# Revisiting the Raman Spectra of Carbonate Minerals

**SUPPLEMENTARY MATERIAL**

**Table Caption**

**Table S1:** Samples information

**Figure Captions**

**Figure S1:** Results of EDS analysis for calcite A

**Figure S2:** Results of EDS analysis for calcite B

**Figure S3:** Results of EDS analysis for calcite C

**Figure S4:** Results of EDS analysis for calcite D

**Figure S5:** Results of EDS analysis for calcite E

**Figure S6:** Results of EDS analysis for aragonite A

**Figure S7:** Results of EDS analysis for aragonite B

**Figure S8:** Results of EDS analysis for aragonite C

**Figure S9:** Results of EDS analysis for dolomite A

**Figure S10:** Results of EDS analysis for dolomite B

**Figure S11:** Results of EDS analysis for dolomite C

**Figure S12:** Results of EDS analysis for dolomite D

**Figure S13:** Results of EDS analysis for magnesite A

**Figure S14:** Results of EDS analysis for magnesite B

**Figure S15:** Results of EDS analysis for rhodochrosite A

**Figure S16:** Results of EDS analysis for rhodochrosite B

**Figure S17:** Results of EDS analysis for witherite

**Figure S18:** Results of EDS analysis for siderite

**Figure S19:** Results of EDS analysis for azurite

**Figure S20:** Results of EDS analysis for malachite

**Figure S21:** Results of EDS analysis for calcites samples

**Figure S22:** Results of EDS analysis for aragonites samples

**Figure S23:** Results of EDS analysis for dolomites samples

**Figure S24:** Results of EDS analysis for magnesite samples

**Figure S25:** Results of EDS analysis for rhodochrosite samples

**Figure S26:** Results of EDS analysis for witherite sample

**Figure S27:** Results of EDS analysis for siderite sample

**Figure S28:** Results of EDS analysis for azurite sample

**Figure S29:** Results of EDS analysis for malachite sample

**Figure S30:** Raman spectra normalized by the B1g, B2g and B3g symmetries for aragonite samples.

**Figure S31:** Raman spectra normalized by the Eg symmetry for dolomite samples.

**Figure S32:** Raman spectra normalized by the Eg symmetry for dolomite samples showing the bands at 1078 cm-1 and 882 cm-1

**Figure S33:** Raman spectra normalized by the Eg symmetry for Magnesite samples samples.

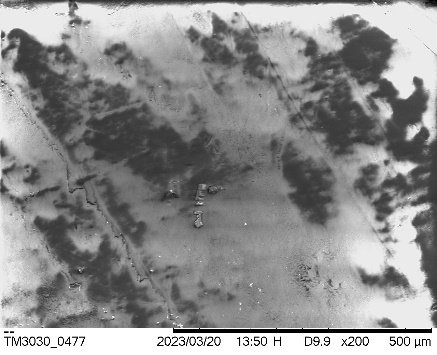
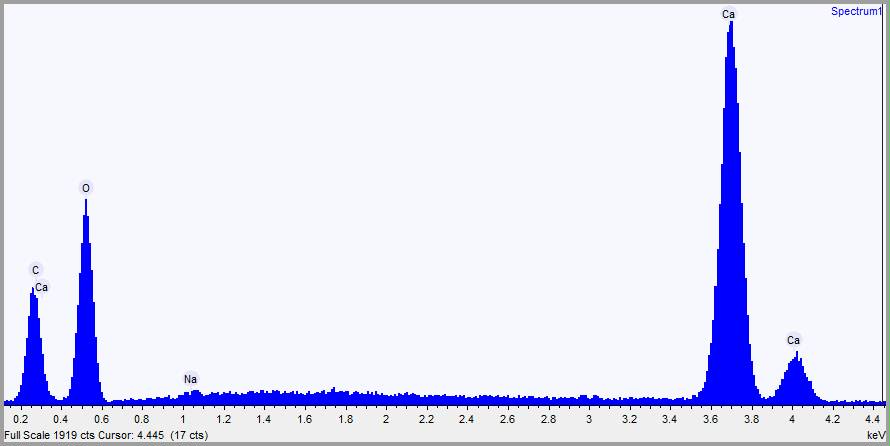
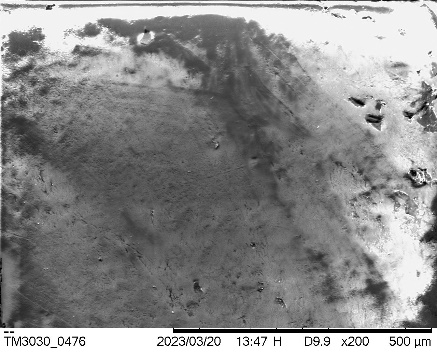
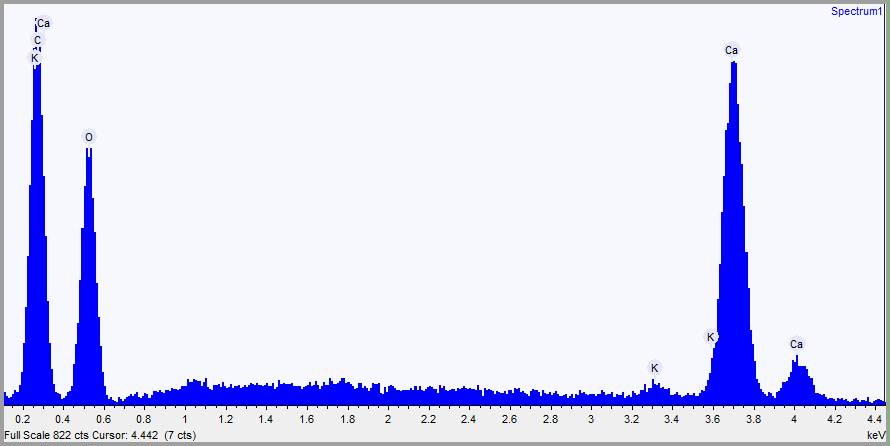
**Figure S34:** Raman spectra normalized by the B1g, B2g and B3g symmetries for a comparison between aragonite and witherite samples.

**Figure S35:** Mineral samples **p**hotographs

Table S1

|  |  |  |
| --- | --- | --- |
| Sample | Characteristics | Origin Source |
| Calcites | | |
| A | Optical calcite; transparent | Minas Gerais |
| B | Gray; sulphur and graphite traces | Minas Gerais |
| C | Orange, pink and white | Bahia |
| D | White | Minas Gerais |
| E | Orange | Minas Gerais |
| Magnesites | | |
| A | White | Bahia |
| B | Purple and white | Bahia |
| Dolomites | | |
| A | Pale purple | Minas Gerais |
| B | Gray; powder sample | São Paulo |
| C | White | Bahia |
| D | White and yellow | Minas Gerais |
| Aragonites | | |
| A | White | Minas Gerais |
| B | White, yellow, and brown | Spain |
| C | White | Minas Gerais |
| Rhodochrosites | | |
| A | Pink | Argentina |
| B | Pink | Argentina |
| Witherite | | |
| A | White with black dots | Prague |
| Siderite | | |
| B | Brown | Prague |
|  | Azurite |  |
| A | Blue | South Africa |
|  | Malachite |  |
| A | Green | South Africa |

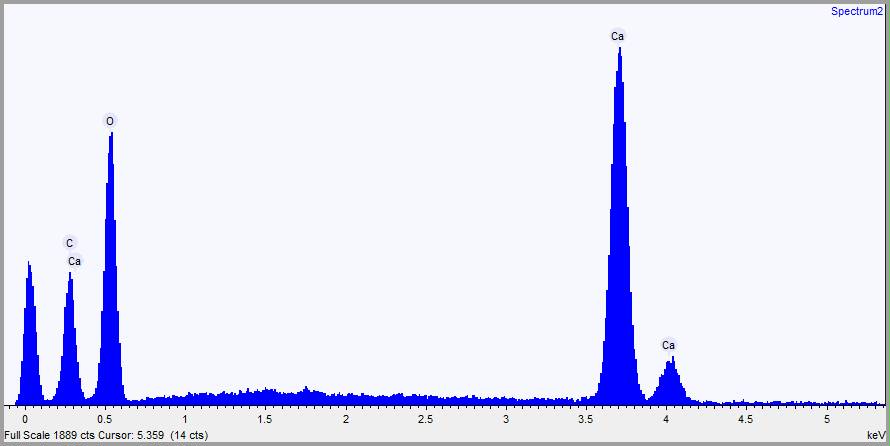
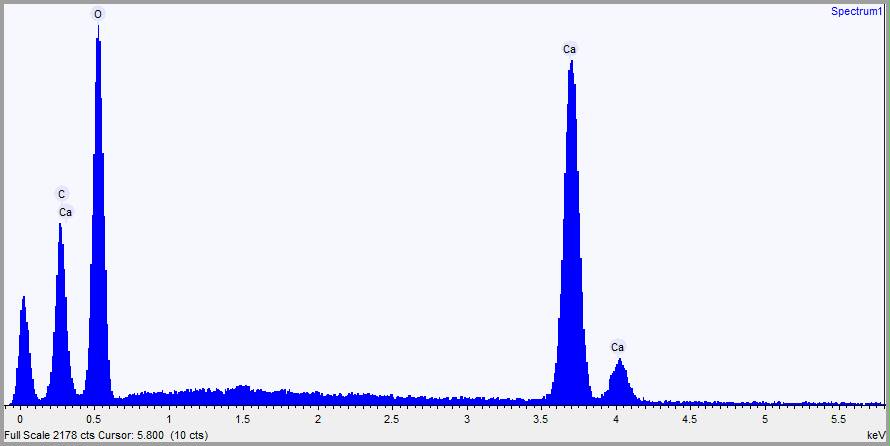
Figure S1 (calcite A)



R1

R2

Figure S2 (calcite B)



