From “Yellow Sapphire: Natural, Heat-Treated, Beryllium-Diffused, and Synthetic”
John L. Emmett, Ungkhana Atikarnsakul, Jennifer Stone-Sundberg, and Supharart Sangsawong
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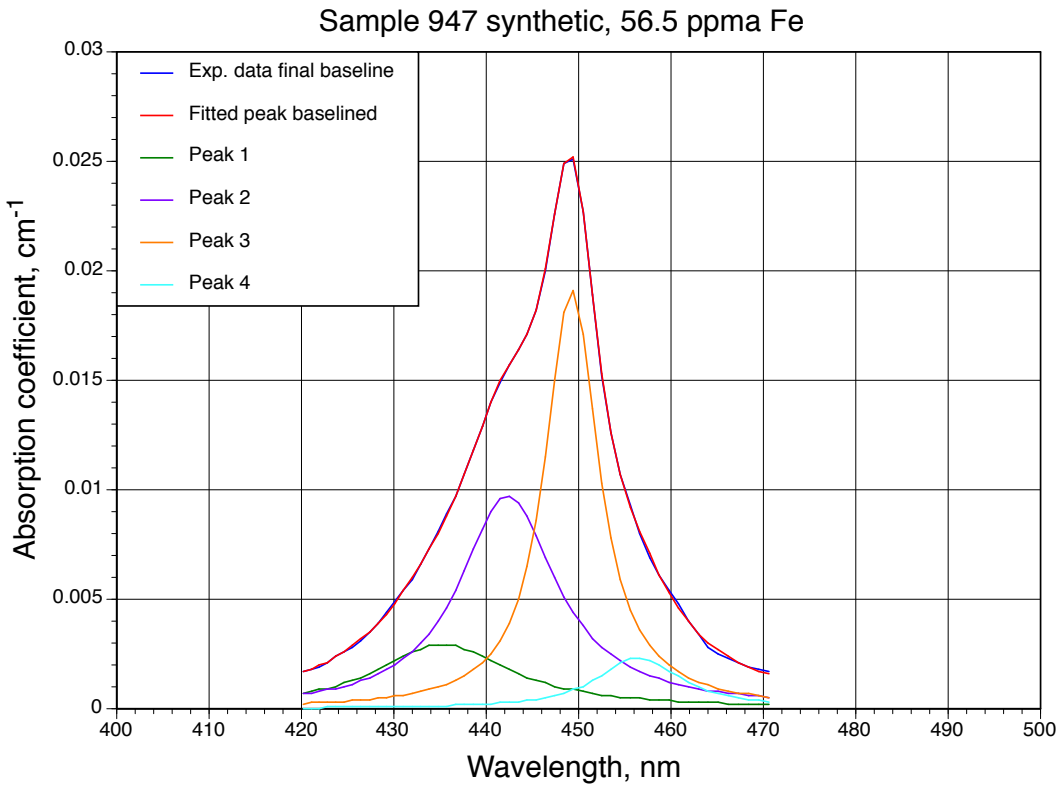
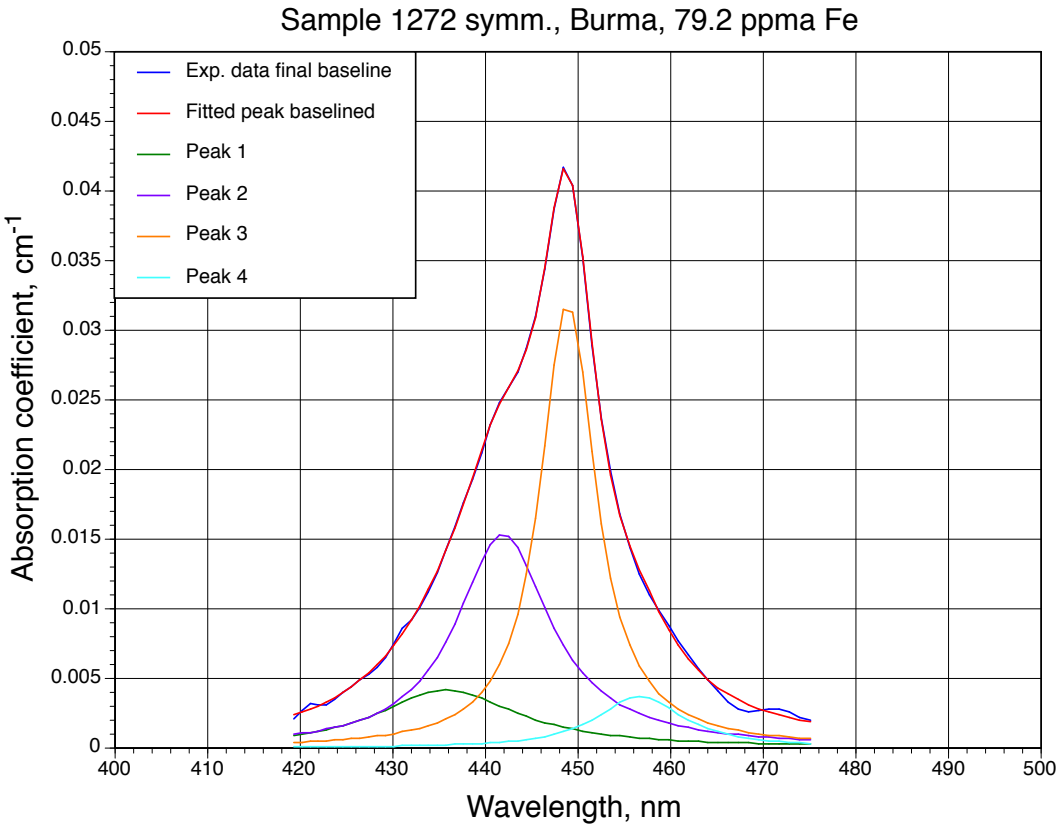
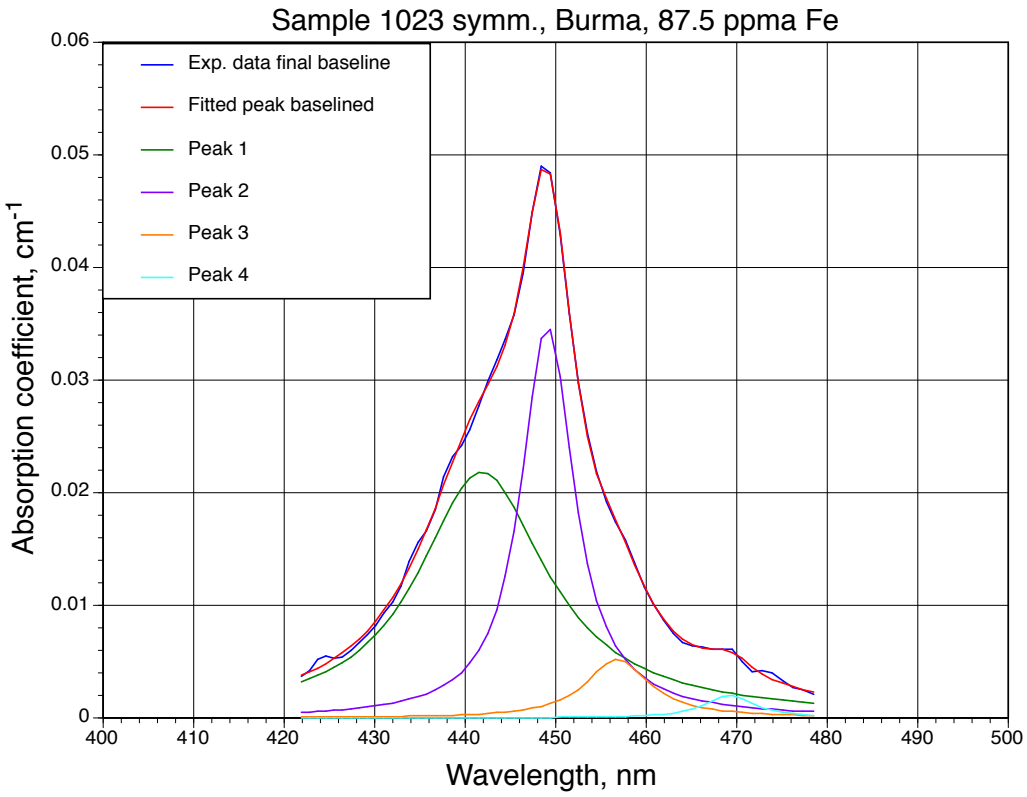
