Modeling of column experiments – Influence of glass micro balls

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Our paper is focused on modeling of a laboratory experiment using the software package The Geochemist's Workbench. We simulate a column experiment in which water solution flows trough a porous soil. The subjects of our interest are the interactions between water solution and porous soil. In some in-situ decontamination technologies, sinking-in reagents are used to be used. Column experiments are important for preparation and verification of such decontamination activities.

To verify the experiment configuration we decided to begin with the simplest case of the column experiment: the flowing water solution is pure distilled water and the porous medium is inert glass micro balls. Even in such a simple experiment we could observe unexpected change of pH of water solution after passage through the column. We try to understand this observation and simulated in mentioned software.

The results of the study will be presented.

Platinum group minerals (PGM) in chromite lode deposits from the Sulawesi ophiolite belt

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Some localities in Indonesia including Borneo and Sulawesi host PGM-bearing podiform (ophiolite)-type chromitites. Borneo is the locality type of two platinum group minerals (PGM), the rare vincentite and laurite, the most common Ru minerals. These PGM have been found in placers, however, data on the occurrence of PGM in lode deposits of Indonesian Archipelago are very poor. We present a mineralogical investigation on lode chromite deposits and associated PGM from the Sulawesi ophiolite belt. The investigated chromitites were sampled in the South and Southeast Arms of Sulawesi. According to the #Cr (0.51-0.88), in both the localities chromite composition varies from Cr-rich to Al-rich. TiO_2 is low in the Southeast Arm chromitites (0.07-0.28 wt%), whereas in the South Arm chromitites its values are comprised between 0.08 up to 0.55 wt%. Small PGM, 1 to 10 μm in size, have been found in both the localities and in Cr- and Al-rich chromitites. The most abundant PGM is laurite that occur included in fresh chromite or in contact with chlorite along cracks of the chromite. Laurite forms polygonal crystals and it occurs as single phase or in association with amphibole, chlorite, Co-pentlandite, apatite and other PGM. Small grains of irarsite (less than 3 μm) have been found associated with small blebs of awaruite and Co-pentlandite in the chromite gangue composed of chlorite. One grain (2 μm in size) containing Ru and Fe was found in the rim of a laurite occurring with Co-pentlandite in the chromite crack, filled with chlorite. The results suggest that the studied chromitites could have crystallized from different melts varying in composition from MORB formed in back-arc setting (Al-rich) to boninites related with subduction zone (Cr-rich). The bimodal composition and the anomalous enrichment in TiO_2 observed in some chromitites, may also indicate vertical zoning due to the fractionation of a single magma batch during its ascent, implying accumulation of Cr-rich chromitites at deep mantle levels and formation of the Al-rich ones close to the Moho-Transition Zone. All the laurite are considered to be magmatic in origin, i.e. entrapped as solid phases during the crystallization of chromite. Irarsite possibly represents a low temperature exolution product.