Hybrid Organic-Inorganic Derivatives of LDHs and Dodecylbenzenesulfonate: Preparation and Adsorption Characteristics. (S02-vance153334-Poster)

Authors:

- H.Zhao - *University of Wyoming*
- Y.You - *University of Delaware*
- G.F.Vance - *University of Wyoming*

Abstract:

Contamination of surface and ground waters by hazardous organic solvents such as trichloroethylene (TCE) and tetrachloroethylene (PCE) threaten the quality of drinking water supplies. Remediation of contaminated sites requires development of adsorbents that can effectively retain organic solvents. We studied the use of layered double hydroxides (LDHs) materials and calcined derivatives (e.g., heated LDH) for their ability to adsorb the anionic surfactant, dodecylbenzenesulfonate (DBS). Results indicate adsorption data conformed to a simple Langmuir equation with maximum adsorption of DBS by calcined-LDH. From x-ray diffraction analysis of organo-LDHs, DBS was found to be intercalated into LDHs with the monolayer DBS molecules oriented perpendicularly to LDH surfaces. Adsorption capacities of organo-LDHs for TCE and PCE were substantially greater than the original LDH materials and was considered due primarily to partitioning mechanisms. Results suggest organo-LDHs are effective adsorbents for removing organic solvents from aqueous solutions, suggesting these materials should be studied further in meso- or field-scaled experiments.

Corresponding Author Information:

George Vance
University of Wyoming
Department of Renewable Resources
Laramie, WY 82071-3354

phone: 307 766-2297
fax: 307 766-6403
e-mail: gfv@uwyo.edu

Presentation Information:

Presentation Date: Wednesday, November 13, 2002
Presentation Time: 2:00-4:00 pm
Poster Board Number: 1419

Keywords:

Anionic Clay Adsorbents, Contaminant Remediation, Organo-clay Complexes, Hydrophobic Sorption