R1

R2

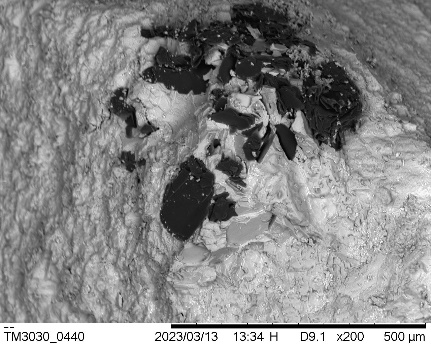
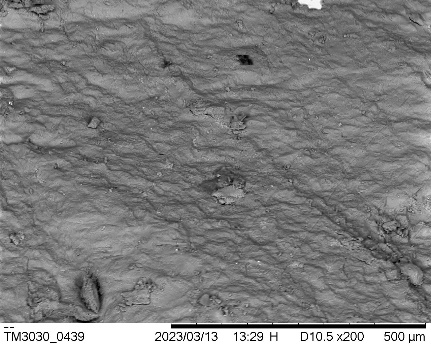
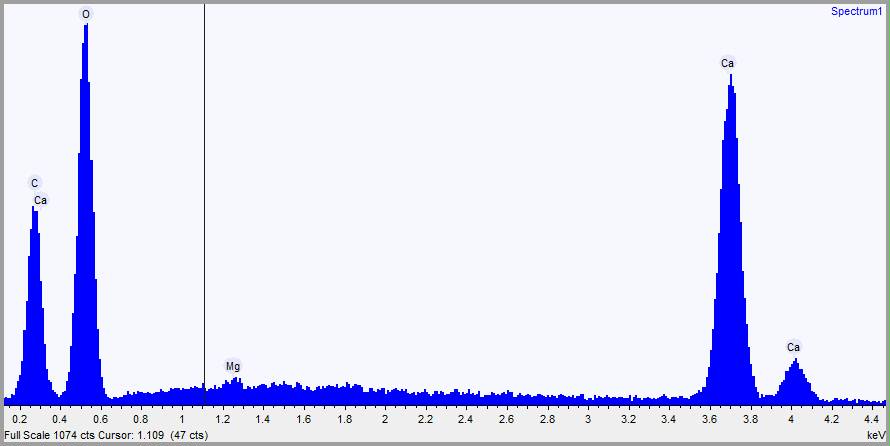
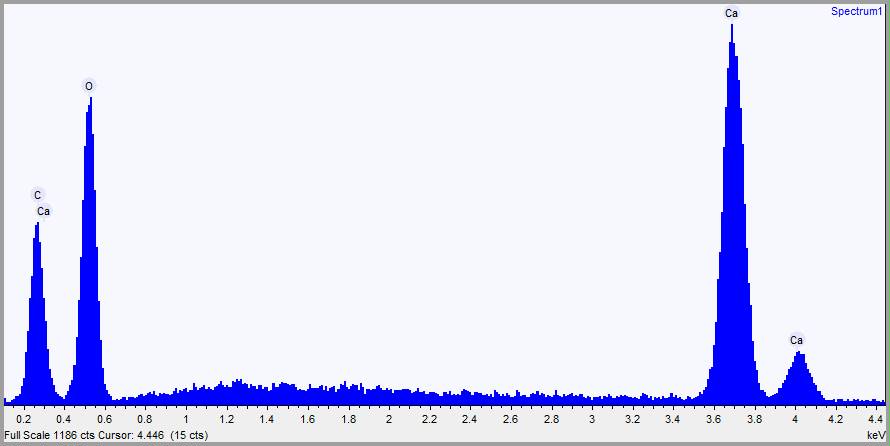


Figure S3 (calcite C)



R1



R2

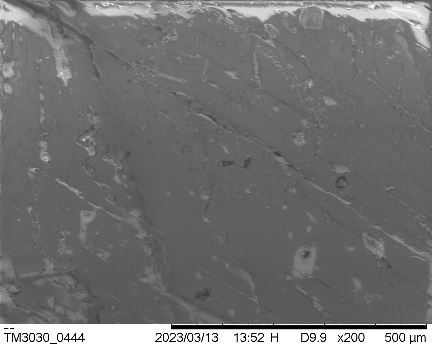
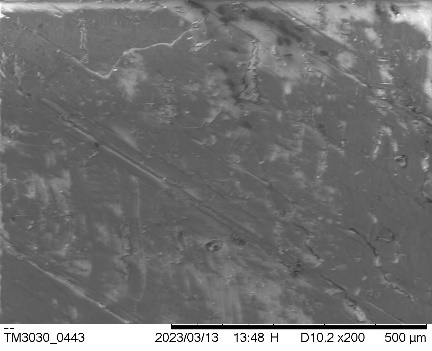
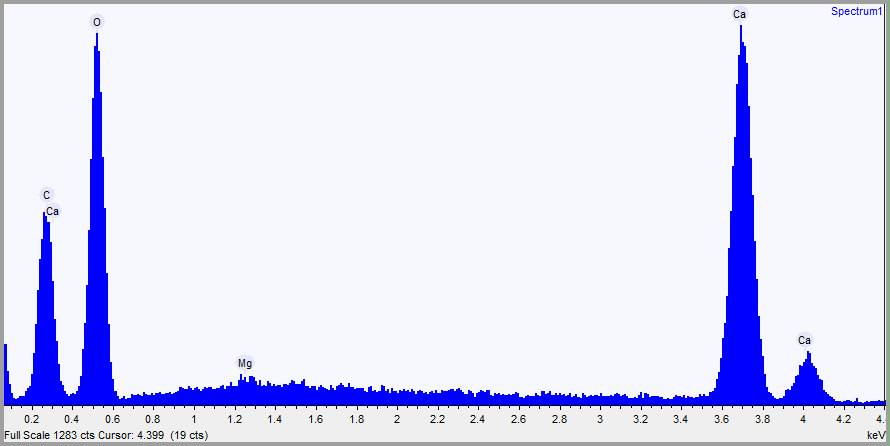
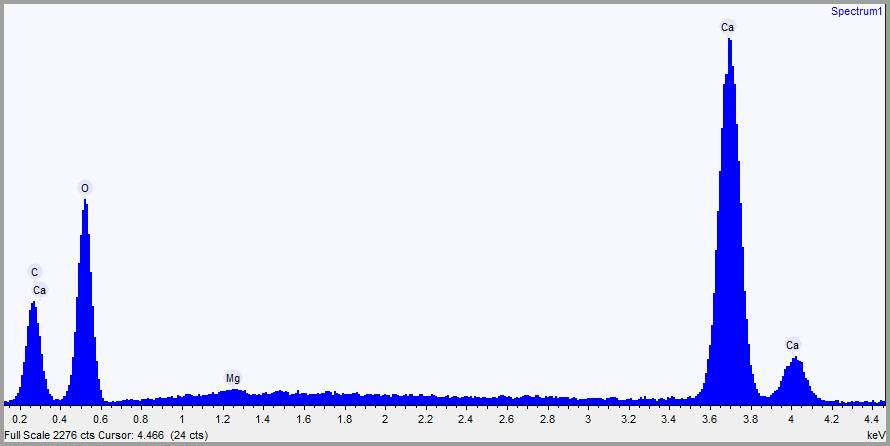


Figure S4 (calcite D)



R1

R2

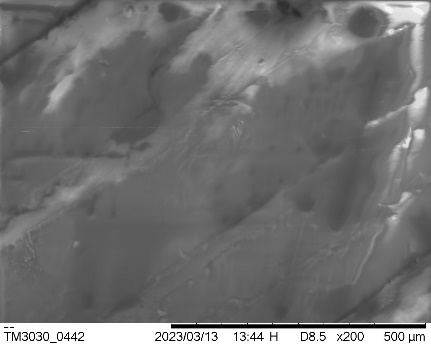
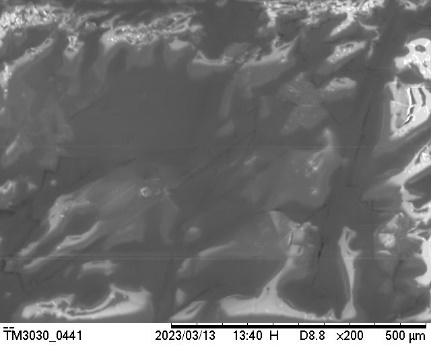


Figure S5 (calcite E)

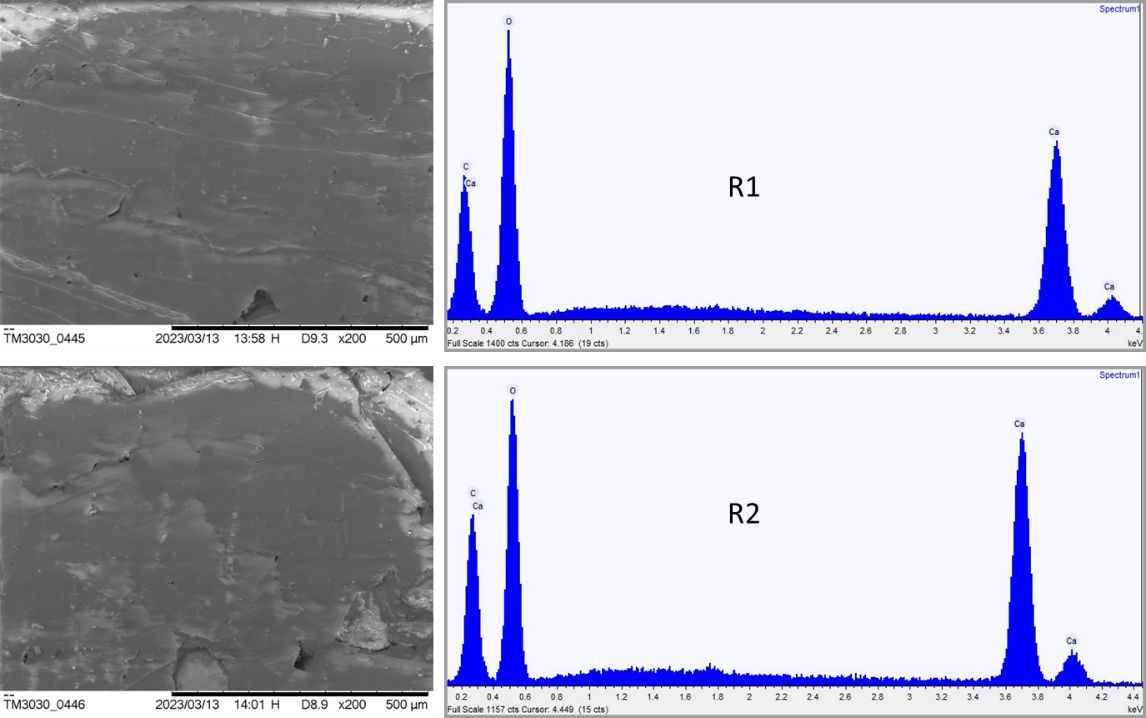
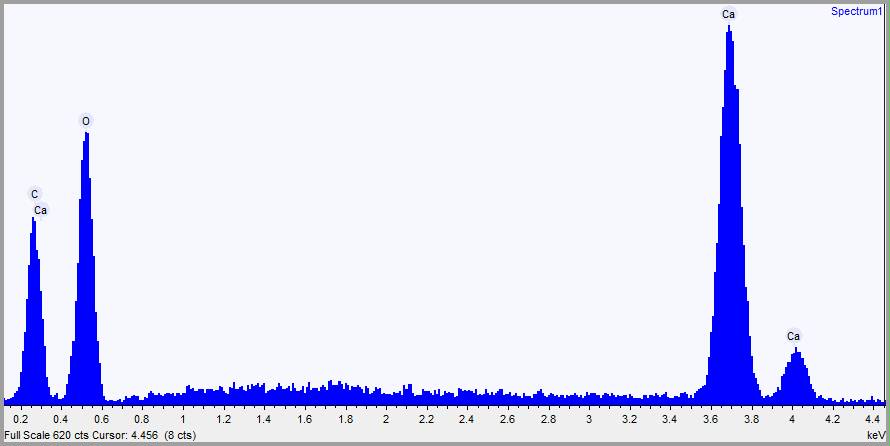
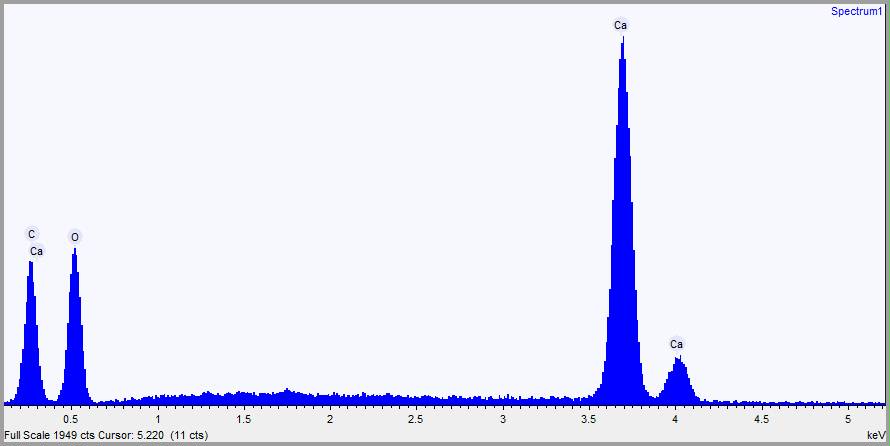


