# Grazing-Incidence XAFS and Long-Period Standing Wave Studies of Metal(loid) Sorption and Transformations at Mineral/Biofilm Interfaces. (S11-trainor194224-Oral)

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## Abstract:

The transport and chemical speciation of trace metals and metalloids in aquatic systems is strongly influenced by reactions at the mineral/solution interface. However, the sorptive properties of soil and sediment assemblages may be significantly different than that expected for pristine mineral phases due to the presence of biofilm surface coatings. Hydrated biofilms can form important sinks for the sequestration of dissolved metal (loids) through complexation by the biofilm matrix and localized precipitation within biofilm microenvironments. We have used long-period x-ray standing wave (XSW) measurements to investigate the partitioning of aqueous Pb and Se to model mineral surfaces in the presence and absence of biofilm surface coatings. The long-period XSW provides information on the spatial distribution of a particular element relative to the mineral surface, thereby allowing investigation of the relative reactivity of the components within these heterogeneous systems. The observed reactivity trend of the pristine mineral surfaces will be discussed in terms of surface structural models and compared with the results of our partitioning studies in mineral/biofilm systems.

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