SUPPLEMENTARY MATERIAL

related to

Interaction of corroding iron with seven bentonites in the alternative buffer materials field experiment (ABM2)

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S2 μ-Raman spectroscopy data of reference materials and contact zone

Contents

S2-1 Reference materials: MX80 (Blocks #08, #25 and #27)

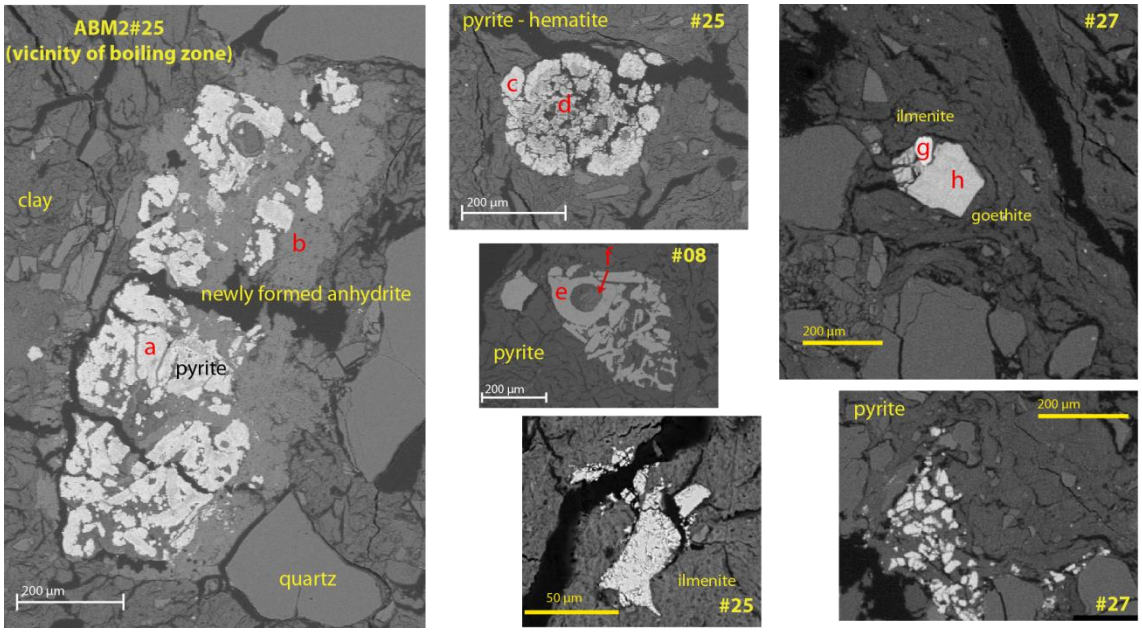
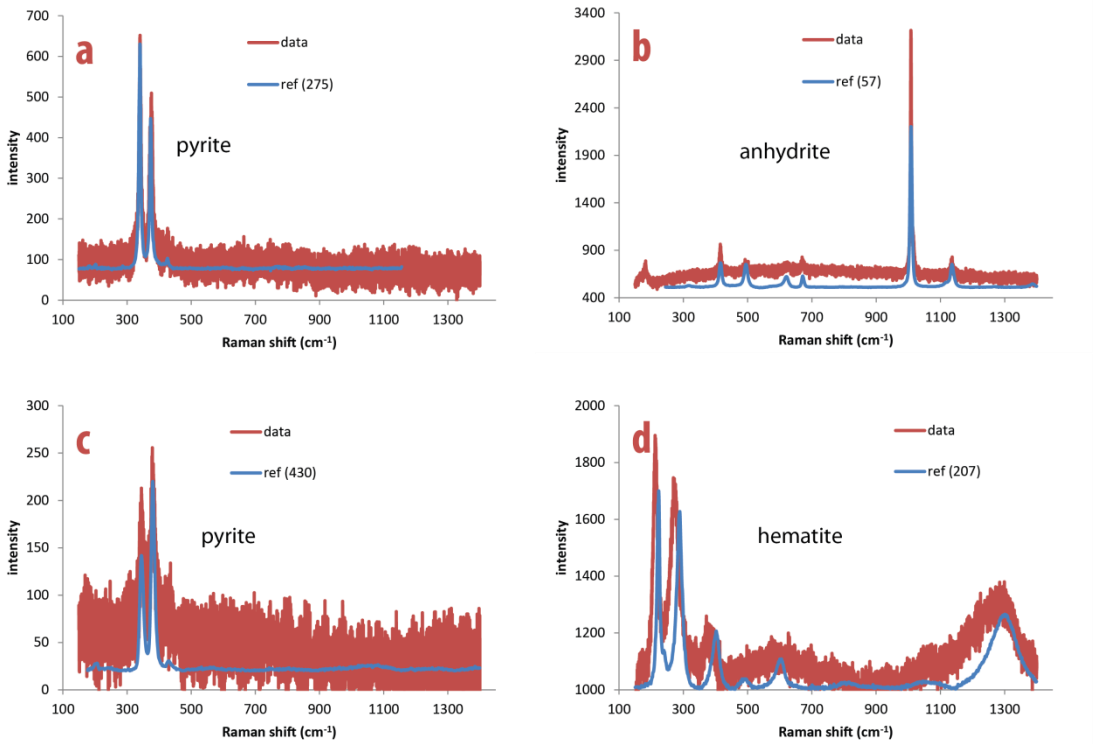


Fig. S2-1 Typical Fe-bearing accessory minerals found in MX80 bentonite. BE images taken in the bulk zone (at distance >20 mm from the interface) of ABM2 samples. Red letters indicate spots analysed by Raman spectroscopy (spectra displayed below).



