
The Formation of Hematite from Amorphous Iron(III)Hydroxide

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Abstract: The formation of hematite from amorphous Fe(III)hydroxide in aqueous systems at pH 6 and 70° C, both with and without oxalate, was followed by kinetic measurements, electron microscopy, i.r. spectroscopy and thermal analysis.

In the absence of oxalate, small amorphous particles coalesce into aggregates which eventually become single crystals of hematite. When oxalate is present, crystal growth is much faster and does not proceed through the intermediate stage of aggregation. Aggregates, when formed, consist of groups of single crystals. It is suggested that oxalate accelerates the nucleation of hematite crystals by acting as a template, the Fe-Fe distance in Fe-oxalate ions being similar to that in hematite.

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