

Supplementary Table S4 Details of extraction procedure for Fe speciation analysis

As speciation	Extractive reagents	Reaction time and temperature	Targeted mineralogical phases
Acid volatile sulfide- and carbonate-associated Fe (II) ($\text{Fe}_{\text{AVS+carb}}$)	1 M NaAc buffer solution (pH = 4.5)	25 °C, 24 h	AVS- and carbonate-associated Fe including siderite and ankerite
Easily reducible Fe oxides (Fe_{ox1})	1 M hydroxylamine-HCl	25 °C, 48 h	Ferrihydrite, lepidocrocite
Reducible Fe oxides (Fe_{ox2})	50 g/L sodium dithionite (pH = 4.8)	75 °C, 2 h	Goethite, akageneite, hematite
Magnetite (Fe_{mag})	0.2 M ammonium oxalate (pH = 3.2)	25 °C, 6 h	Magnetite
Pyrite-Fe (Fe_{py})	14 M HNO_3	25 °C, 2 h	Pyrite