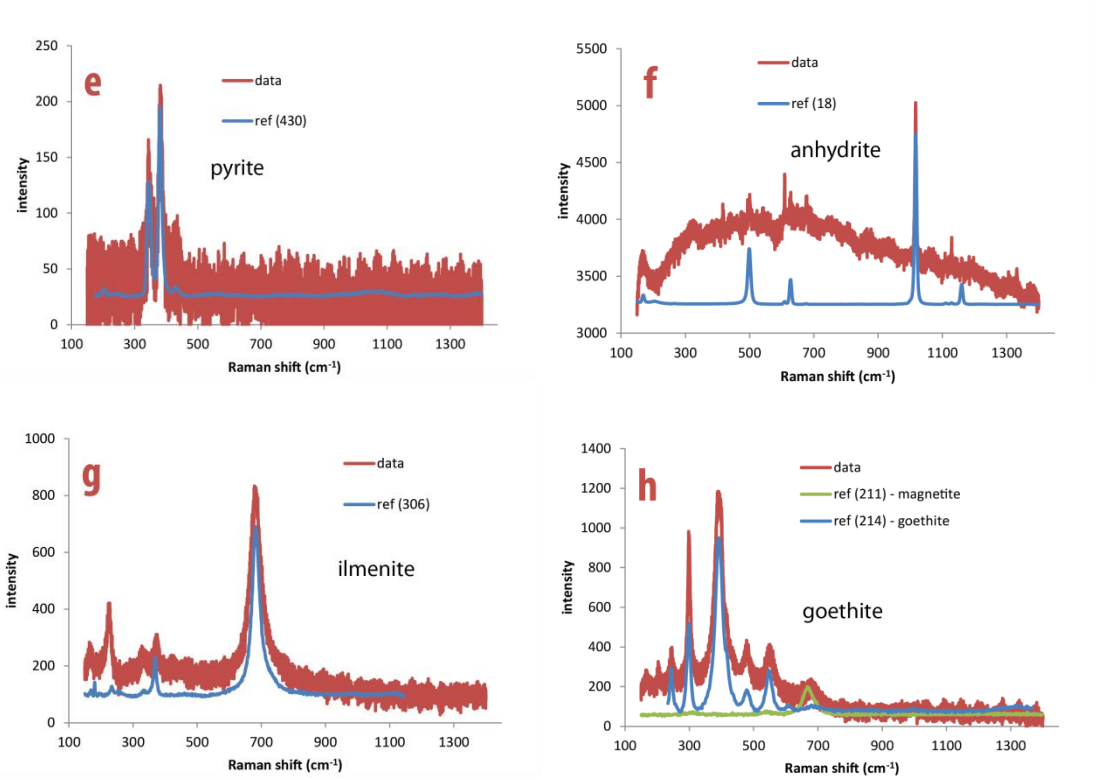


Fig. S2-2 Raman spectra of the spots indicated in Fig. S2-1.

S2-2 Reference materials: Ibecoseal (Block #11)

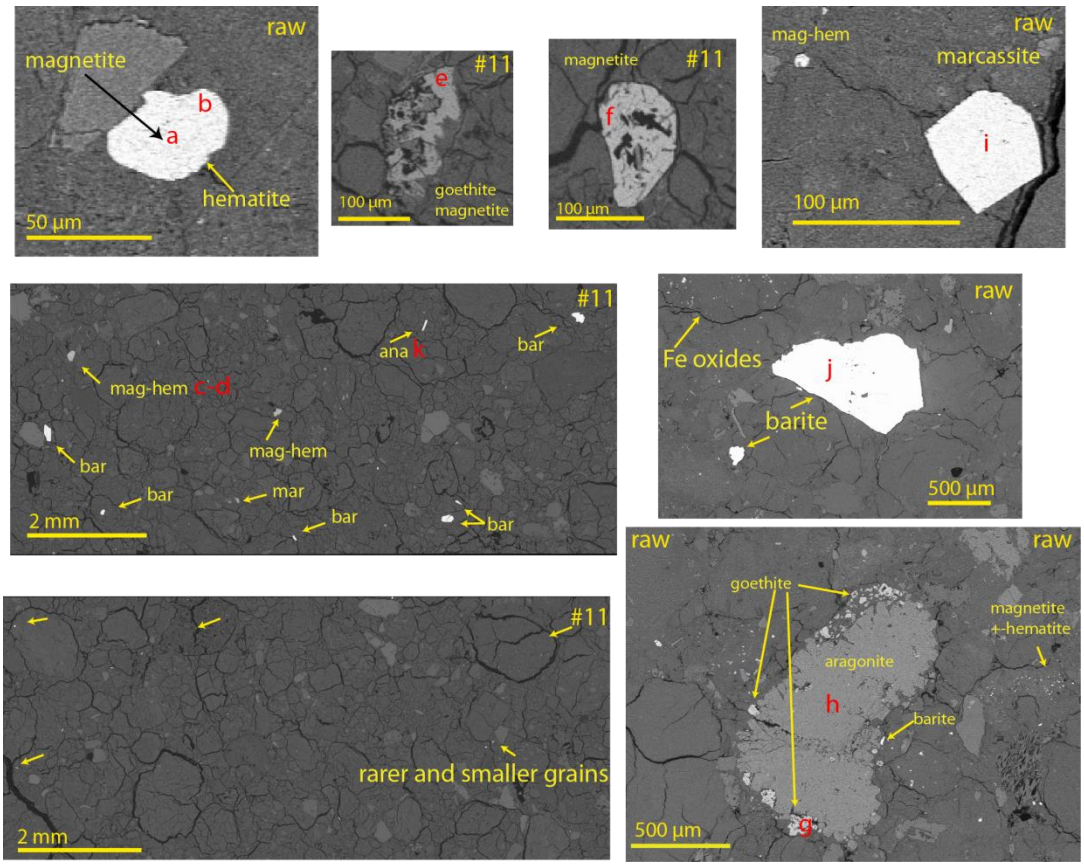
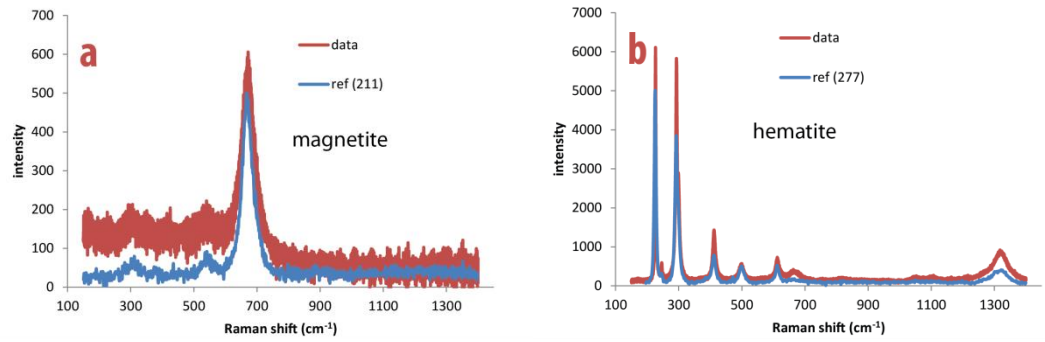


Fig. S2-3 Typical Fe-bearing accessory minerals found in Ibecoseal bentonite (light grey/white). Other light grey accessory minerals are also indicated. (ana: anatase, bar: barite , mag-hem: magnetite-hematite, mar: marcasite). Red letters indicate spots analysed by Raman spectroscopy (spectra displayed below).



