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**Effects of Environmental Conditions on the Properties of Biogenic Manganese Oxides.**

**Mengqiang Zhu**, Sanjai Parikh, Matt Ginder-Vogel, and Donald L. Sparks. Plant and Soil Science and Center for Critical Zone Research, University of Delaware, 152 Townsend Hall, 531 South College Ave., Newark, DE 19716-2170

Due to their adsorption and oxidation abilities, Mn-oxides play very important roles in the transport, fate and bioavailability of heavy metal(loid)s, nutrients, and organic compound in the natural environment. Various microorganisms, including bacteria and fungi in the critical zone, have been found to mediate aqueous Mn(II) oxidation to form biogenic manganese oxides (BioMnOx). Microbially mediated BioMnOx are thought to be one of the major sources of manganese oxides in soils. Recent, studies have investigated the characteristics of BioMnOx in media or inorganic solutions, containing known concentration of Ca, Mg, uranium and copper etc., to determine the effects of environmental conditions on BioMnOx. In this study, we investigated the effect of pH on the structure, morphology and reactivity of BioMnOx produced by pseudomonas putida strain GB-1 using state-of-the-art analytical techniques, such as XAFS, XRD, ATR-FTIR and SEM, as well as conventional chemical analysis. Significant structural differences were observed, using XAFS, between BioMnOx formed under varying pH conditions. We also investigated the adsorption and oxidation capacities of these BioMnOx under different pH conditions.

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