



Contribution ID: 50

Type: Poster

## Sorption of Cadmium, Nickel, Caesium and Strontium to a Laterite Soil: Application of Linear Additive Model and Surface Complexation Modelling

*Wednesday, 19 September 2012 18:00 (1h 50m)*

Laterite soil obtained from Lagos, Nigeria was comprehensively characterised to determine the organic matter content, cation exchange capacity, surface area, and of mineralogical composition. The laterite was constituted mostly of Quartz (47.2 %), Kaolinite (42.6 %), Goethite (7.2 %), and hematite (2.1 %).

Batch sorption experiments for Cd, Cs, Ni & Sr to the laterite were performed from pH 5 to 9, and to a synthetic laterite soil prepared using commercially available analytical grade minerals. The individual sorption profiles of the metals with the pure minerals were obtained, as well as those of mixtures of the minerals in incremental complexity, a Linear Additive Model (LAM) has been used to calculate the theoretical Rds of the mixtures from the individual Rds. Potentiometric titrations of the solids were carried out to obtain log K values and proton exchange capacities, and these have been applied to surface complexation models (SCM) using the speciation software JCHESS, to predict sorption profiles.

The sorption profiles of the different metals with the natural and synthetic laterites have been compared to the profiles calculated with LAM and predicted with SCM. The sorption profiles obtained from the incremental complex mixtures allow for better understanding of differences between the experimental, calculated or predicted sorption profiles, if any.

**Primary author:** Mr ANJOLAIYA, Olanrewaju (Loughborough University, UK)

**Co-authors:** Dr EVANS, Nick (Loughborough Univeristy); Dr JAIN, Sneha Lata (Loughborough University)

**Presenter:** Mr ANJOLAIYA, Olanrewaju (Loughborough University, UK)

**Session Classification:** Poster Session

**Track Classification:** Radioactive elements in the environment, radiation archeometry and Health Physics