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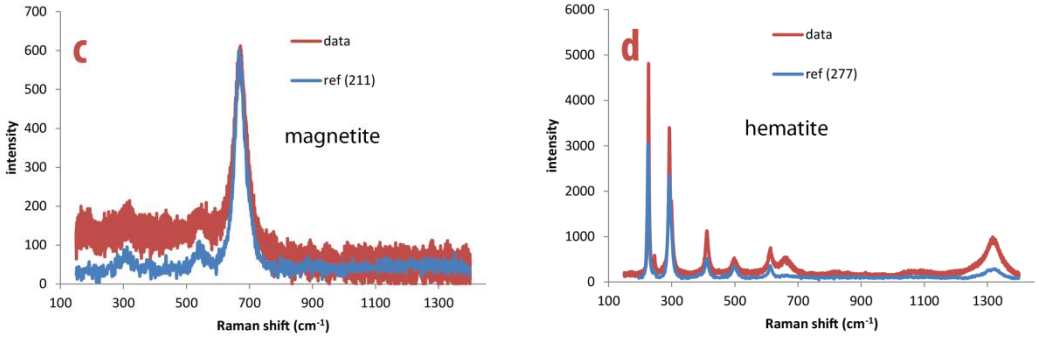

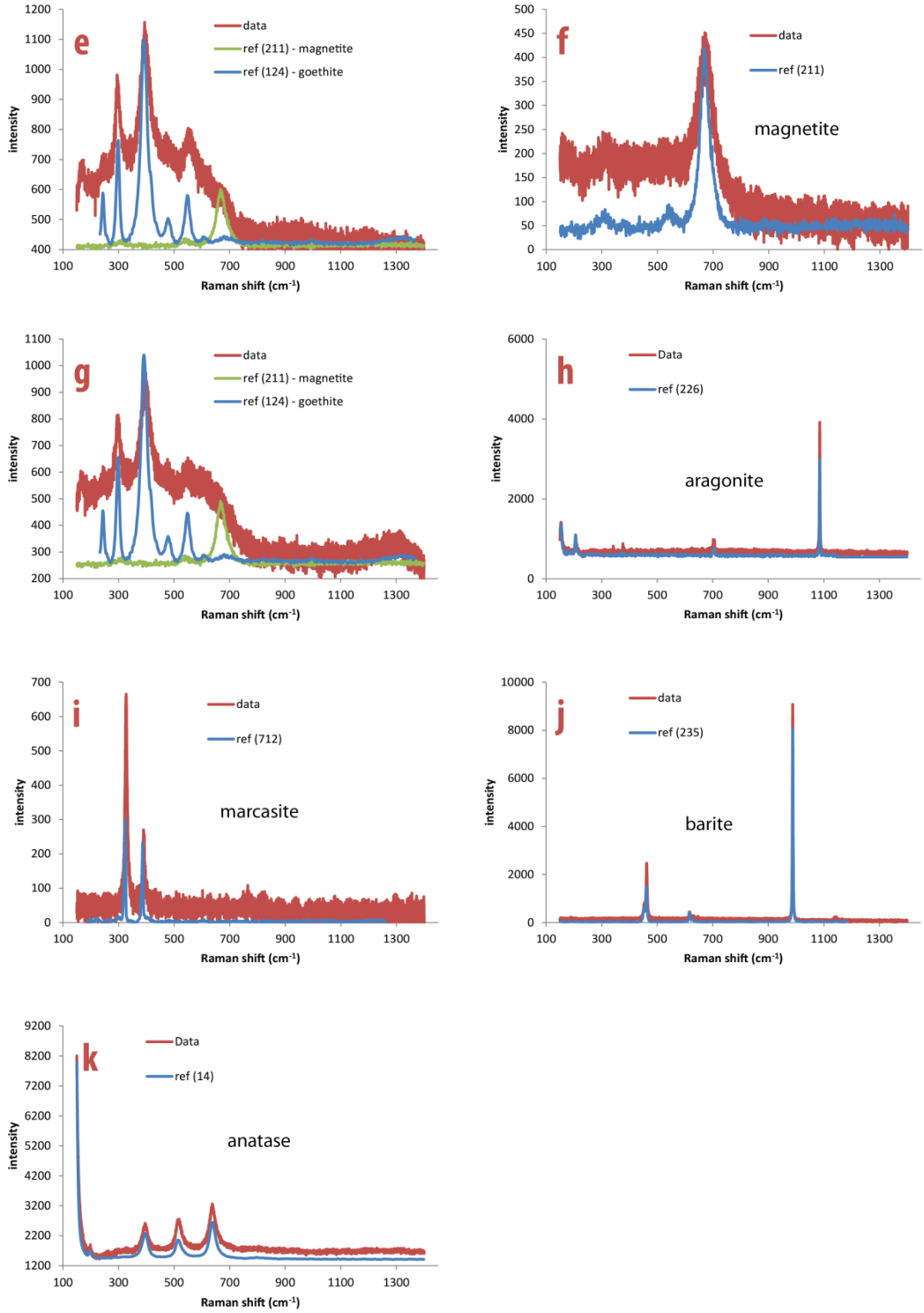

Fig. S2-4 Raman spectra of the spots indicated in Fig. S2-3.

S2-3 Reference materials: Ikosorb (Block #12)

