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Acid production by $FeSO_4 \cdot nH_2O$ dissolution: Comment

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ABSTRACT

Dissolution of natural and commercial melanterite generates a significant decrease in pH that is not thermodynamically explained by Fe^{2+} hydrolysis. It has been recently proposed that the production of acidity is actually caused by hydrolysis of Fe^{3+} occurring in trace amounts in melanterite. Following this finding, the experiments of melanterite dissolution previously conducted by the author have been reviewed and modeled with PHREEQC. Without invoking oxidation of Fe^{2+} to Fe^{3+}, modeling results indicate that the amount of Fe^{3+} needed to significantly decrease solution pH is low (0.16–0.20 wt%) and already contained in melanterite in the form of contaminant.

Keywords: Melanterite, dissolution, acidity, modeling