

## Probing redox potential of clay minerals using organic contaminants

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Structural iron in the clay minerals layer is redox-active [1]. The ubiquity of clay minerals in soils makes this characteristic important for environmental science, especially for the fate of contaminants. Indeed, the degradation of many organic contaminants is controlled by redox reactions [2]. However, the quantification and prediction of these transformations through redox reactivity with clay minerals are hindered by a lack of a mechanistic redox reactivity model that couples layer structure information with the redox state.

In this study, we build up a laboratory experiment in anoxic condition in which we observe the interaction between reduced nontronites with different starting Fe(II)/Fe(tot) ratio and redox active organics contaminants 2'-nitroacetophenone. The redox speciation of the organics is determined by aqueous concentration measurements using UV Vis Spectroscopic. Once a steady state is reached, measured concentrations were used to determine an Eh value, which was assumed to be in equilibrium with the mineral layer Fe(II)/Fe(tot) ratio. By comparing these results with redox potential values obtained with other methods in the literature, we aim to build a thermodynamic redox reactivity model which correlates with the structural parameters of clay minerals.

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