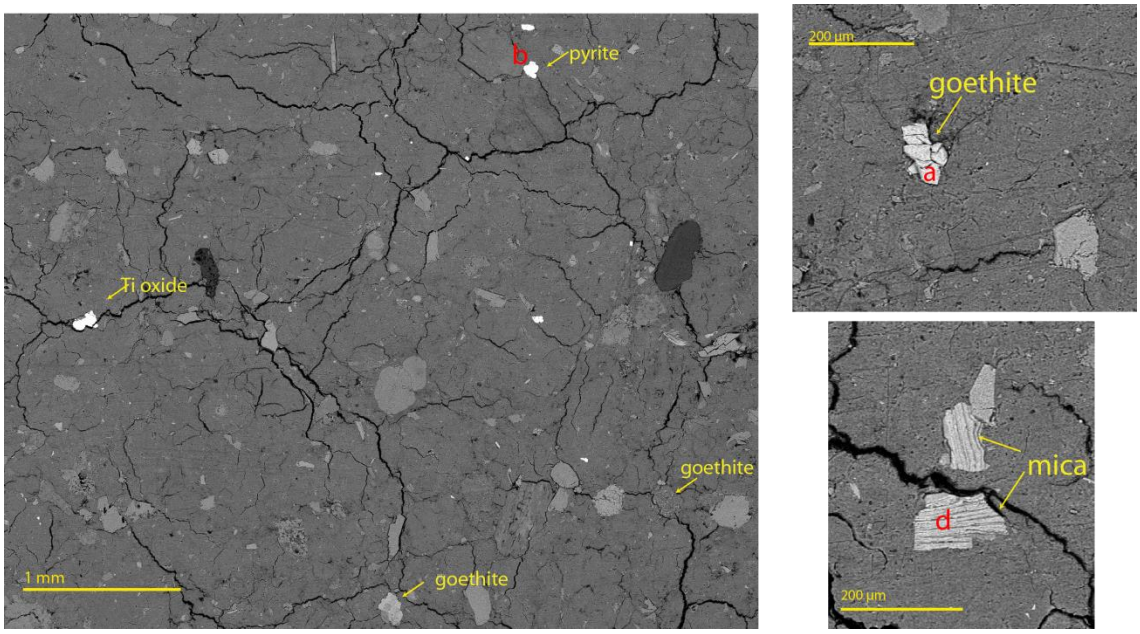

Fig. S2-5 Typical Fe-bearing accessory minerals found in raw Ikosorb bentonite. Red letters indicate spots analysed by Raman spectroscopy (spectra displayed below).

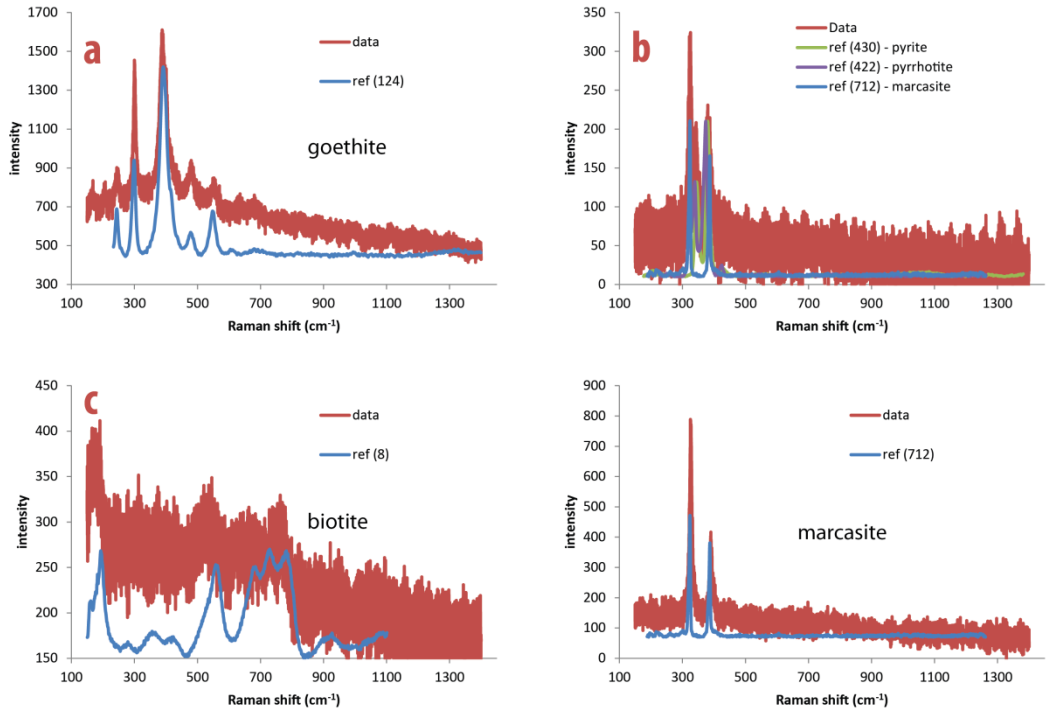

Fig. S2-6 Raman spectra of the spots indicated in Fig. S2-5. An additional spectrum of another grain of marcasite found in raw Ikosorb matrix is also displayed (no SEM image shown). The identification of biotite in spectrum c is uncertain.

S2-4 Reference materials: Kunigel VI (Block #13)

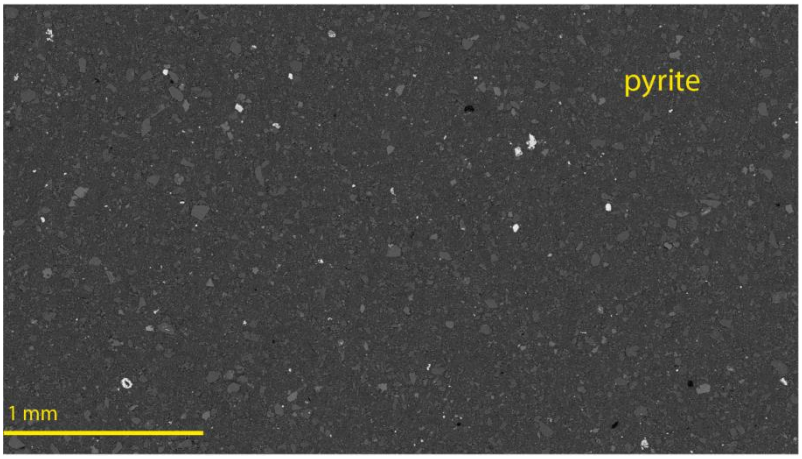

Fig. S2-7 Typical Fe-bearing accessory minerals found in Kunigel bentonite (Picture from raw bentonite). The bright spots are predominantly pyrite grains.

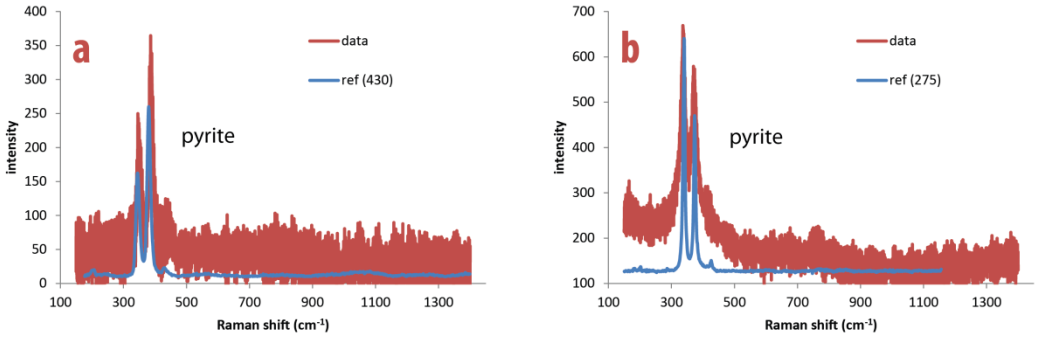

Fig. S2-8 Raman spectra of two different pyrite grains spotted in the bulk of sample ABM2#13.

