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Donald L. Sparks is the S. Hallock du Pont Chair in Soil and Environmental Chemistry, Francis Alison Professor and Director of the Delaware Environmental Institute at the University of Delaware, USA. He is internationally recognized for his landmark research on the kinetics and mechanisms of contaminant reactions in soils and sediments. This research has led to effective soil remediation strategies and predictive models. He is the author of more than 300 refereed papers and book chapters and three textbooks. He is a Fellow of five international professional societies and recipient of numerous distinguished lectureships and awards. He served as President of both the Soil Science Society of America and the International Union of Soil Sciences.

Shining Light on Metal Speciation and Remediation of Contaminated Soils

Contamination of soils and waters with metals, oxyanions, radionuclides, nutrients, and organic chemicals, and their impact on environmental quality and sustainability, is a concern worldwide. Ideally, one wants to understand environmentally important reactions and processes in natural systems at multiple scales to accurately predict the fate, transport, toxicity, and bioavailability of contaminants. In recent years there have been major advances in applying novel analytical techniques, particularly those that employ bright light sources at synchrotron facilities, to directly speciate contaminants in natural systems. Such approaches have resulted in more effective remediation strategies. Their application will be discussed in this presentation.