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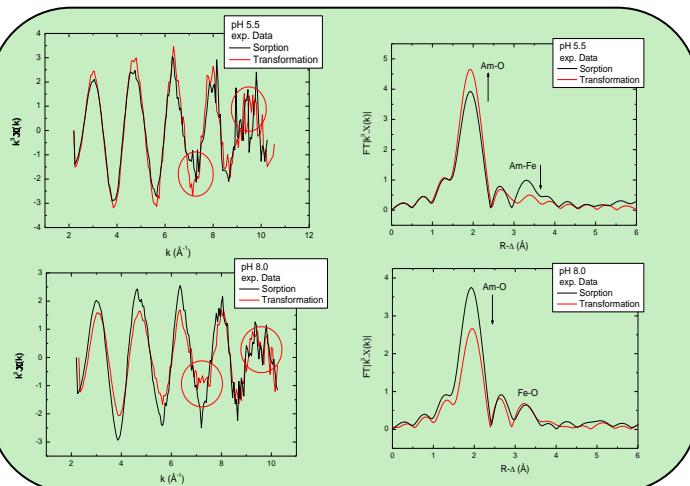
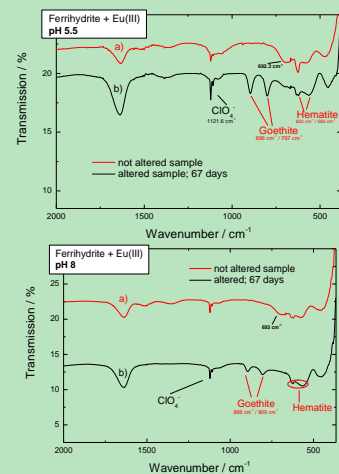
Sorption of Am(III) onto 6-line-Ferrihydrite and its Alteration Products: Investigations by EXAFS

Introduction

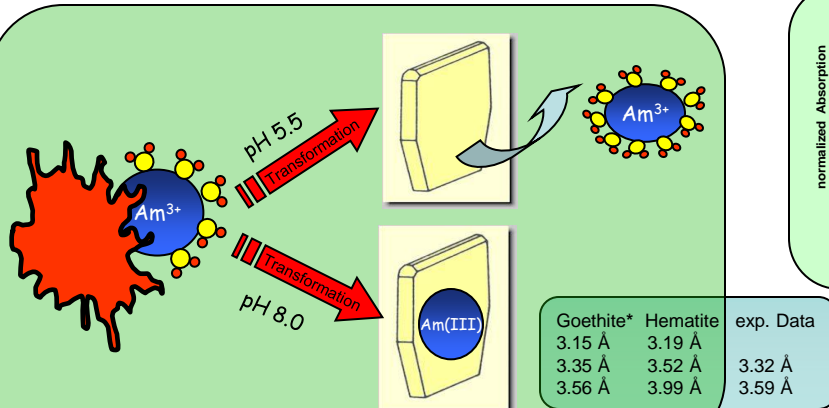
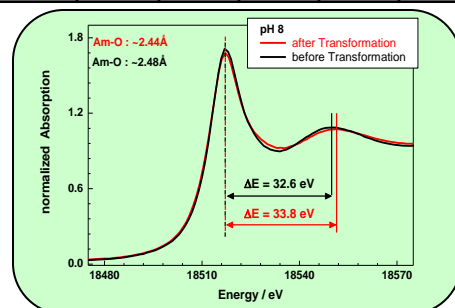
For the long-term performance assessment of nuclear waste repositories, knowledge concerning the interactions of actinide ions with mineral surfaces is imperative. The mobility of released radionuclides is strongly dependent on the sorption/desorption processes at mineral surfaces [1] and their incorporation into the mineral frame [3]. Hydrated iron oxides (ferrihydrite) are globally of great importance in the environment.

Upon heating pure ferrihydrite converts to crystalline goethite and hematite [4]. In the presence of di- or trivalent metal ions the transformation is affected leading to the promotion of one crystal formation over the other and incorporation of these ions [5,6]. This study deals with the question if released Am(III) can be immobilized by sorption onto 6-line-ferrihydrite. Moreover it is studied what happens if ferrihydrite transforms to a more crystalline phase.

TRANSFORMATION



Sample	Shell	R [Å] ^a	N ^b	σ ² [Å ²] ^c	ΔE ₀ [eV] ^{d,e}
Am/Ferrihydrite pH 5.5	Am-O	2.480(5)	6.3(9)	0.0084	-2.73°
	Am-Fe	3.70(2)	1.0 ^c	0.0046	5.47°
Am/Ferrihydrite pH 8	Am-O	2.478(3)	6.1(5)	0.0086	-2.73°
	Am-Fe	3.69(2)	1.0 ^c	0.0112	5.47°
Am/Goethite pH 5.5 transformed	Am-O	2.478(3)	7.2(6)	0.0079	-2.73°
	Am-Fe	3.75(3)	0.3(1)	0.0020 ^c	5.47°
Am/Goethite pH 8 transformed	Am-O	2.466(4)	4.1(4)	0.0081	-2.73°
	Am-Fe	3.59(1)	4.4(8)	0.0200 ^c	2.28
		3.32(1)	1.4(3)	0.0108	2.28



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