S2-5 Reference materials: Rokle (Block #24)

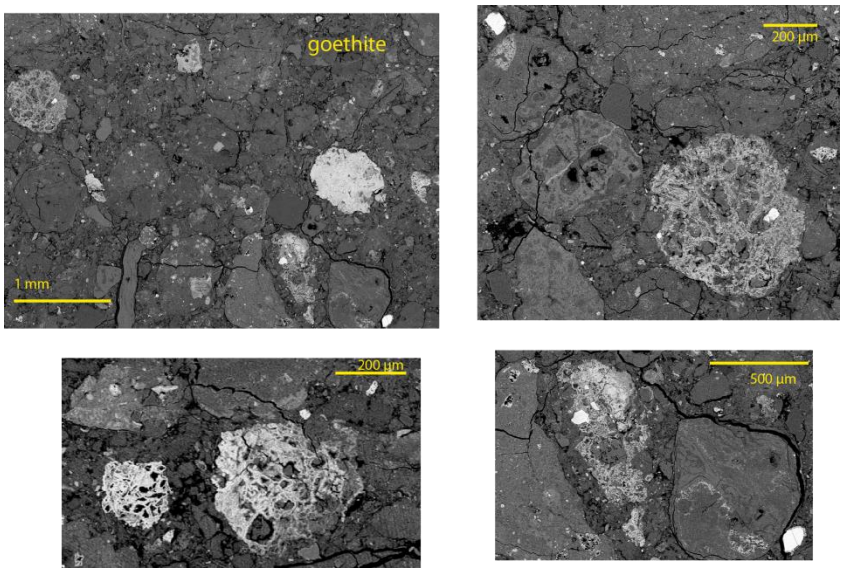

Fig. S2-9 Typical Fe-bearing accessory minerals found in Rokle bentonite (Picture from raw bentonite). Brighter grains represent higher contents in heavier elements, especially Fe.

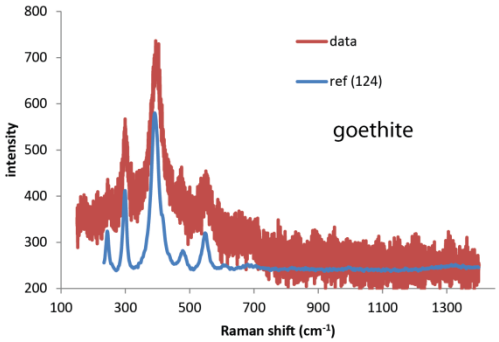

Fig. S2-10 Raman spectrum of a goethite grain found in raw Rokle bentonite.

S2-6 Reference materials: Deponit (Block #26)

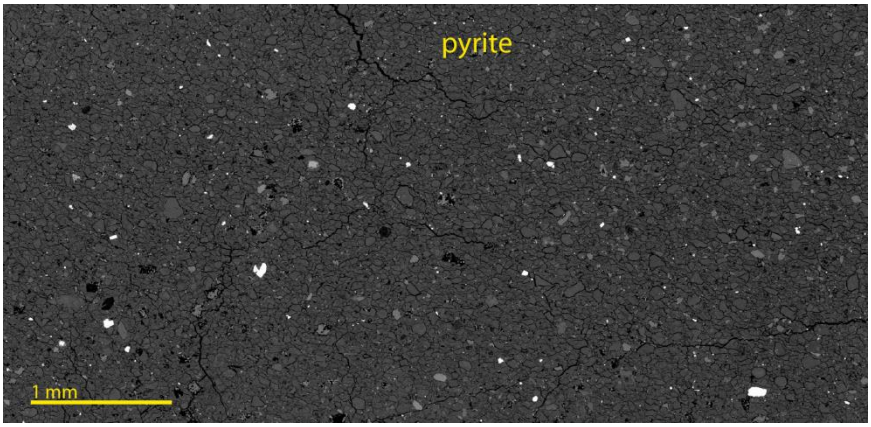

Fig. S2-11 Typical Fe-bearing accessory minerals found in Deponit bentonite (picture from sample ABM#26). The white spots are in a vast majority pyrite grains.

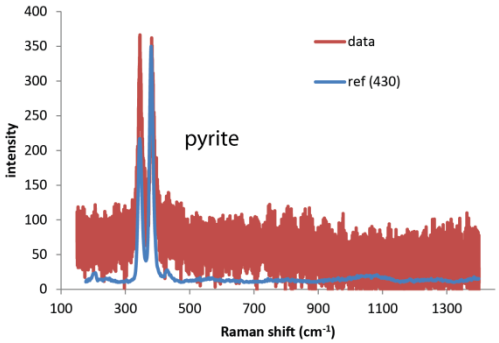

Fig. S2-12 Raman spectrum of a pyrite grain found in raw Deponit bentonite.

S2-7 The Fe-clay interface: MX-80 (blocks #08 and #27)

