

KEYNOTE SPEAKER

Dr. Don Sparks

S. Hallock du Pont Chair

Chair, Department of Plant and Soil Sciences

Director, Center for Critical Zone Research

University of Delaware

Title of Presentation: *Shining Light on Biogeochemical Processes in the Earth's Critical Zone!*

Dr. Sparks is internationally recognized for his research contributions in the areas of: kinetics of soils chemical processes, surface chemistry of soils and soil components using in-situ spectroscopic and microscopic techniques. Dr. Sparks Environmental Soil Chemistry Laboratory focuses on how toxic metals such as arsenic (As), nickel (Ni), and zinc (Zn) and plant nutrients such as phosphorus (P) and sulfur (S) are bound (sorbed) on soils. His laboratory conducts these studies under different environmental and experimental conditions (pH, time, temperature, hydration state, presence of microbes) to best represent the natural environment. His research uses bright light sources generated at synchrotron facilities (associated with National Laboratories) to determine the forms (species) of the metals and nutrients in the soil at the molecular scale. This information is necessary to make accurate predictions about how easily the contaminant will leach into the water supplies, and determine its toxicity and bioavailability to plants, animals, and humans. His research also conducts speciation research on metal contaminated soils and on plants that accumulate large quantities of metals (hyper-accumulators). The results of these studies are useful in developing effective strategies for soil remediation.

Additional details of Dr. Sparks' research and teaching programs can be found at: <http://ag.udel.edu/plsc/faculty/sparks.htm>