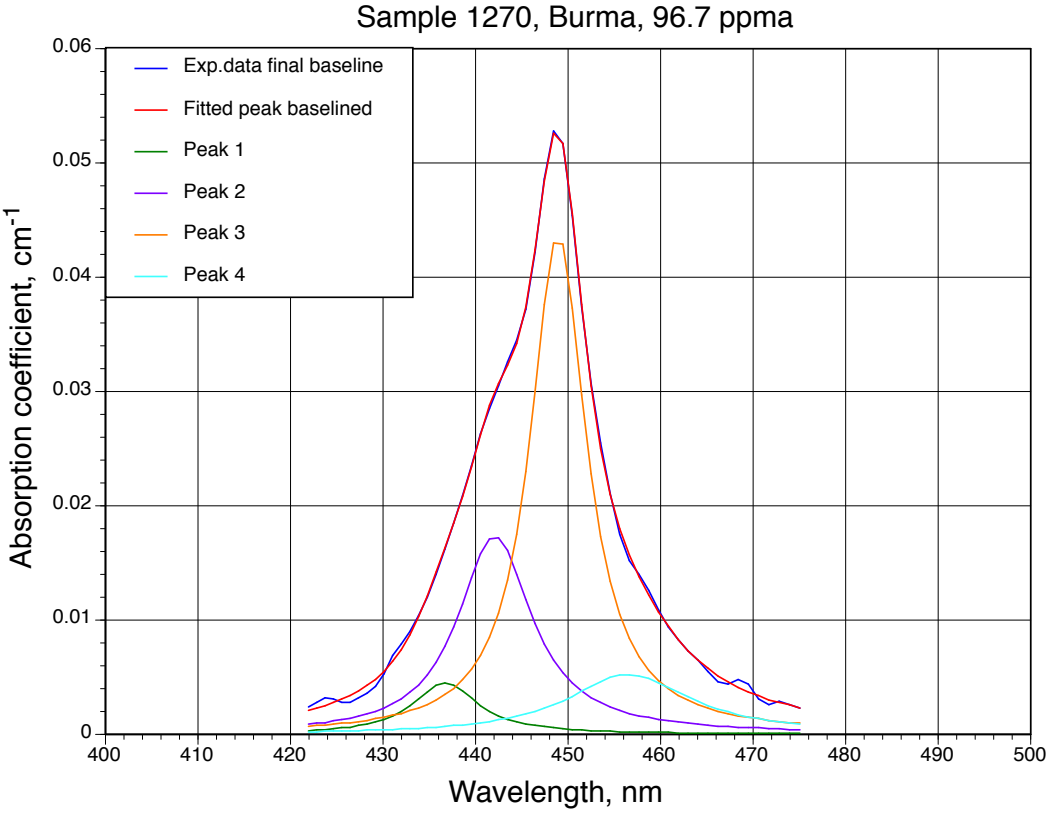
Appendix 1

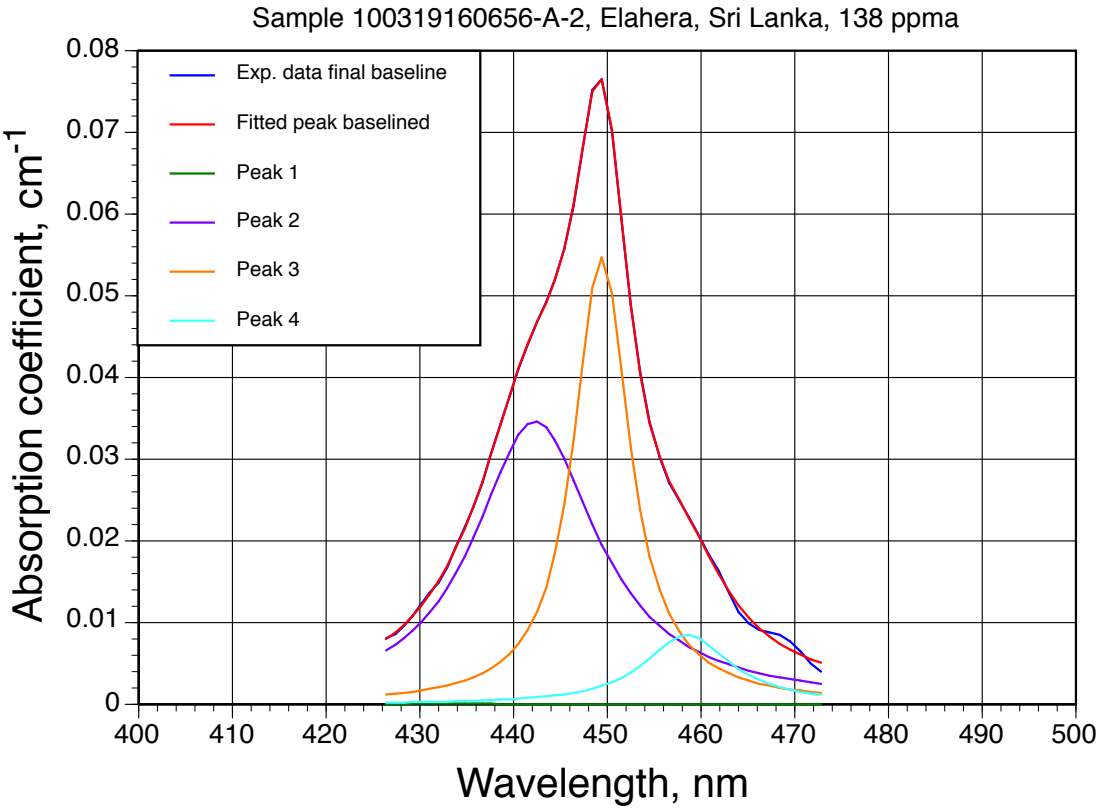
This appendix is comprised of 24 spectra of the Fe^{3+} 450 nm band in corundum samples. The Fe concentrations of these samples range from 56.5 to 4730 ppma. The spectra presented are for the E $\perp$ c (O-ray) only.