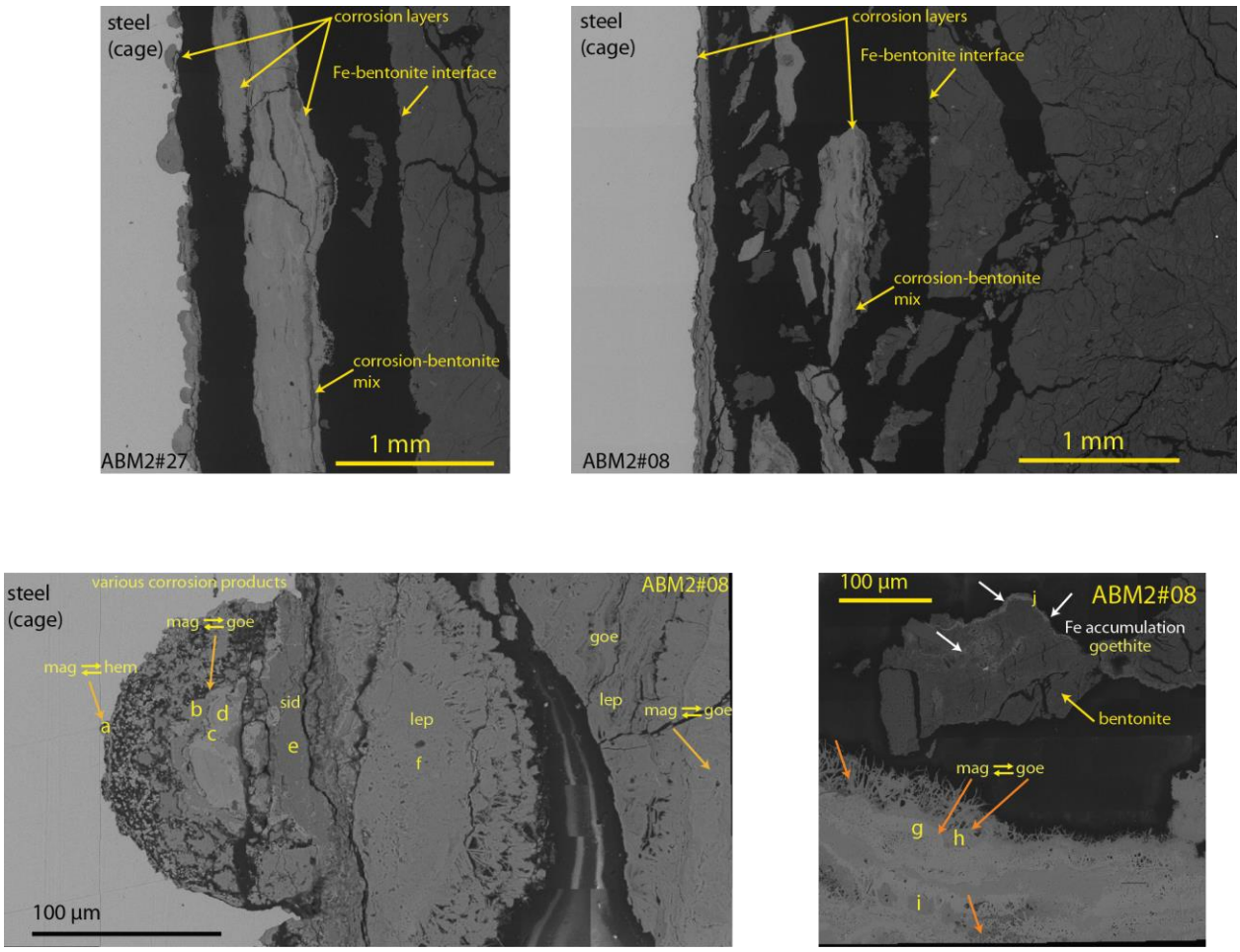

Fig. S2-13 (up) BE images of the Fe-bentonite interface in a sample from blocks ABM2#08 and ABM2#27 (MX80). (bottom) Close-up of some corrosion features in sample #08. Resin in black, mostly cracks caused by the sample preparation. Letters indicate spots analysed by Raman spectroscopy (spectra displayed below). mag: magnetite, hem: hematite, goe: goethite, sid: siderite, lep: lepidocrocite.

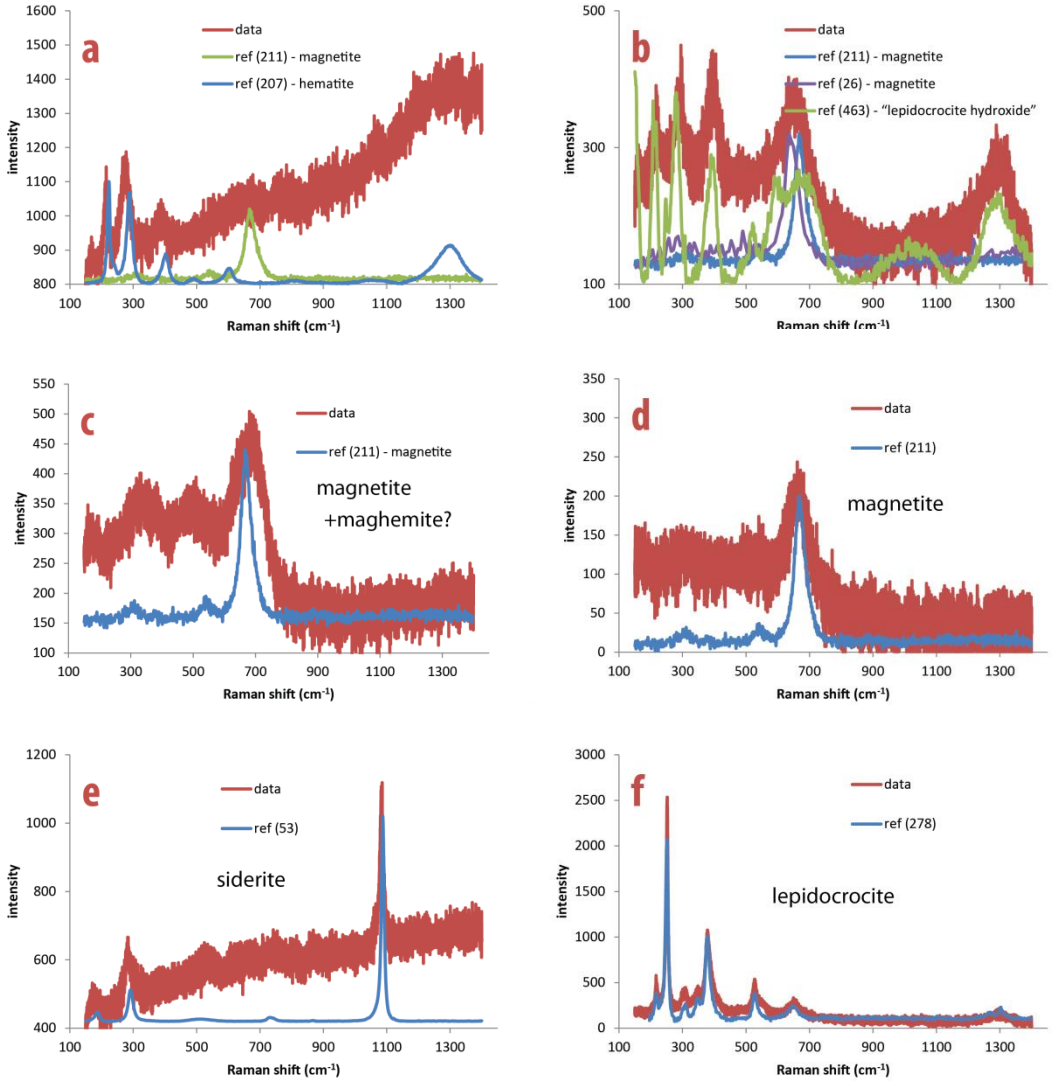

Fig. S2-14 Raman spectra collected in the two zone indicated in bottom left picture of Fig. S2-13.

