Journal of Chemistry

Special Issue on

Mobilization Dynamics through Contaminant Entrapment at Solute-Sorbent Interface

CALL FOR PAPERS

Environmental hazards derived from toxic pollutants are increasingly being reported from Acid Mine Drainage (AMD), riparian corridors, agricultural fields, industrial land use systems, and municipal waste sites. Each of these sources has the potential to pose a serious threat to complex ecosystem structure. In most cases, the contaminants are naturally attenuated through interaction with geosorbents and potential sorbents, for example, Fe(II)/Fe(III)-oxyhydroxides. Interactions at the sorbent-solute interface cause electron transfer processes that strongly control the oxidation-reduction behavior of pollutants, as well as sorbent elements, such as oxidation of As(III) through interactions with Fe(III)-rich sorbents. Furthermore, these electron transfer processes also control the toxic element release of pollutants via the phase transformation of the sorbent phase (e.g., reduction of As containing ferrihydrite causes the release of As into solution upon phase transformation of ferrihydrite into a more thermodynamically stable crystalline phase). Understanding these microscale processes provides strong insights on entrapment mechanisms and electron transfer dynamics at the solute-sorbent interface, which substantially differ depending on the nature of sorbents and contaminants.

This special issue is focused on research that examines solute-sorbent interaction processes and the mechanisms of toxicant entrapment from the micro- to nanoscale level. We invite high-quality scientific contributions in this broad area of research that has the potential for wide social and environmental implications. Novel research contributions and recent developments from authors to this special issue are strongly encouraged. We also appreciate contributions involving a wide distribution of natural sorbents including but not limited to Fe-sulfates (e.g., jarosites), Fe-Sulfides (e.g., pyrite), Fe(II)/Fe (III)-oxyhydroxides (e.g., magnetite, green rust), and Mg-Al-oxyhydroxides (e.g., gibbsite, barite, brucite, and hydrotalcites).

Potential topics include, but are not limited to:

- Process interactions of toxic pollutants such as arsenic, selenium, mercury, lead, zinc, and chromium
- The role of natural, synthetic, and industrial sorbents
- Influence of potential minerals such as Fe-oxyhydroxides on contaminant retention
- Electron transfer mechanisms such as redox state interchanges through XAS or XPS techniques
- Identification of micro- to nanoscale morphological and structural changes on solute-sorbent interactions through SEM, TEM, and EPMA techniques
- Attenuation kinetics and equilibrium-natural versus experimental observations
- Mineralogical transformations or stability during solute-sorbent interactions
- Interlayer formations and their role on electron transfer and redox stability
- Synthesis of potential minerals and their application for contaminant entrapment

Authors can submit their manuscripts via the Manuscript Tracking System at http://mts.hindawi.com/submit/journals/jchem/environmental.chemistry/mdce/.

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