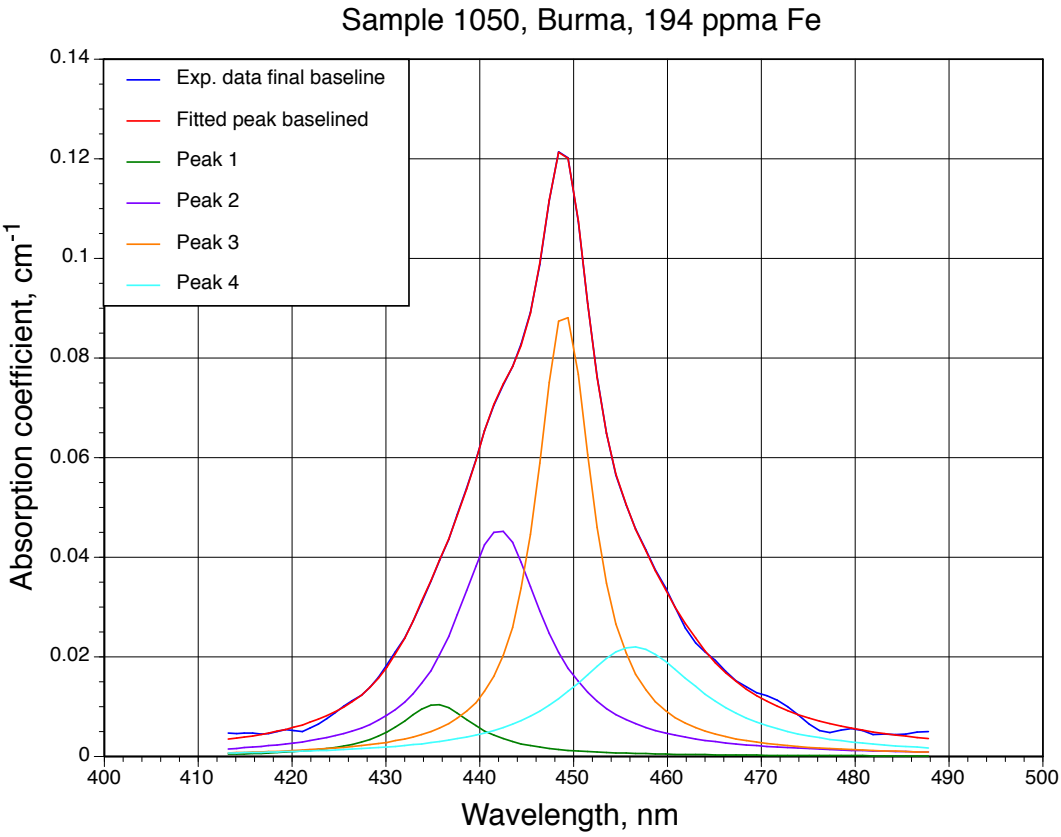

Sample 947 synthetic, 56.5 ppma Fe
Exp. data final baseline
Fitted peak baselined
Peak 1
Peak 2
Peak 3
Peak 4
Absorption coefficient, cm-1
Wavelength, nm
0.03
0.025
0.02
0.015
0.01
0.005
0
400
410
420
430
440
450
460
470
480
490
500

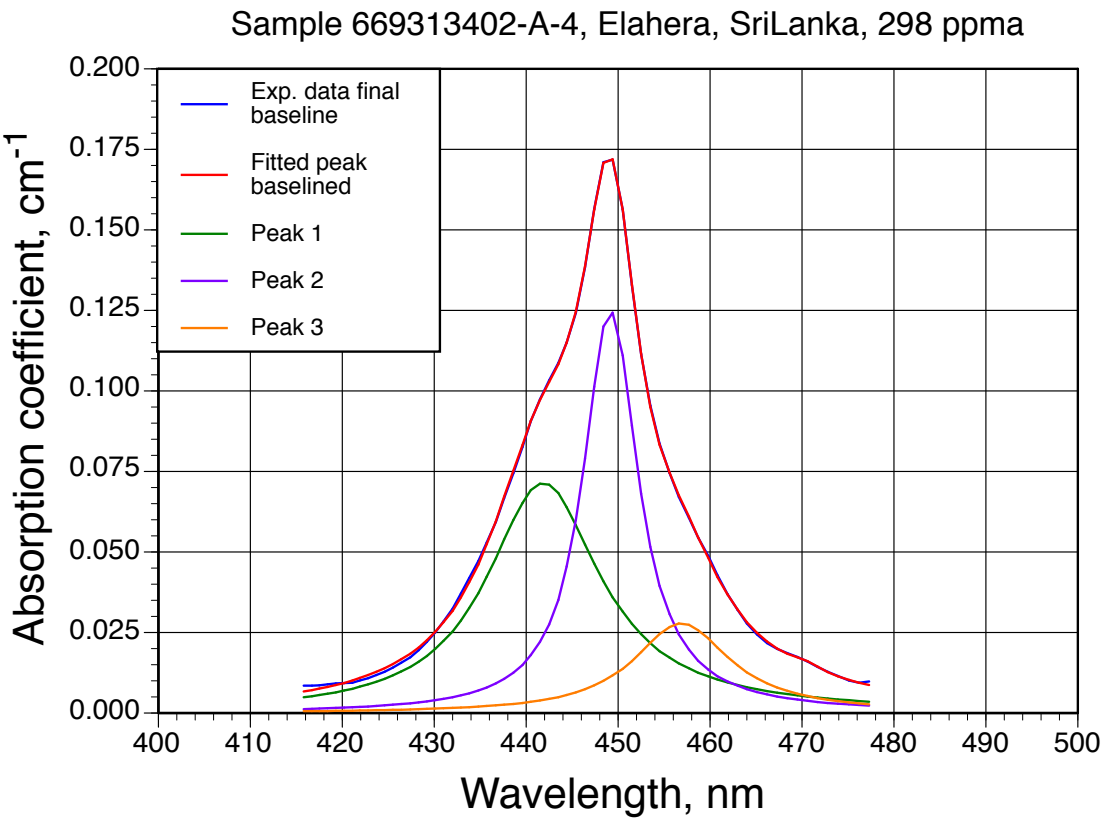

Sample 1272 symm., Burma, 79.2 ppma Fe