Figure S6 (aragonite A)



R1



R2

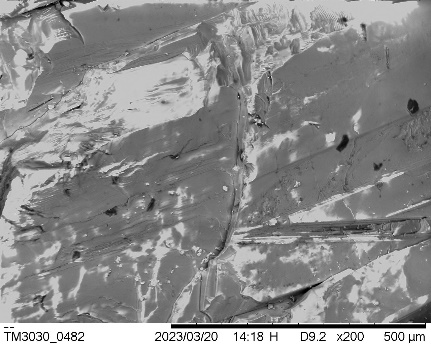
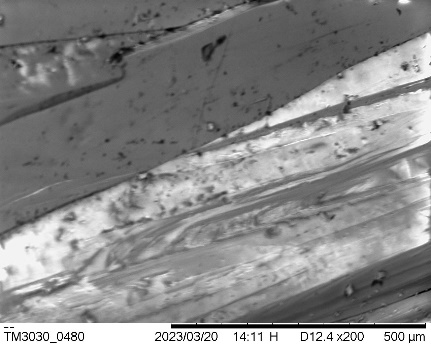


Figure S7 (aragonite B)

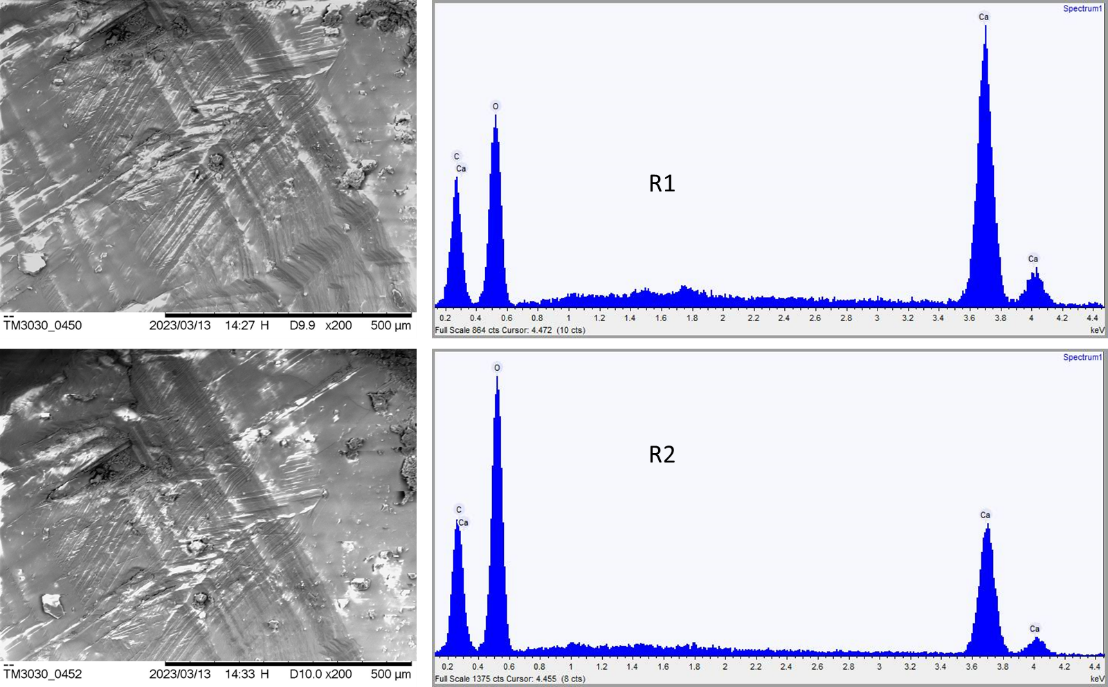


Figure S8 (aragonite C)

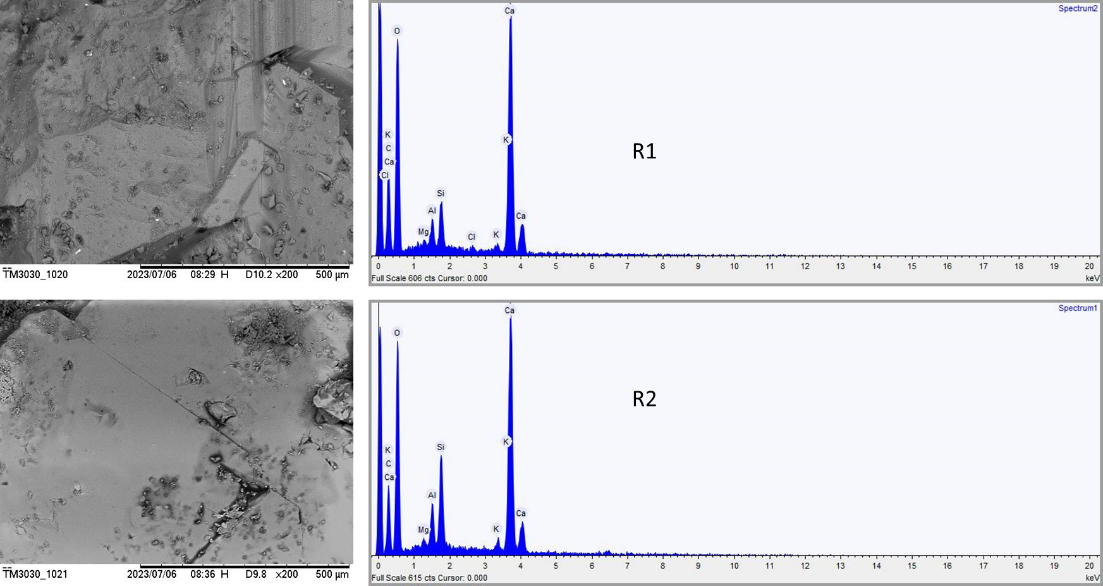
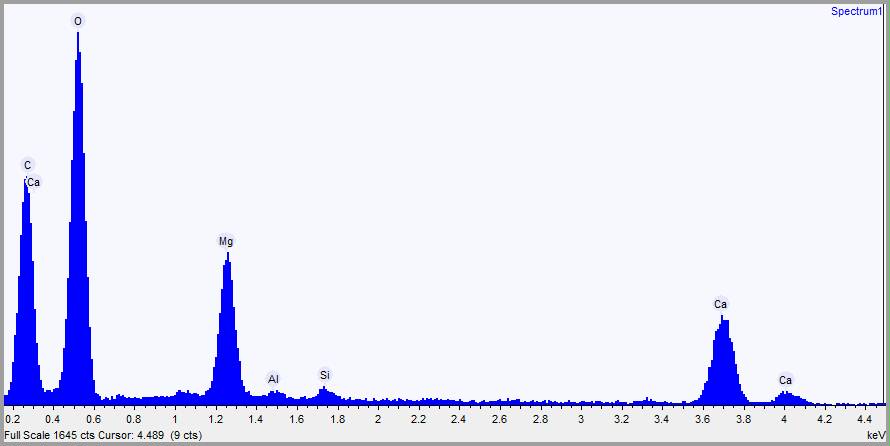
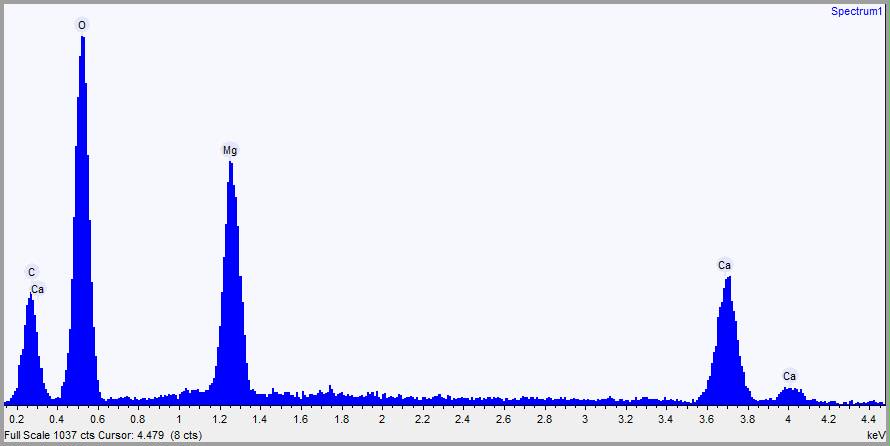


Figure S9 (dolomite A)



R1



R2

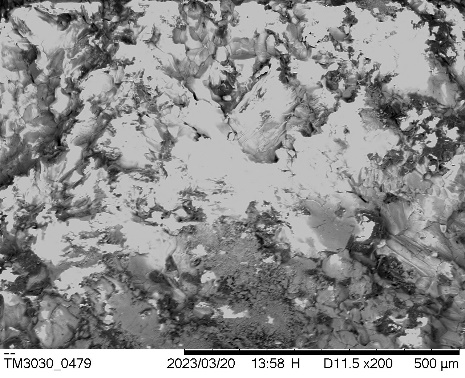
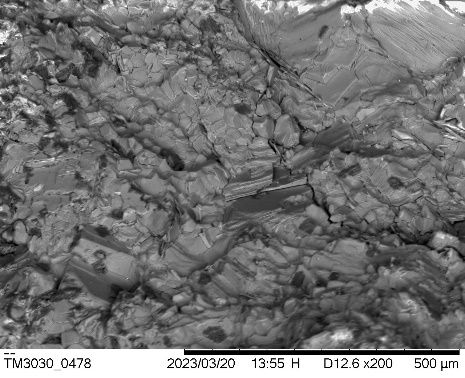
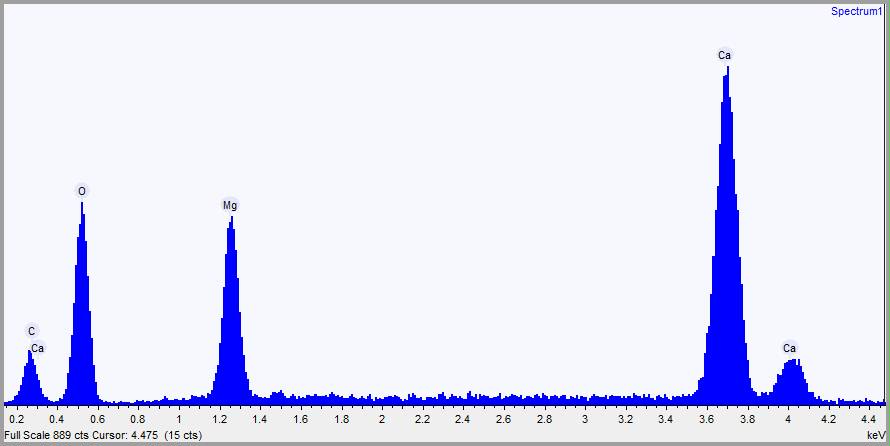
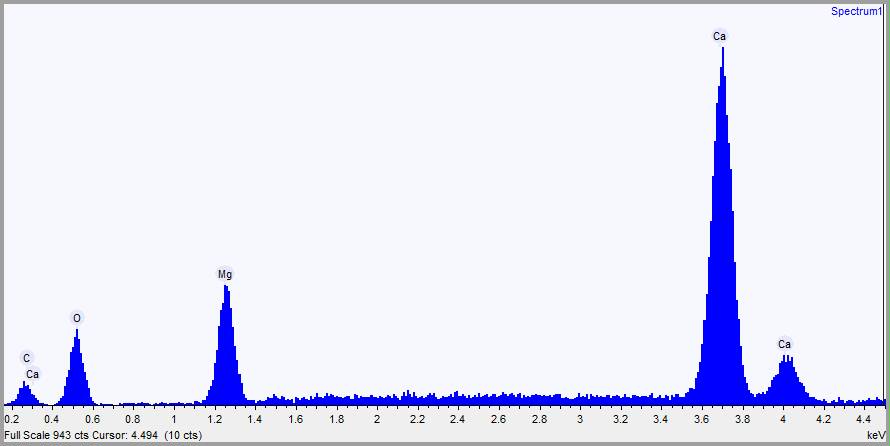


