

Description of Additional Supplementary Files:

Supplementary Dataset 1: Carbon Systematics

Supplementary Dataset 2: Major, Trace and Rare Earth Element Analysis

Supplementary Dataset 3: Iron Speciation Analysis

Supplementary Dataset 4: Co-extraction of Iron and Phosphorus

Supplementary Dataset 5: Semi-quantitative XRD mineralogical Analysis

Supplementary Dataset 6: Iron Isotope Analysis