Exp. data final baseline
Fitted peak baselined
Peak 1
Peak 2
Peak 3
Peak 4
Absorption coefficient, cm-1
Wavelength, nm
0.05
0.045
0.04
0.035
0.03
0.025
0.02
0.015
0.01
0.005
0
400
410
420
430
440
450
460
470
480
490
500

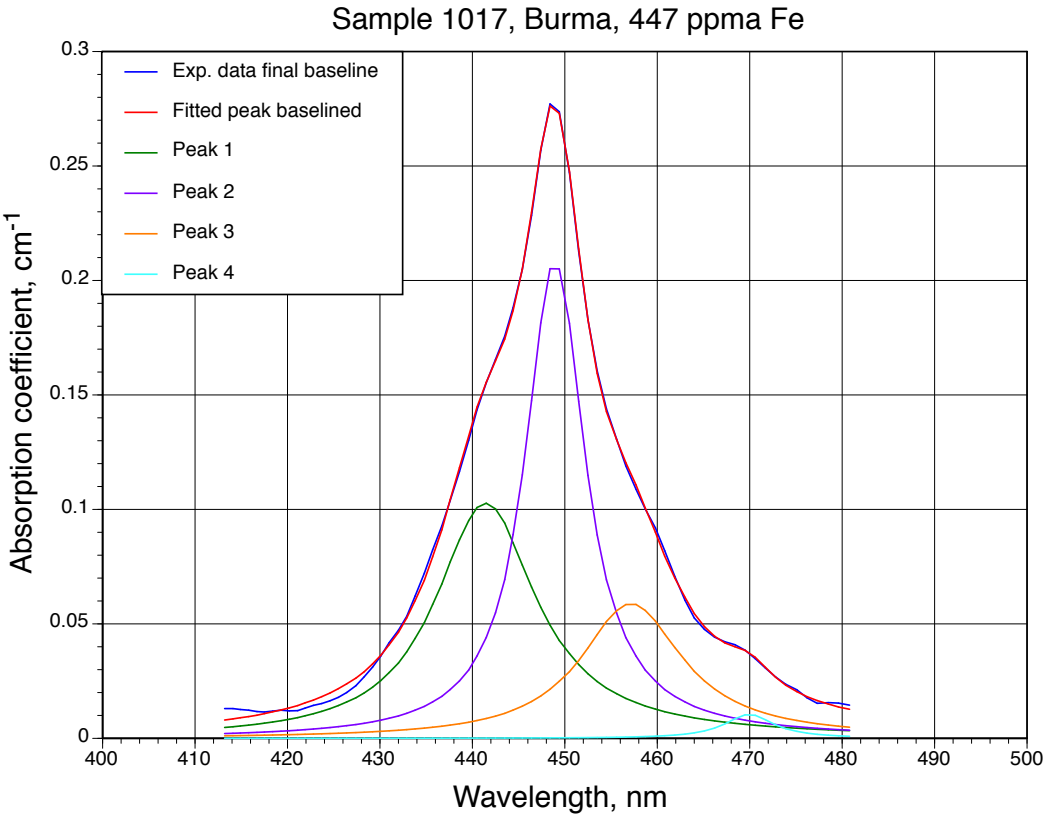

Sample 1023 symm., Burma, 87.5 ppma Fe
Exp. data final baseline
Fitted peak baselined
Peak 1