Figure S10 (dolomite B)



R1



R2

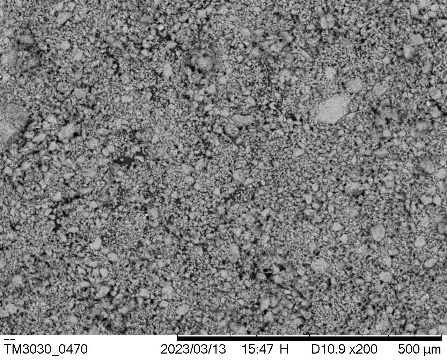
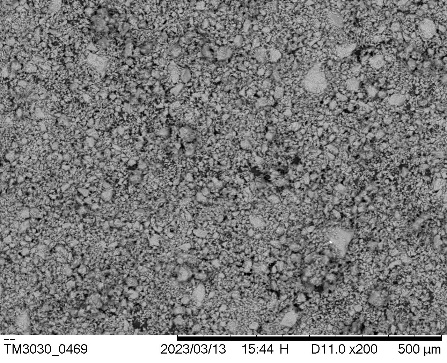
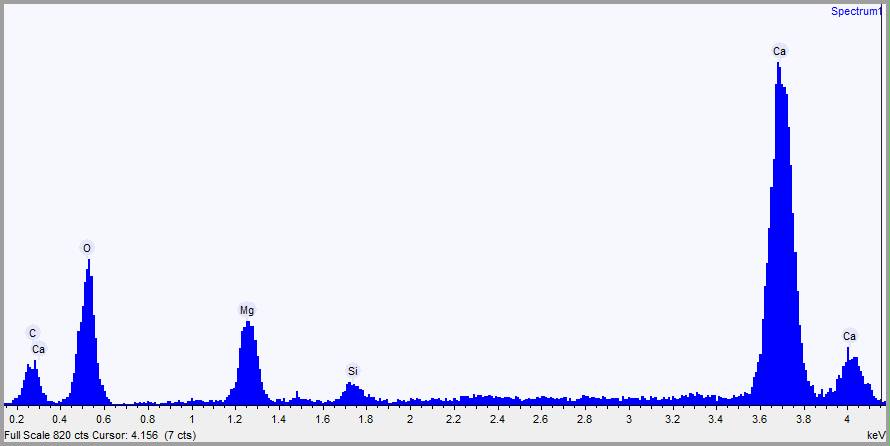
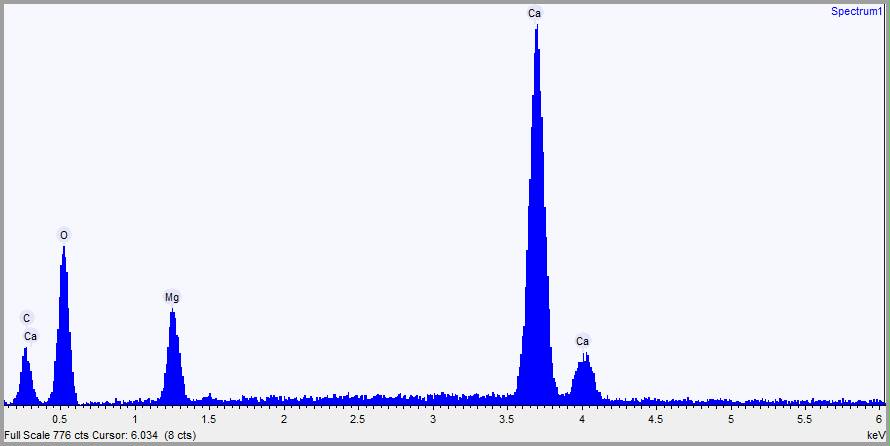


Figure S11 (dolomite C)



R1



R2

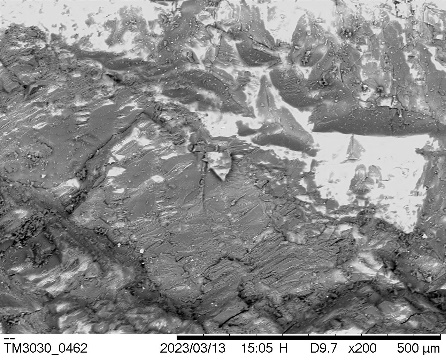
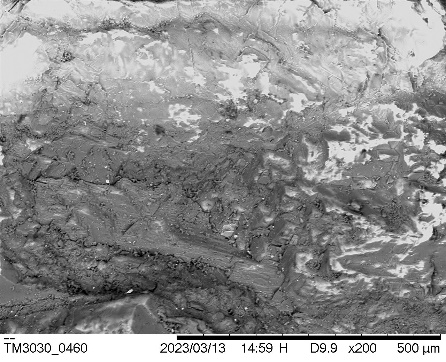
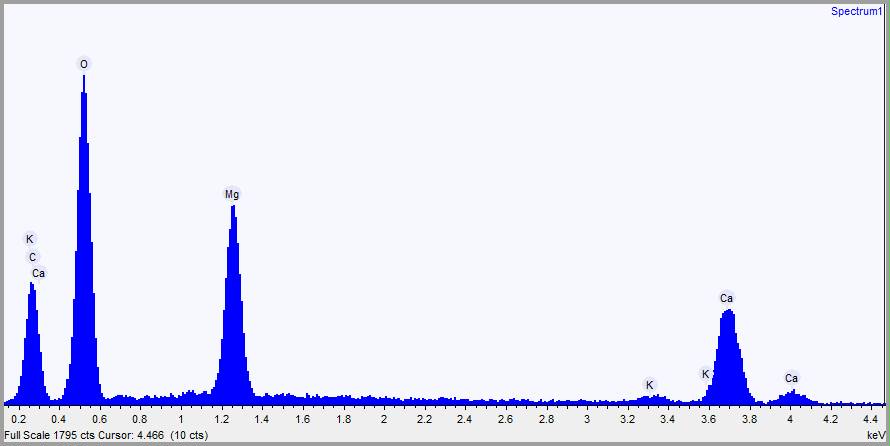
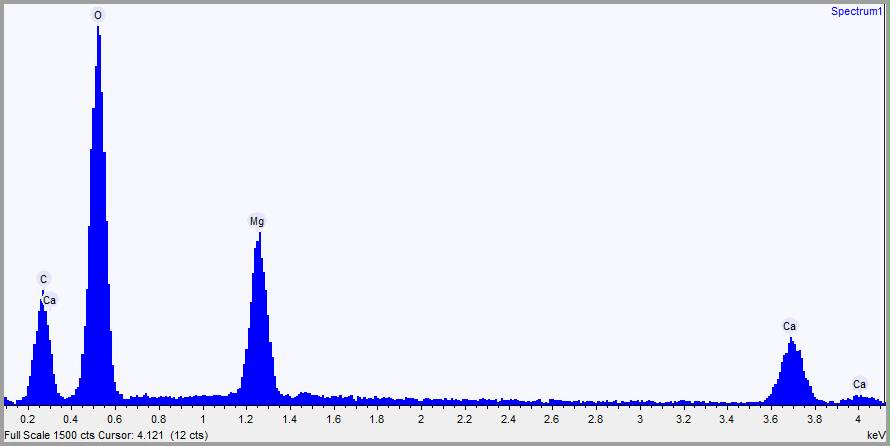


Figure S12 (dolomite D)



R1



R2

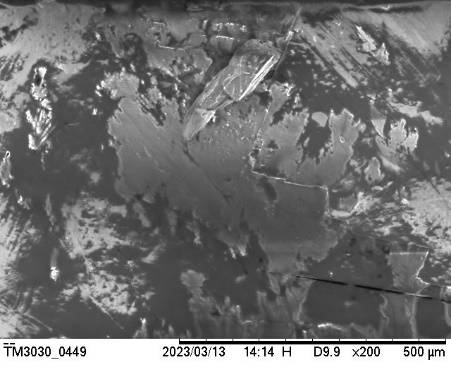
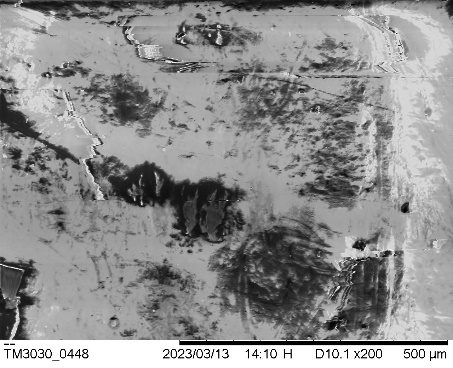
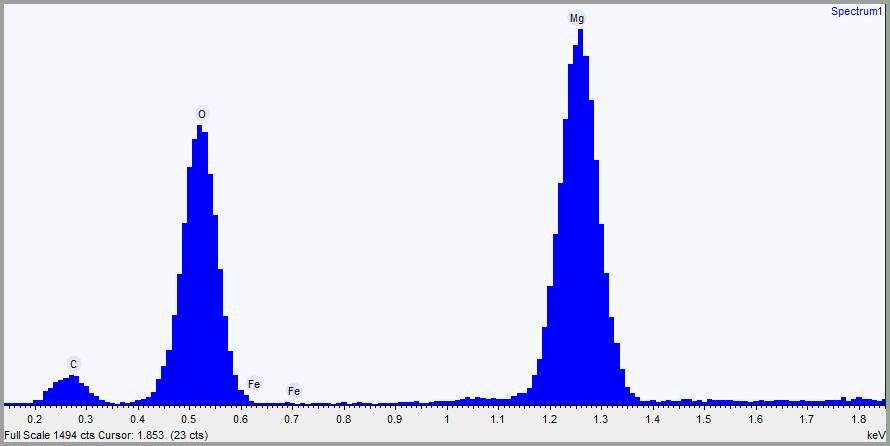


Figure S13 (magnesite A)



