

## Sorption of metals and metalloids on synthesized Mg-Fe layered double hydroxides and mixed oxides

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Mg-Fe layered double hydroxides (especially mixed oxides prepared by thermal treatment of these materials) are highly effective materials for a stabilization of oxyanions, but there are only few studies based on cation sorption [1]. This study is focused on the stabilization of environmentally relevant metal(loid)s (such as Cd, Pb, Zn and As). Mg-Fe layered double hydroxides occur in the nature and they can be also relatively easily and economically synthesized in a laboratory by a co-precipitation method [2].

The objective of the study is to prepare an efficient stabilizing amendment that can be subsequently used for the stabilization of metal(loid)s in contaminated soils. Therefore, batch experiments will be performed to determine adsorption kinetics and adsorption isotherms. The content of metal(loid)s in the solution will be determined using ICP-OES and results will be mathematically modelled (pseudo-first or second rate kinetic models and Langmuir or Freundlich adsorption isotherms). The analysis of the solid phase (by XPS, XRD, SEM/EDS and BET) is necessary to describe the adsorption mechanism in the context of surface functional groups. Furthermore, the effect of pH on a stability and adsorption properties of Mg-Fe layered double hydroxides and mixed oxides will be studied.

[1] Liang et al. (2013) *Colloids and Surfaces A: Physicochem. Eng. Aspects* **433**, 122-131. [2] Goh et al. (2008) *Water Res.* **42**, 1343-1368.