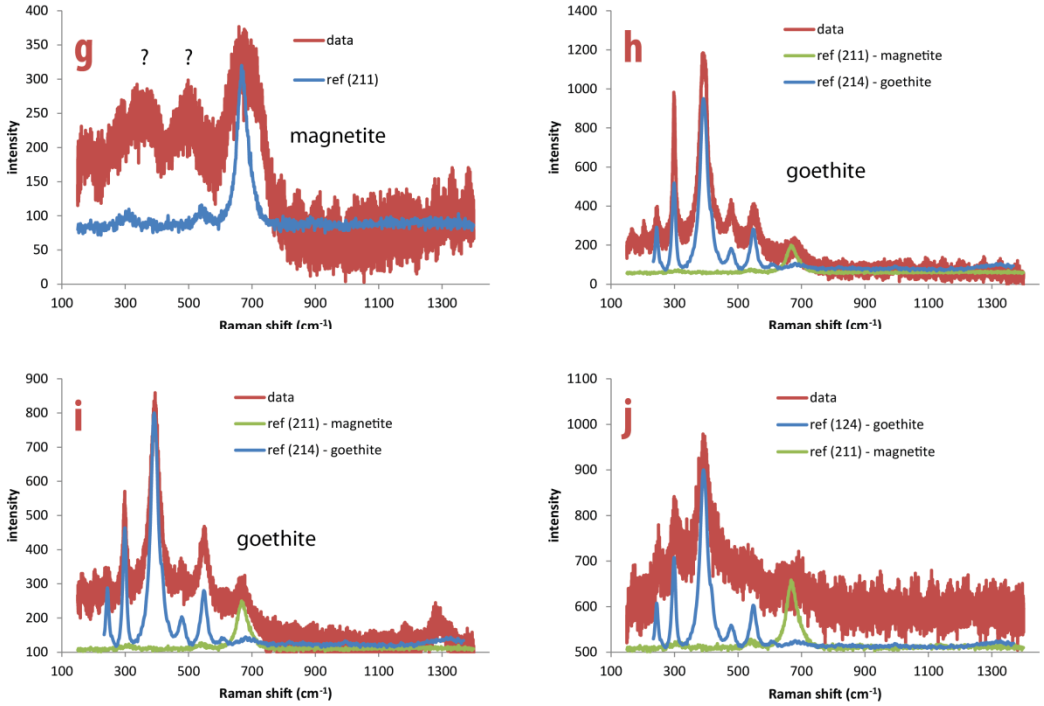

Fig. S2-15 Raman spectra collected in the two zone indicated in bottom left picture of Fig. S2-13.

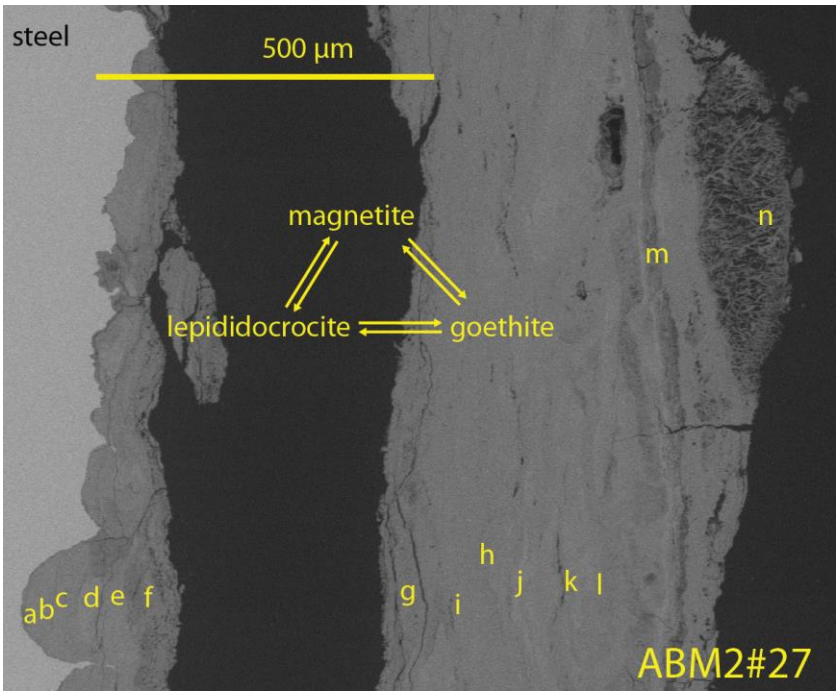

Fig. S2-16 SEM BE images of the thick corrosion layer sitting next to Fe-bentonite interface in a sample from blocks ABM2#27. The letters indicate were Raman spectra were collected. Spectra are displayed below.