R1



R2

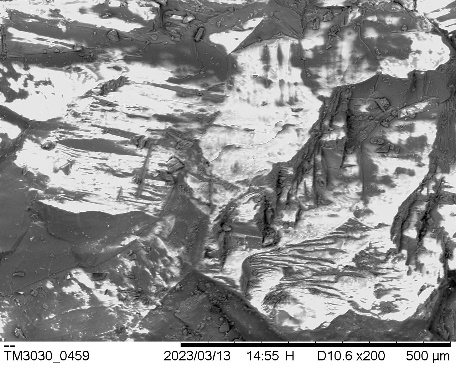
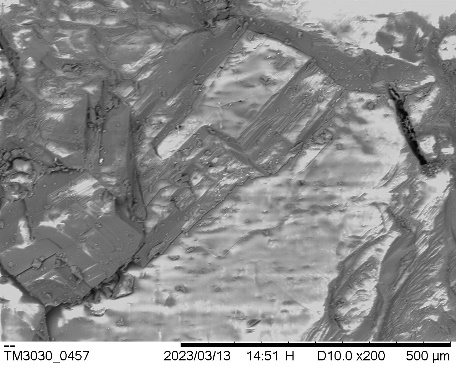
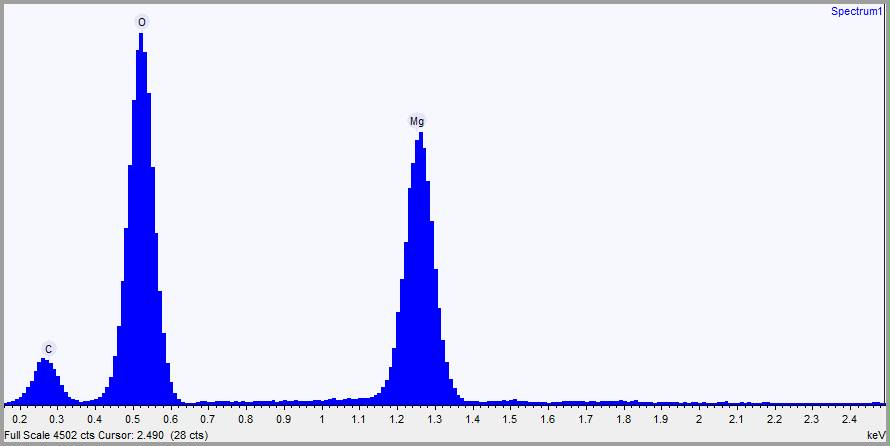
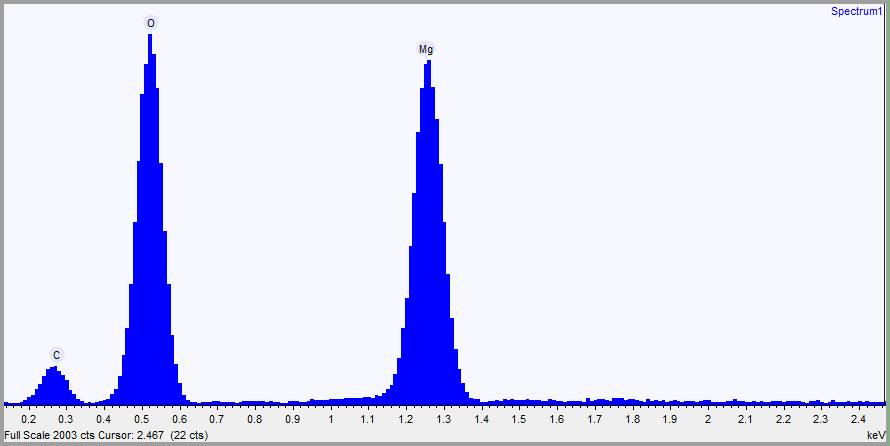


Figure S14 (magnesite B)



R1

R2

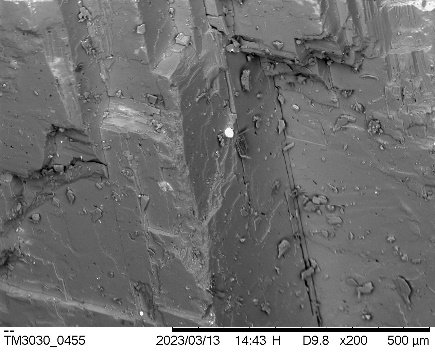
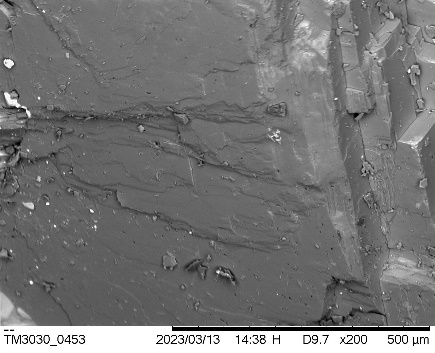
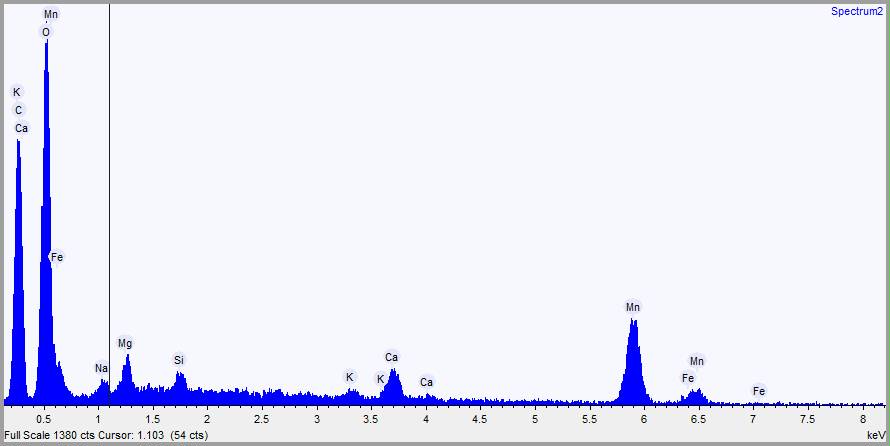
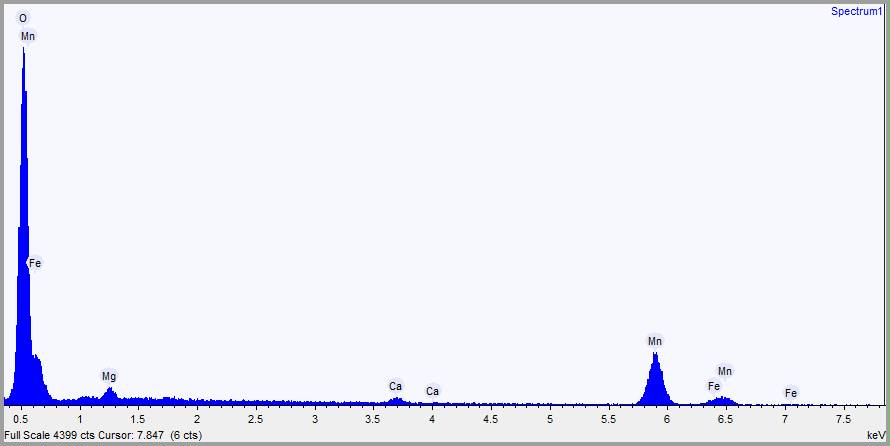


Figure S15 (rhodochrosite A)



R1



R2

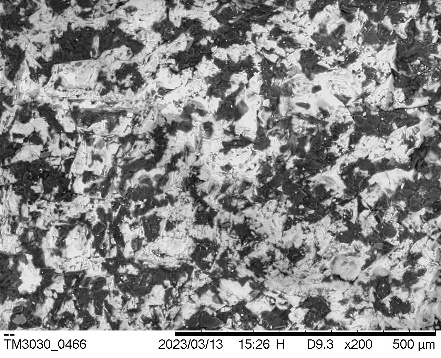
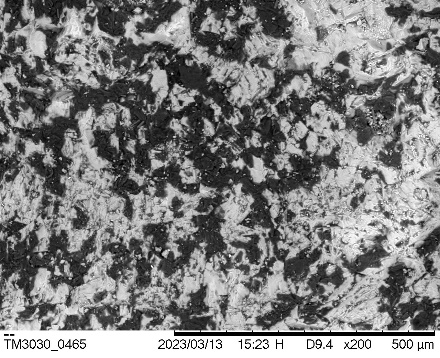
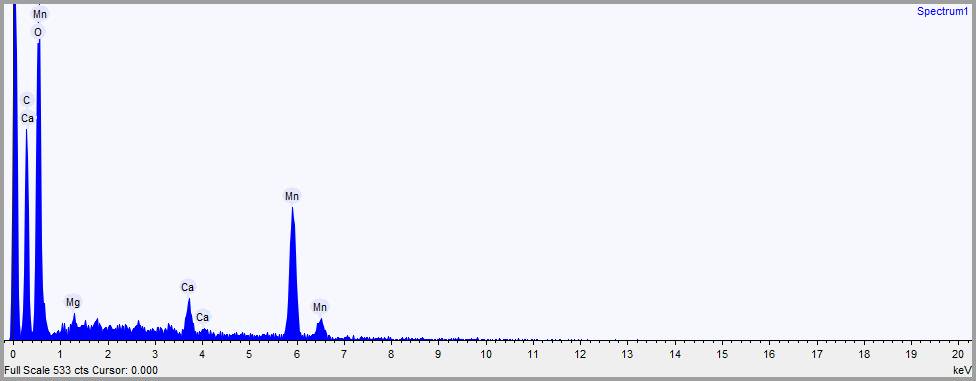
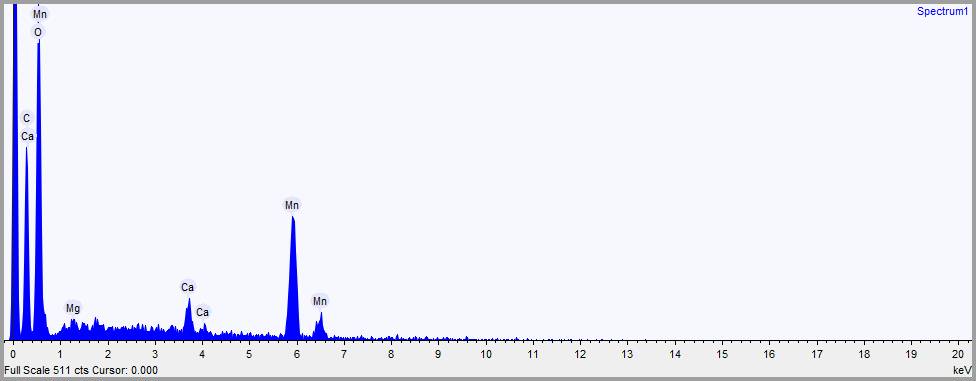


Figure S16 (rhodochrosite B)



R1

R2

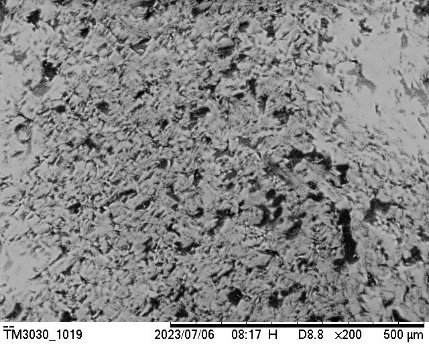
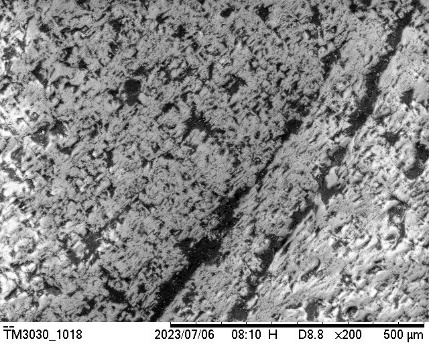
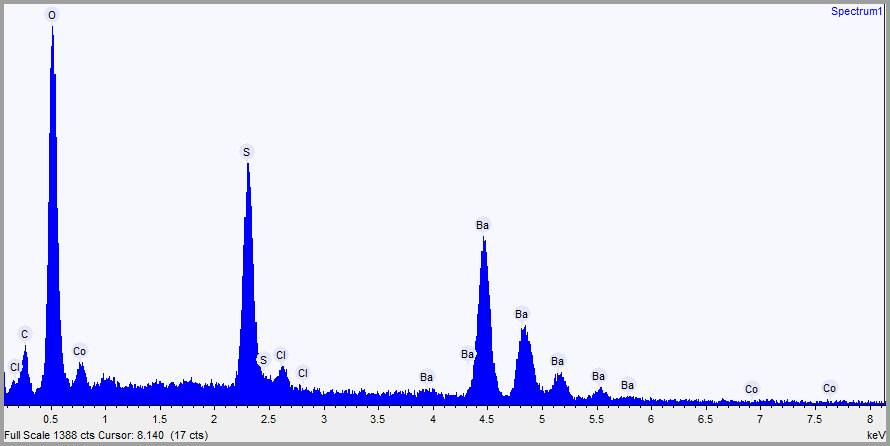
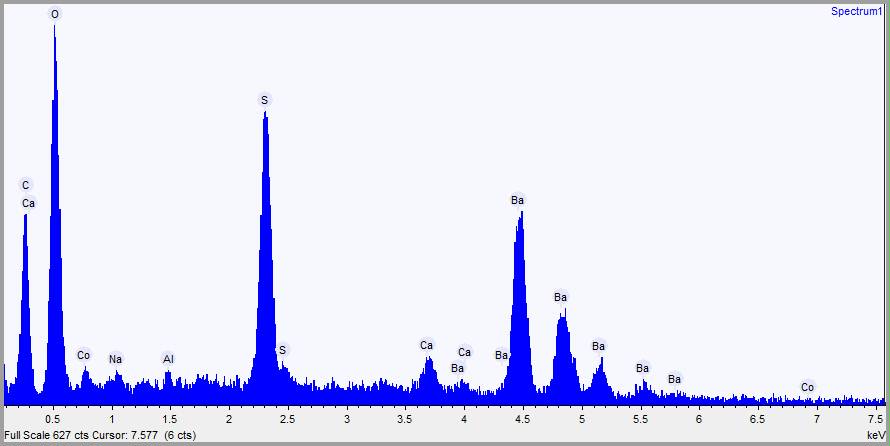


