

Hydrothermal venting occurs in every ocean basin on the planet. The physical and chemical gradients created by the mixing of ocean water with vent fluids creates dynamic changes in the chemistry of many biogeochemically important elements. Whether vents are net sources or sinks of elements in ocean budgets depends in large part on particle formation, reactivity, and transport properties. Hydrothermal vent particles have been shown to host microbial communities, and exhibit complex size distributions, aggregation behavior, and composition. In this talk, I will describe how a suite of complementary synchrotron radiation instruments in the soft-, tender-, and hard x-ray regimes with nano- and micro-meter focusing capabilities are changing our understanding of deep ocean biogeochemistry.



Brandy Toner is a Professor at the University of Minnesota-Twin Cities. As a low-temperature geochemist, Toner focuses on the solid-state chemistry of metals. In many ways, Toner's work is the materials science of messy (natural) materials. The context for Toner's research is metal speciation, mobility, bioavailability, and biosignature potential in a wide variety of environments, including the Earth's deep ocean and continental biosphere, as well as other ocean worlds. Toner has been recognized for excellence in science communication through a distinguished graduate teaching award and National Science Foundation lectureship. Toner earned a Ph.D. at the University of California-Berkeley and was awarded National Academies of Science Research Associate and a NASA Post-Doctoral Fellow funding for post-doctoral research at the Woods Hole Oceanographic Institution.

Wednesday, December 4, 2019 | 3:00 p.m.

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