Peak 2
Peak 3
Peak 4
Absorption coefficient, cm-1
Wavelength, nm
0.06
0.05
0.04
0.03
0.02
0.01
0
400
410
420
430
440
450
460
470
480
490
500

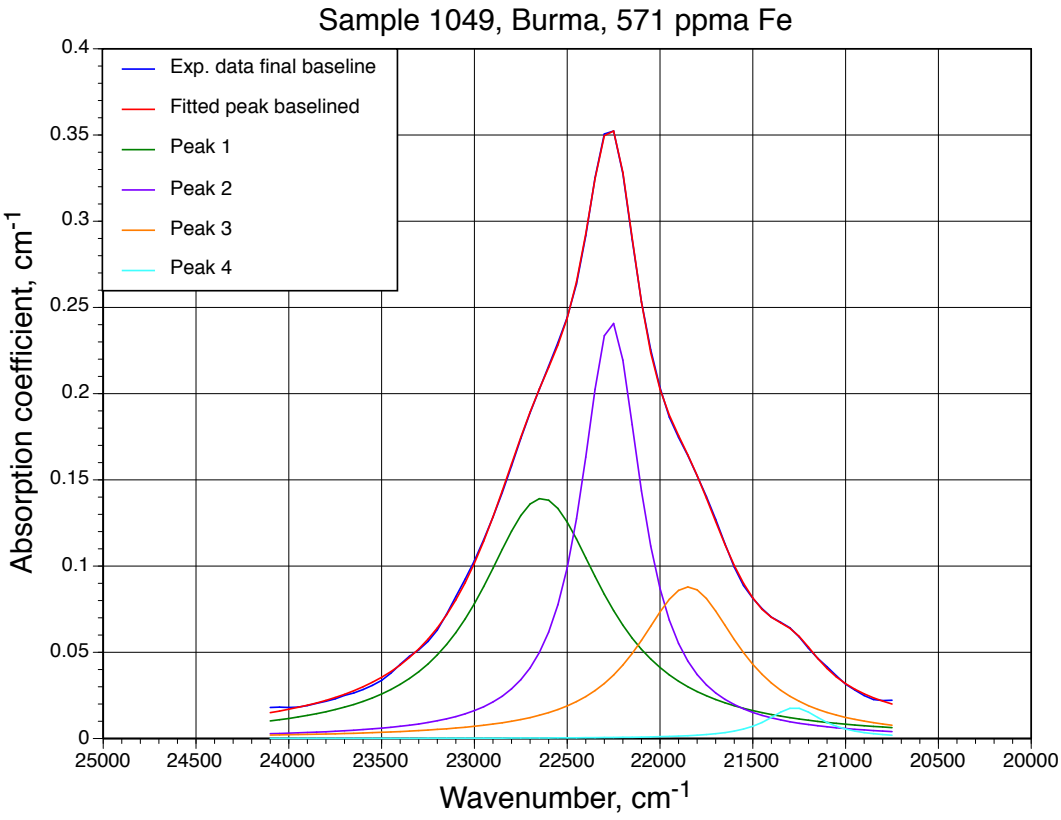

Sample 1270, Burma, 96.7 ppma
Exp.data final baseline
Fitted peak baselined
Peak 1
Peak 2
Peak 3
Peak 4
Absorption coefficient, cm-1
Wavelength, nm
0.06
0.05
0.04
0.03
0.02