Figure S17 (witherite)



R1

R2

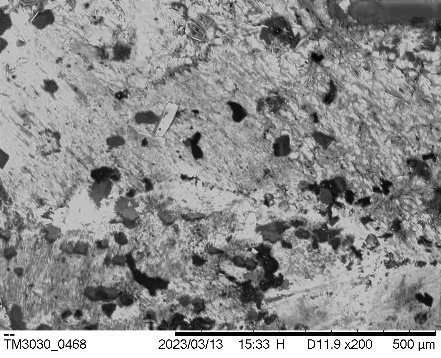
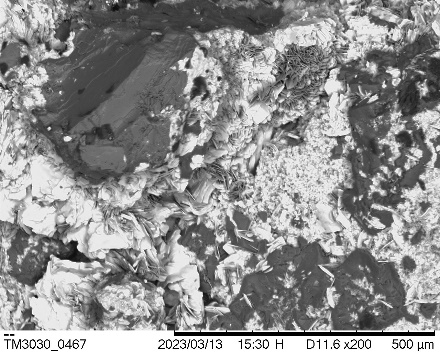
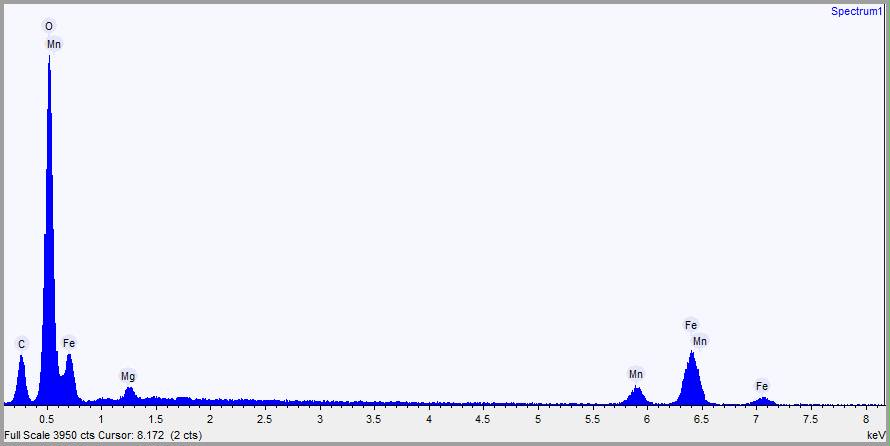
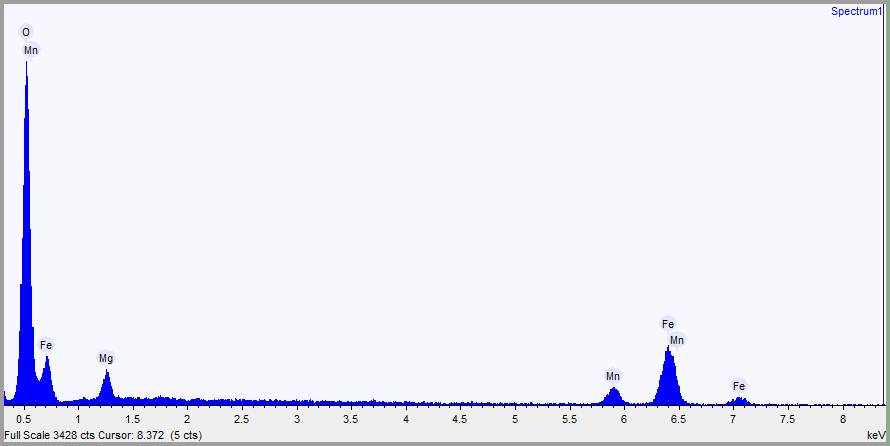


Figure S18 (siderite)



R1

R2

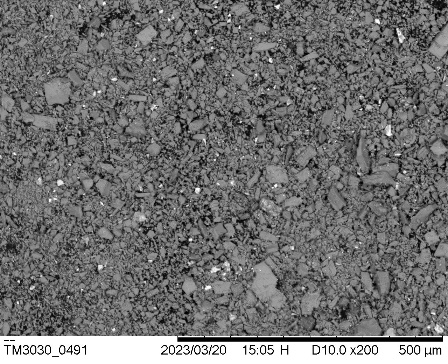
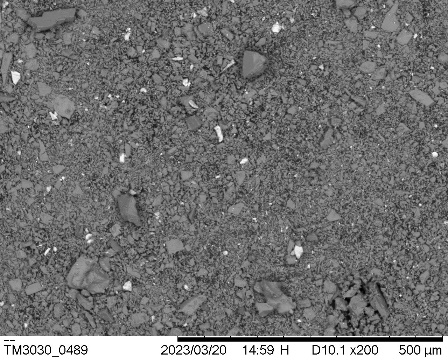
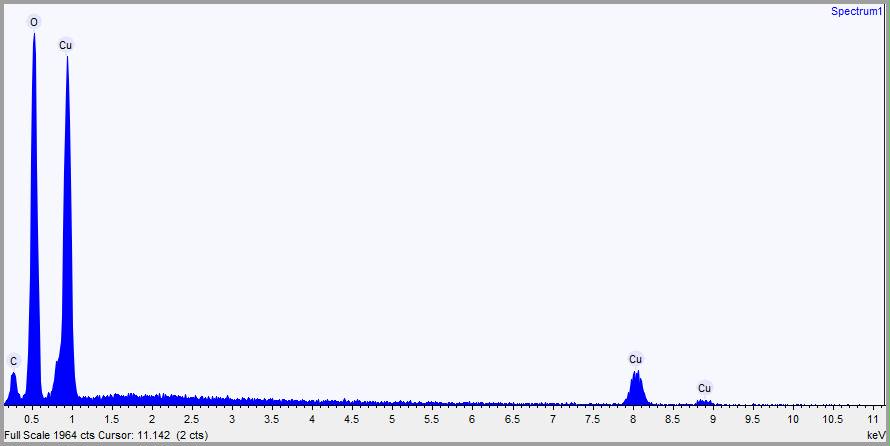
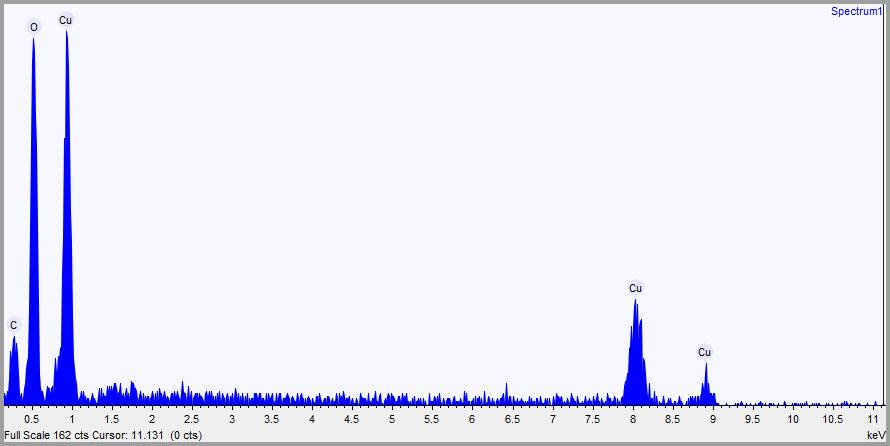


Figure S19 (azurite)



R1

R2

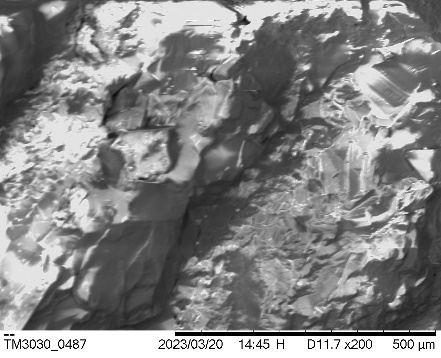
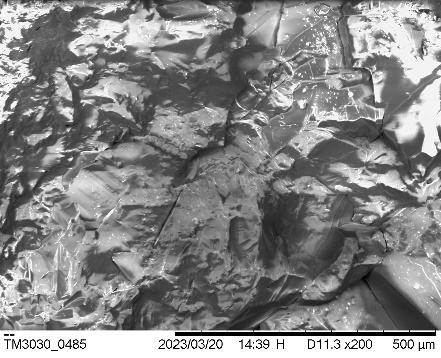
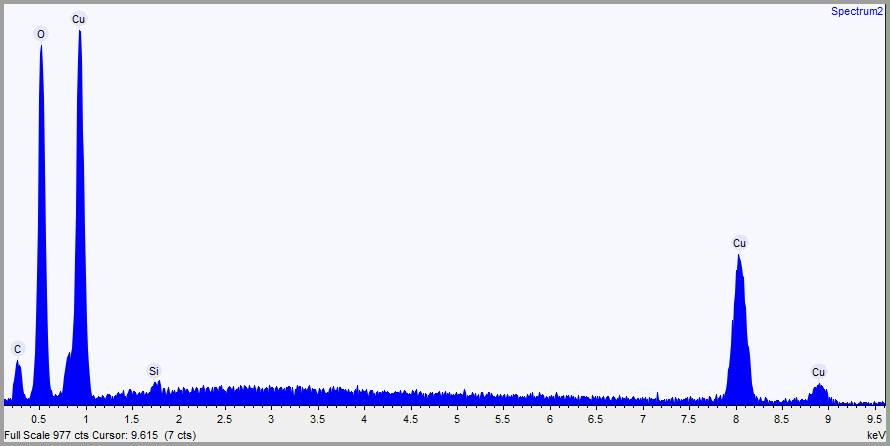
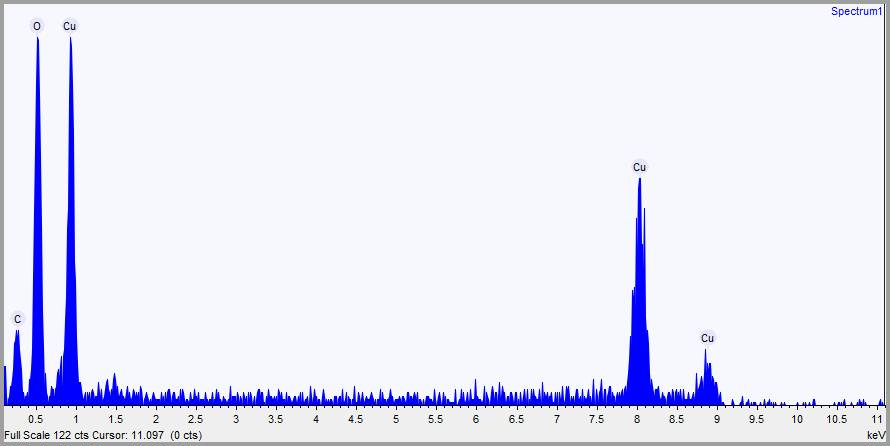


