Electronic Supplementary Information

Contrasted redox-dependent structural control on Fe isotope fractionation during its adsorption onto and assimilation by heterotrophic soil bacteria

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Table ESI-1. Summary of experimental conditions for Fe adsorption onto and assimilation by *P. aureofasciens* (4 g_{wet}/L) in 0.01M $NaNO_3$ at different pH and with different Fe sources. $[Fe]_{aq}$ and $[Fe]_{fin}$ represent the initial and final iron concentration in solutions. The adsorbed and assimilated Fe are represented by $[Fe]_{ad}$ and $[Fe]_{as}$, respectively. The $SI_{goethite}$ is a saturation index with respect to goethite. AS and SP stand for EPS-poor and EPS-rich cultures, respectively. *Represents AS with 10% of Phosphate.

Name	Type of sample	Fe source	Media	pH end	$[Fe]_{aq}$ mg/L	$[Fe]_{fin}$ mg/L	$[Fe]_{ad}$ or $[Fe]_{as}$, mg/L	% $[Fe]_{ad}$ or $Fe]_{as}$	$SI_{Goethite}$
Adsorption Experiments (3 h)									
EPS-rich-2	Biomass/ Solution	$FeCl_3$	SP	4.0	3.3	1.15	2.15	65	4.7
EPS-poor-3	Biomass/ Solution	$FeCl_3$	AS	4.0	3.3	1.10	2.2	67	4.7
EPS-rich-4	Biomass/ Solution	$FeCl_3$	SP	5.5	3.3	0.66	2.6	80	6.4
EPS-poor-5	Biomass/ Solution	$FeCl_3$	AS	6.0	3.3	0.50	2.8	85	6.9
EPS-poor-1	Biomass/ Solution	$FeCl_3$	AS	2.0	3.3	1.0	2.3	70	0.57
EPS-poor-2	Biomass/ Solution	$FeCl_3$	AS	2.8	3.3	1.3	2.0	60	2.5
EPS-rich-3	Solution	$FeCl_3$	SP	4.6	3.3	1.04	2.3	69	5.5
EPS-poor-Fe2	Solution	Fe(II)-ammonium sulfate	AS	4.9	20	17.7	2.3	11.5	-5.9
Assimilation Experiments (48 h)									
EPS-rich-4	Solution	Fe(III)-citrate	SP	7.2	93	71	22	24	9.6
EPS-rich-5	Biomass/ Solution	Fe(II)-lactate	SP	7.1	20	5.07	14.9	75	-3.7
EPS-poor-6	Biomass	Fe(II)-lactate	AS*	7.5	20	5.02	15.0	75	-3.3
EPS-poor-8	Biomass	Fe(III)-citrate	AS	7.1	47	21.5	25.5	54	9.2
EPS-rich-6	Biomass	$FeCl_3$	SP	7.2	2	0.75	1.25	63	7.9
EPS-rich-7	Biomass	$FeCl_3$	SP	7.2	5	4.2	0.8	16	8.4

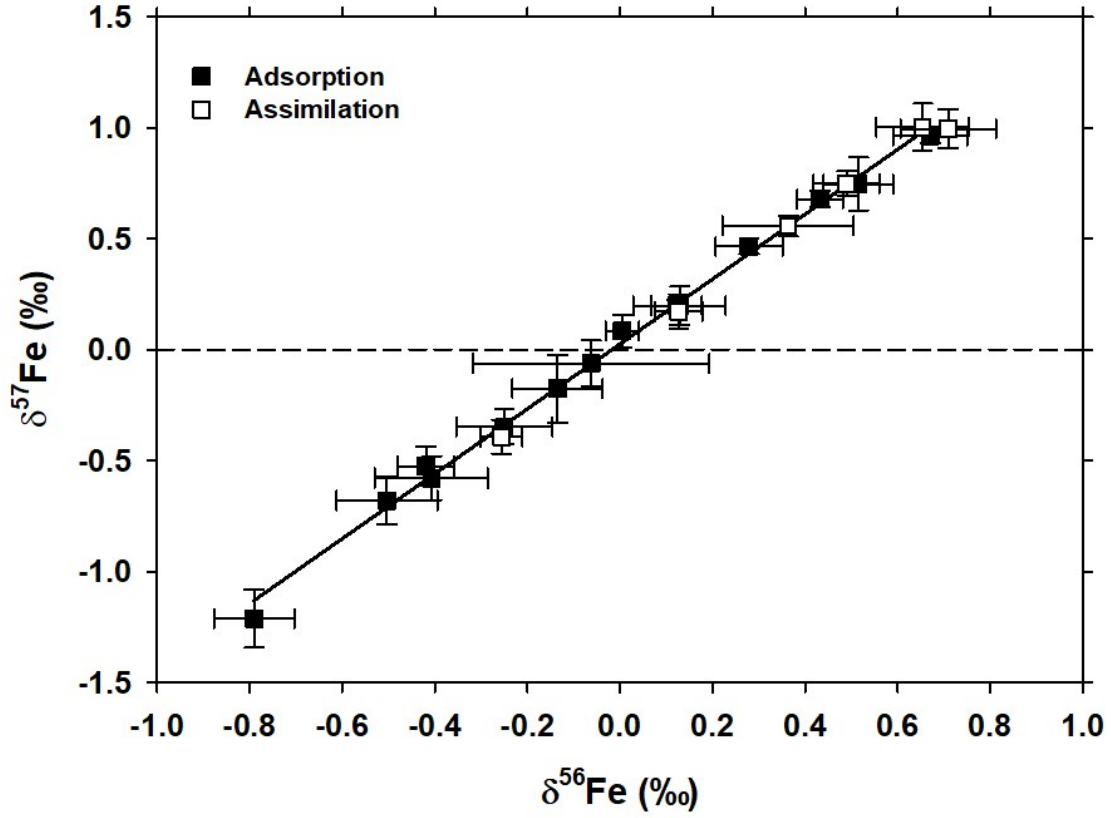

Figure ESI-1. $\delta^{57}Fe$ and $\delta^{56}Fe$ relative to IRMM-14 from the adsorption and assimilation experiments. Experimental data are listed in Tables 1.