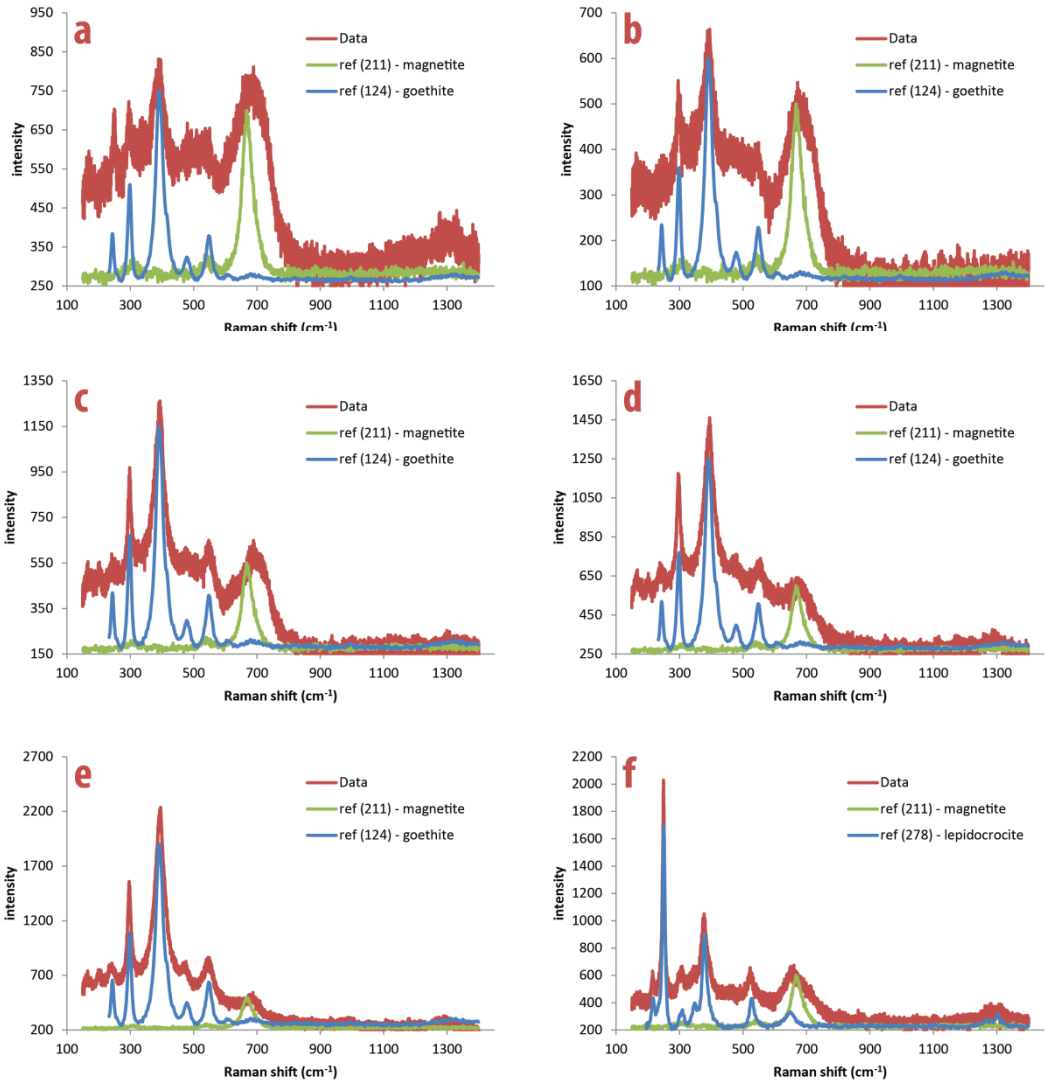

Fig. S2-17 Raman spectra collected in the two zone indicated in bottom left picture of Fig. S2-16.

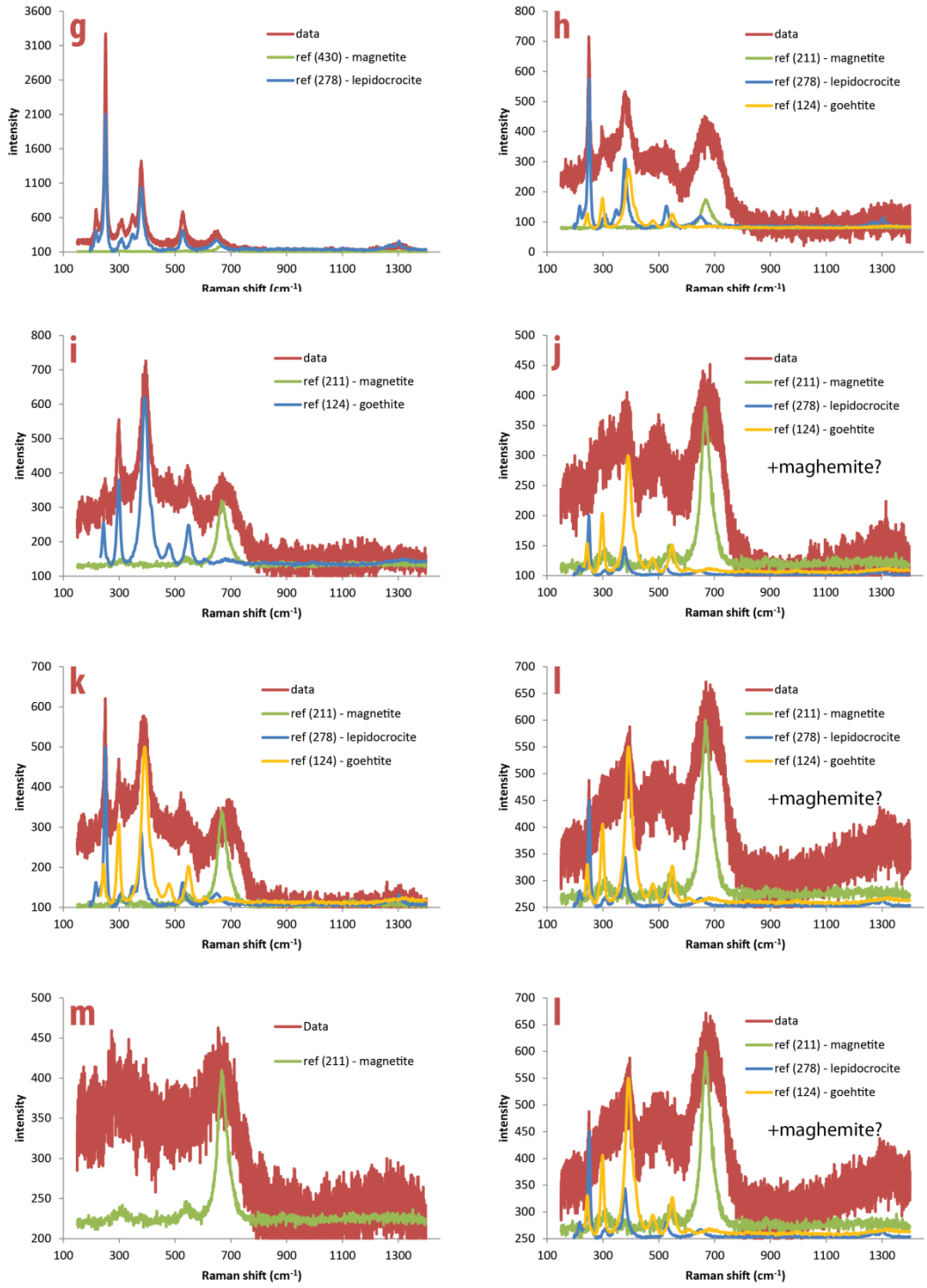

Fig. S2-18 Raman spectra collected in the two zone indicated in bottom left picture of Fig. S2-16.