Figure S20 (malachite)



R1



R2

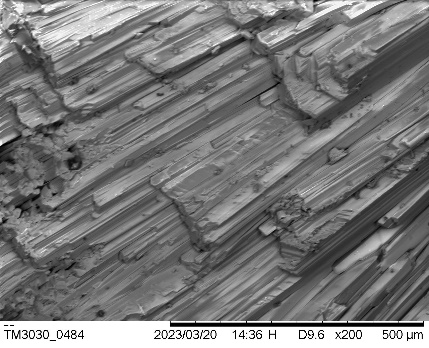
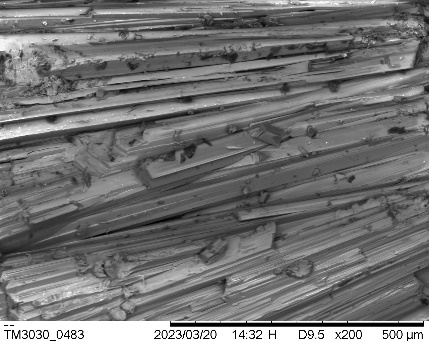


Figure S21 (calcites)

Figure S22 (aragonites)

Figure S23 (dolomites)

Figure S24 (magnesites)

Figure S25 (rhodochrosites)

Figure S26 (witherite)

Figure S27 (siderite)

Figure S28 (azurite)

Figure S29 (malachite)

