

Supplementary Data

Table S1 Hyperfine parameters of room temperature Mössbauer spectra for the untreated and treated bare maghemite. The site labelled broad is poorly crystalline, with a broad distribution of B_{hf} , the standard deviation of the Voigtian being 3 T.

Sample	Heating time	Phase	Site	B_{hf} (T)	δ (mm s^{-1})	QS (mm s^{-1})	Area (%)
Untreated maghemite	nil	$\gamma\text{-Fe}_2\text{O}_3$	A	47.4(1)	0.17(1)	-	33
			B	47.6(1)	0.46(1)	-	41
			broad	43.5(3)	0.55(1)	-	26
Microwaved bare maghemite	60 s	$\gamma\text{-Fe}_2\text{O}_3$	A	49.6(1)	0.20(1)	-	38
			B	49.8(1)	0.45(1)	-	39
			broad	45.8(2)	0.36(1)	-	22
	180 s	$\alpha\text{-Fe}_2\text{O}_3$	A	52.1(1)	0.38(1)	-0.10(1)	100

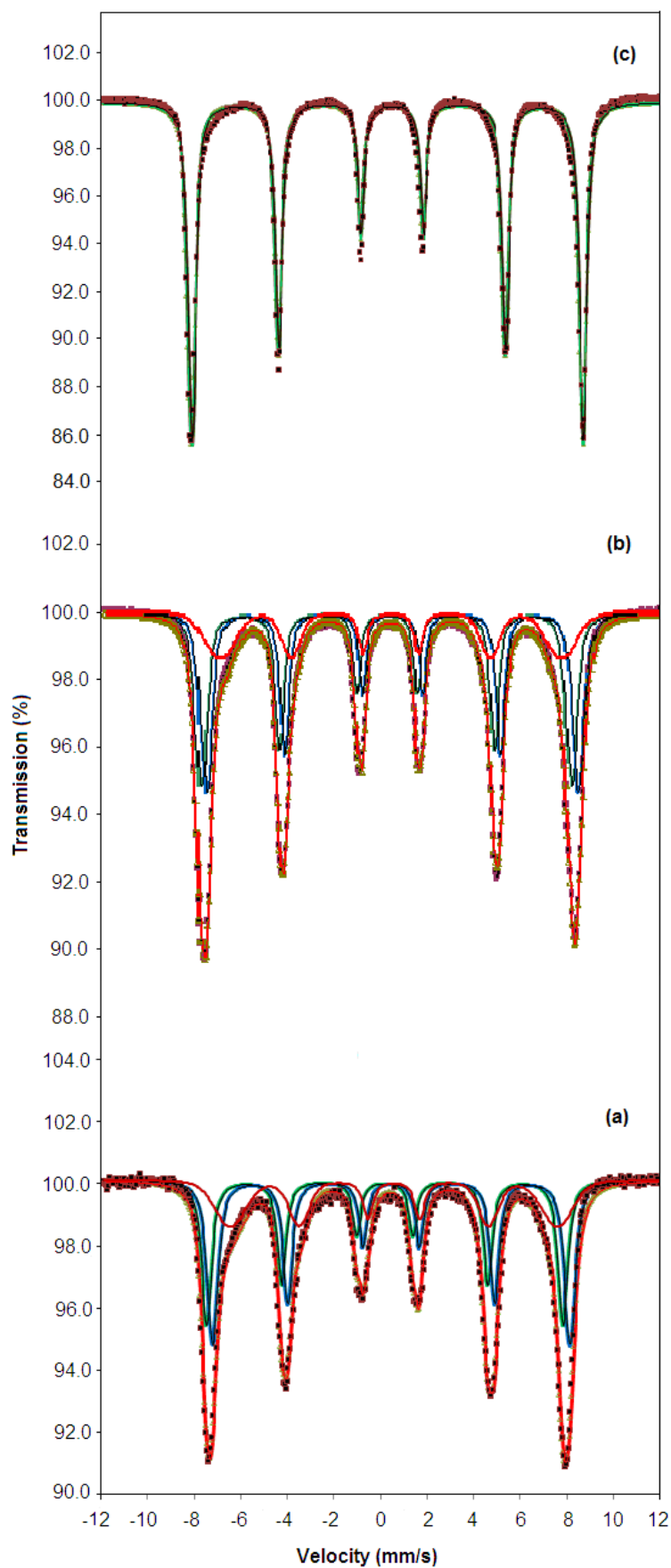


Figure S1. Room temperature Mössbauer spectra of (a) original bare maghemite prior to and after microwave heat treatments for (b) 60 s; (c) 180 s.