Contribution ID: **266** Type: **Verbal**

Model compounds to understand bacterial surface functionality

Of the many factors that influence the transport of actinides in the environment, microorganisms remain among the least understood and most difficult to study. Through a multitude of interactions, bacteria can play a significant role in both the environmental mobilization and immobilization of actinides. This presentation will give an overview of the current status of the field that will be illustrated with example from the literature and with our studies to understand these interactions between a bacterial surface and heavy metal complexation. We are studying a class of single and multifunctional polyelectrolytes as model systems such as propionic acid, 3,3,3-trifluoropropionic acid, phosphoenol pyruvate (PEP), phosphonoacetic acid (PAA), and 3-phosphonopropionic acid (PPA). PEP, PAA, and PPA possess two bifunctional aliphatic organic ligands of different chain lengths, containing each one carboxyl and one phosphate functional group. We are reporting our complexation study of Cm(III) and Eu(III) by time-resolved laser fluorescence spectroscopy (TRLFS) with these ligands. The interactions between species of curium(III)/europium(III) and the various model ligands were investigated as a function of ligand concentration and pH. Thermodynamic stability constants and selected density functional calculations describing the energetically most likely complex configurations will be discussed.

Primary author: Prof. NITSCHE, Heino (UC Berkeley and LBNL)

Presenter: Prof. NITSCHE, Heino (UC Berkeley and LBNL)

Track Classification: Radionuclides in the Environment, Radioecology