Figure S30

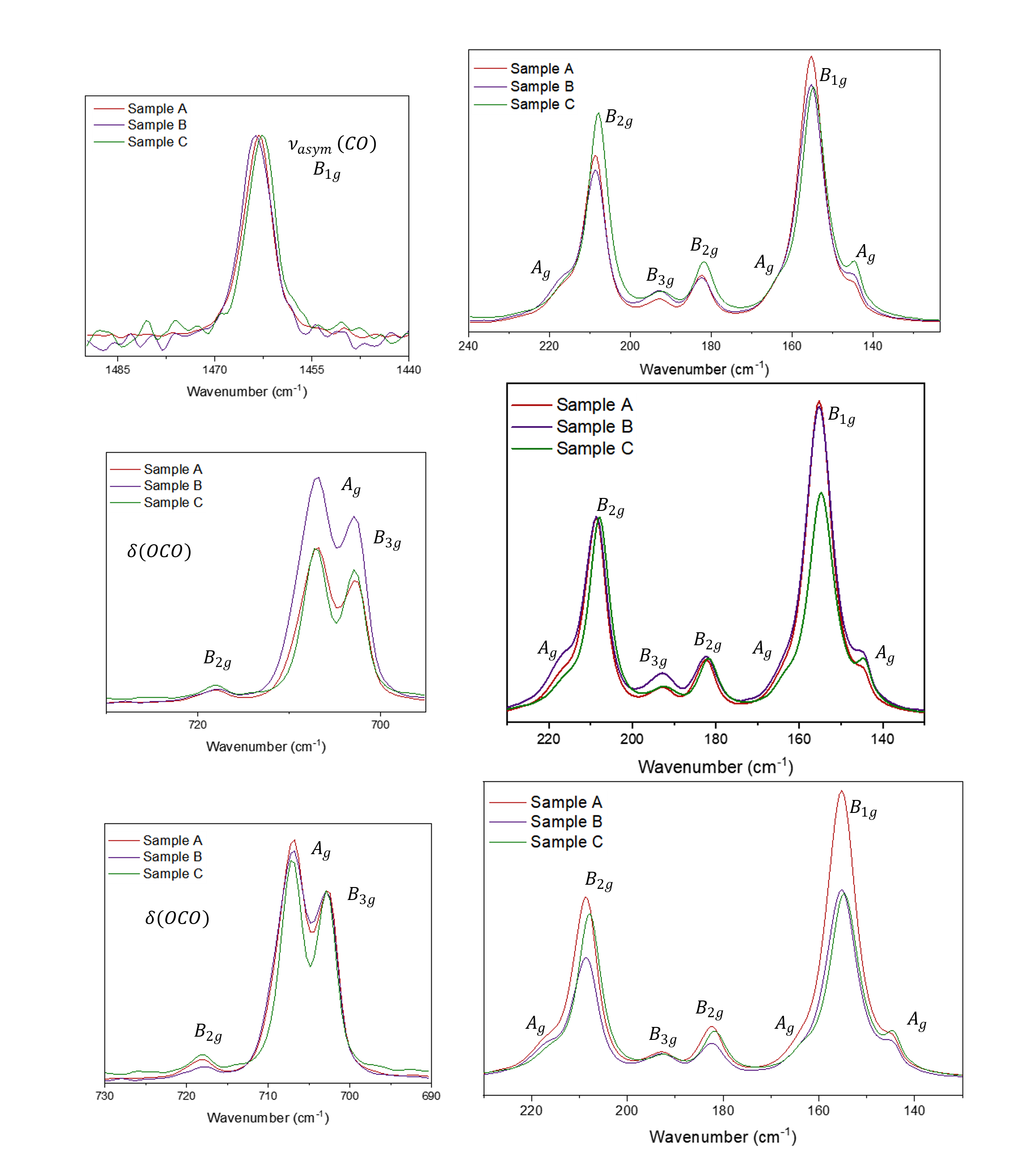


Figure S31

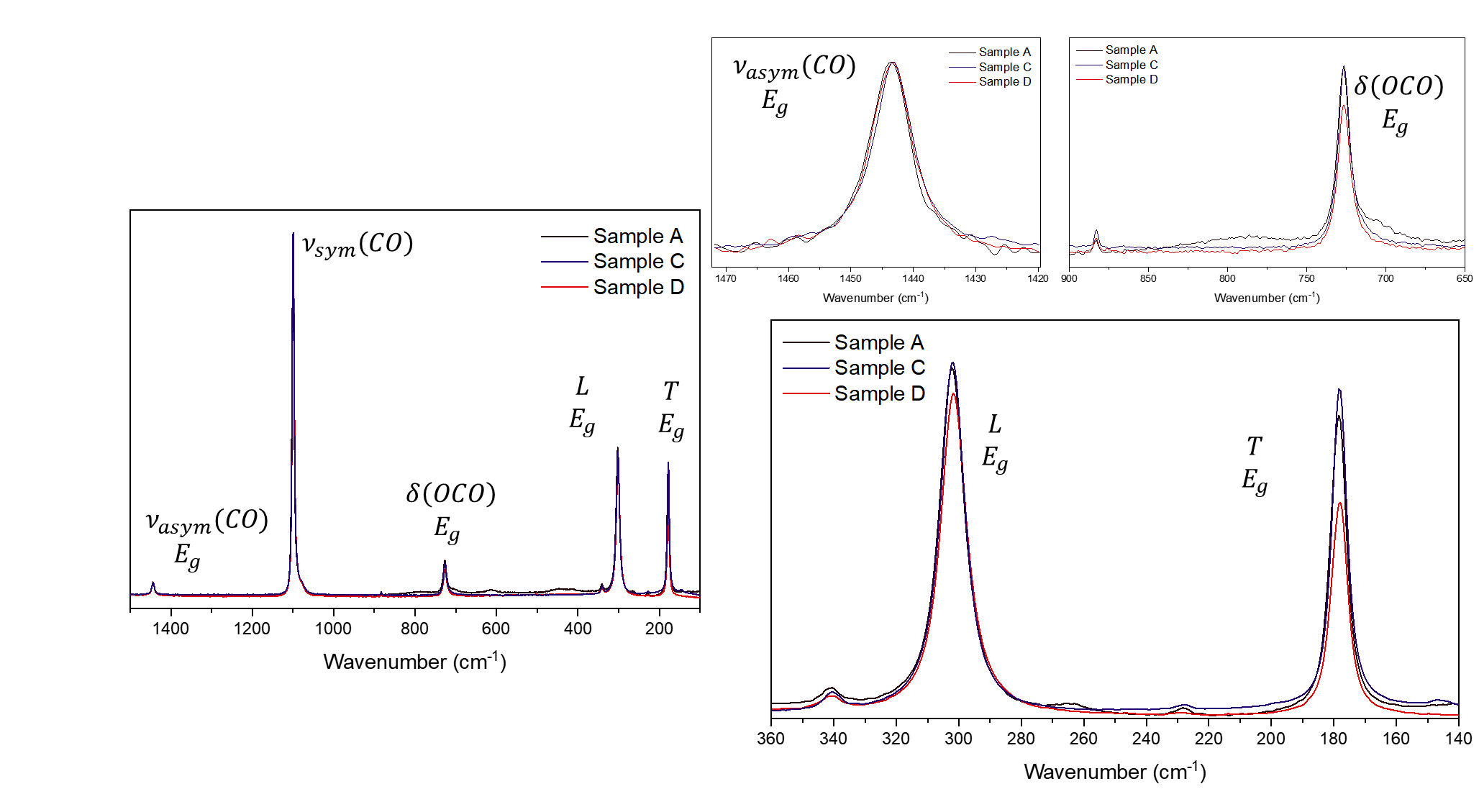


Figure S32

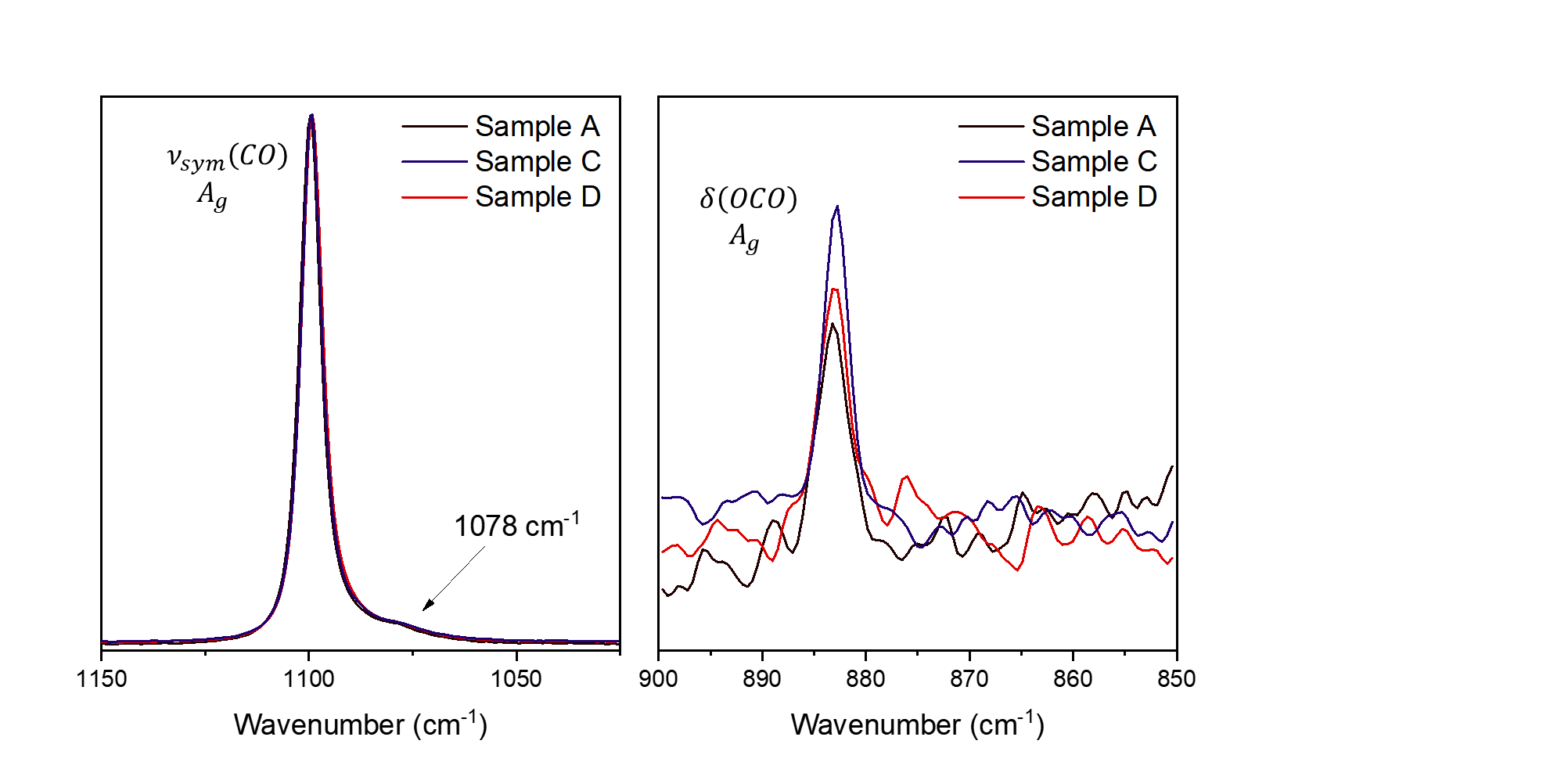


Figure S33

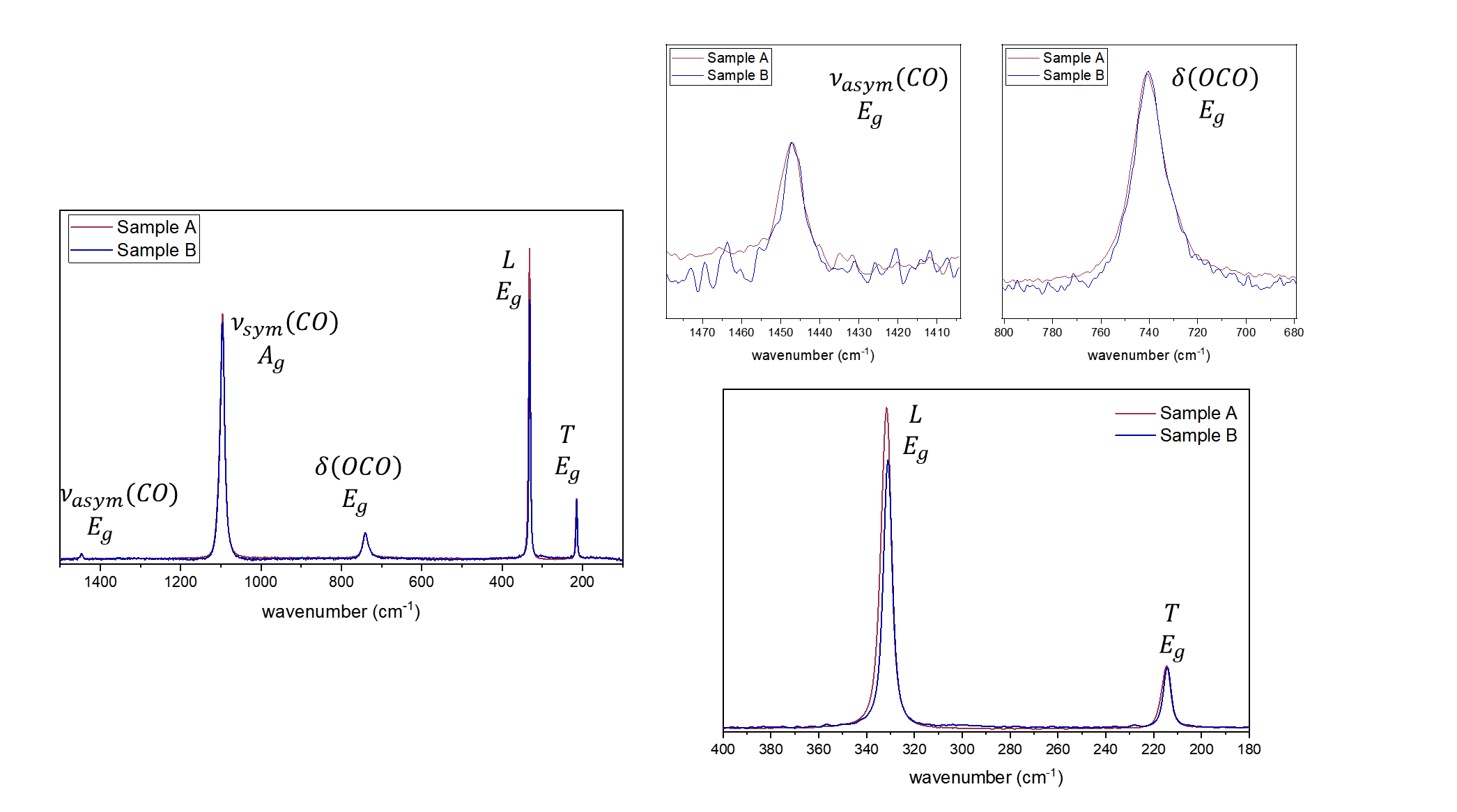


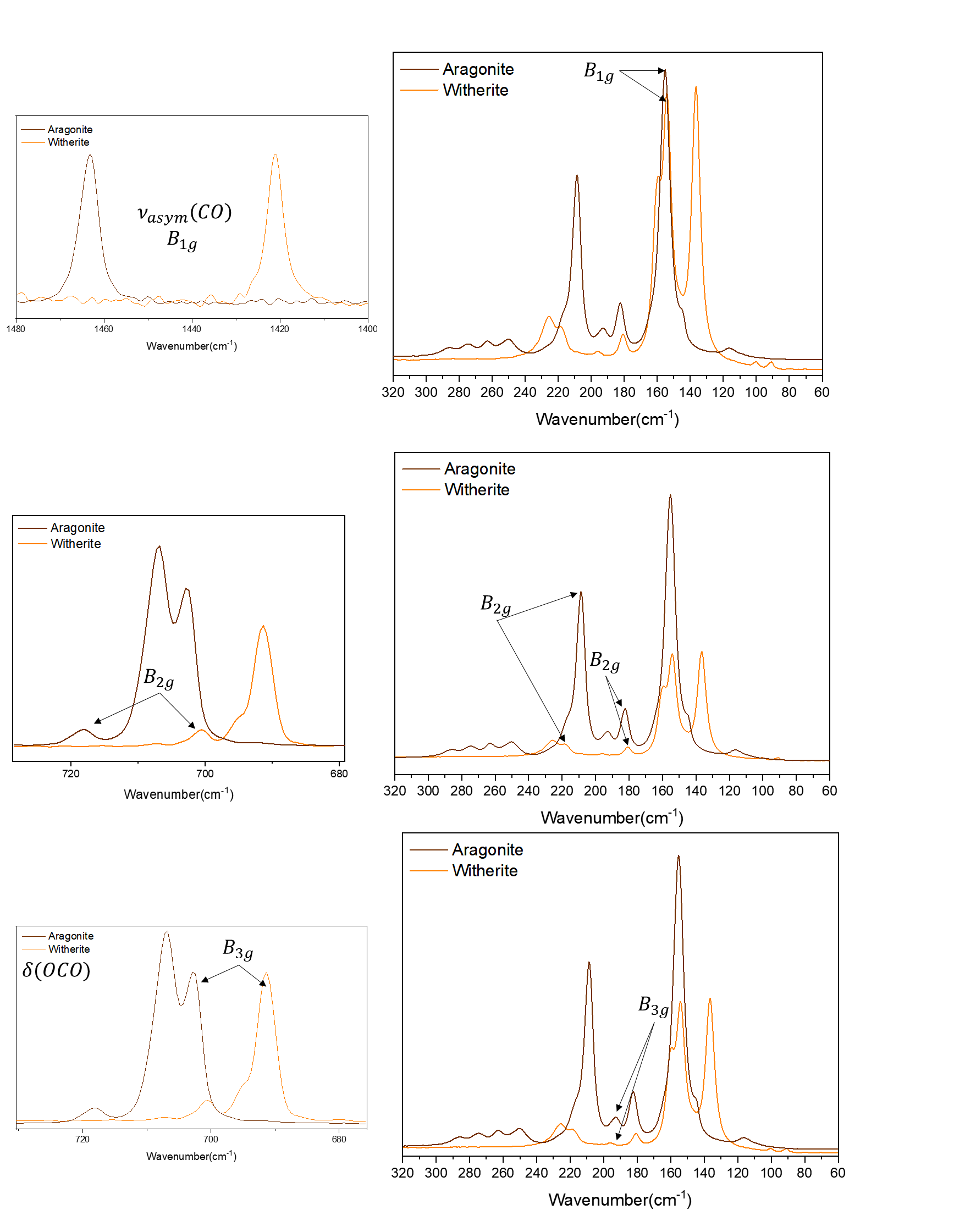
Figure S34

Figure S35

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Calcite  A  Uma imagem contendo mesa, papel, pequeno, pedaço  Descrição gerada automaticamente | Calcite  B  Pedaço de doce  Descrição gerada automaticamente com confiança baixa | Calcite  C  Uma imagem contendo pedaço, comida, pequeno, mesa  Descrição gerada automaticamente | Calcite  D  Uma imagem contendo pedaço, comida, pequeno, mesa  Descrição gerada automaticamente | Calcite  E  Uma imagem contendo comida  Descrição gerada automaticamente |
| Magnesite  A  Uma imagem contendo bolo, pedaço, pequeno, marrom  Descrição gerada automaticamente | Magnesite  B  Pedaço de chocolate  Descrição gerada automaticamente com confiança baixa | Dolomite  A | Dolomite  B | Dolomite  C  Uma imagem contendo pedaço, mesa, deitado  Descrição gerada automaticamente |
| Dolomite  D  Uma imagem contendo pedaço, mesa, deitado  Descrição gerada automaticamente | Aragonite  A  Uma imagem contendo bolo, mesa, pedaço, chocolate  Descrição gerada automaticamente | Aragonite  B  Bolo de chocolate  Descrição gerada automaticamente com confiança baixa | Aragonite  C  Uma imagem contendo comida, mesa  Descrição gerada automaticamente | Rhodochrosite  A |
| Rhodochrosite  B | Witherite  Imagem em preto e branco  Descrição gerada automaticamente com confiança média | Siderite  Uma imagem contendo pedaço, comida, pequeno, mesa  Descrição gerada automaticamente | Malachite  Sapo em cima de uma superfície verde  Descrição gerada automaticamente | Azurite  Imagem em preto e branco  Descrição gerada automaticamente com confiança média |