

MONDAY! January 13th, 1:10pm in Johson Hall Room 204

Geomycology: metal and mineral transformations by fungi

Geoffrey Michael Gadd

Geomicrobiology Group, College of Life Sciences, University of Dundee, Dundee, DD1 5EH, Scotland, UK

Abstract: “Geomycology” can be considered a subset of “geobiology” and “geomicrobiology” and simply defined as the impact of fungi on geological processes. This includes weathering and transformation of rocks and minerals, accumulation of metals, and roles in element cycling. The filamentous chemoorganotrophic lifestyle underpins fungal activities and organic matter decomposition alone is fundamental to cycling of major elements (C, H, N, O, P, S) as well as all others associated with organic substrates. Mycorrhizas and lichens have significant geoactive properties and can determine plant productivity, and soil formation and development. The impact of geomycology on human society is profound. Many processes are of relevance to pollutant fate in the environment and metal and mineral biotransformations are important in bioremediation approaches, but also involved in the biodeterioration of metals, and rock- and mineral-based substrates, including historical artefacts and structural materials such as concrete. This presentation will survey our research on geomycology, particularly regarding examples of fungal roles in biodeterioration and transformations of rocks and metal-containing minerals, metallic lead, depleted uranium, uranium and manganese oxides, and fungal biodeterioration of concrete. The applied significance will be illustrated in the contexts of nuclear decommissioning, bioremediation, biofertilizers, and the biodeterioration of cultural heritage.

Bio: Geoffrey Gadd, PhD, holds the prestigious Boyd-Baxter Chair of Biology in the College of Life Sciences, University of Dundee, and has been full Professor of Microbiology since 1995, specializing in Geomicrobiology, Geomycology and Bioremediation. He is a pioneer in the field of metal-mineral-microbe interactions and recently received the Royal Society of Edinburgh Sir James Black Prize, as well as the Colworth Prize of the Society for General Microbiology for outstanding contributions to geomicrobiology. He is a Fellow of the Royal Society of Edinburgh, has won the Benefactor’s Medal and the President’s Award from the British Mycological Society, and the Charles Thom Award from the Society for Industrial Microbiology for contributions to applied microbiological sciences.

Please contact his host, Tarah Sullivan (t.sullivan@wsu.edu, 335-4837), if you would like to schedule a meeting with Dr. Gadd.