0.01
0
400
410
420
430
440
450
460
470
480
490
500

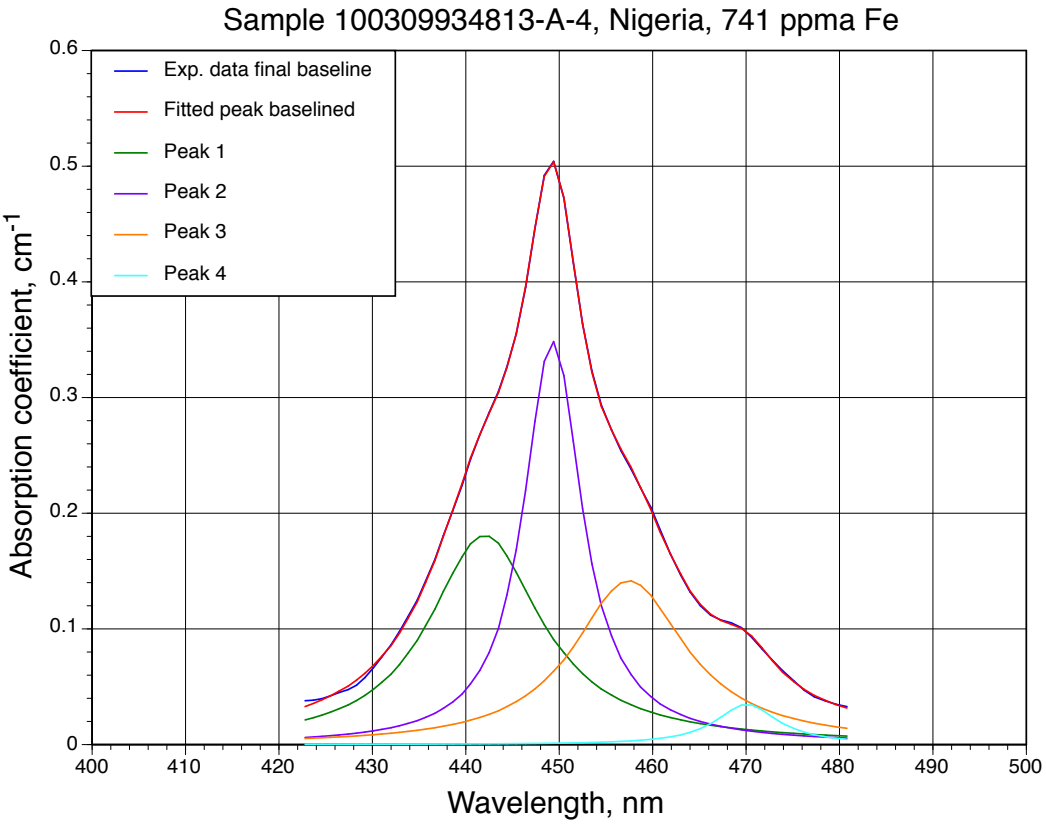

Sample 100319160656-A-2, Elahera, Sri Lanka, 138 ppma
Exp. data final baseline
Fitted peak baselined
Peak 1
Peak 2
Peak 3
Peak 4
Absorption coefficient, cm-1
Wavelength, nm
0.08
0.07
0.06
0.05
0.04
0.03
0.02
0.01
0
400
410
420
430
440
450
460
470
480
490
500

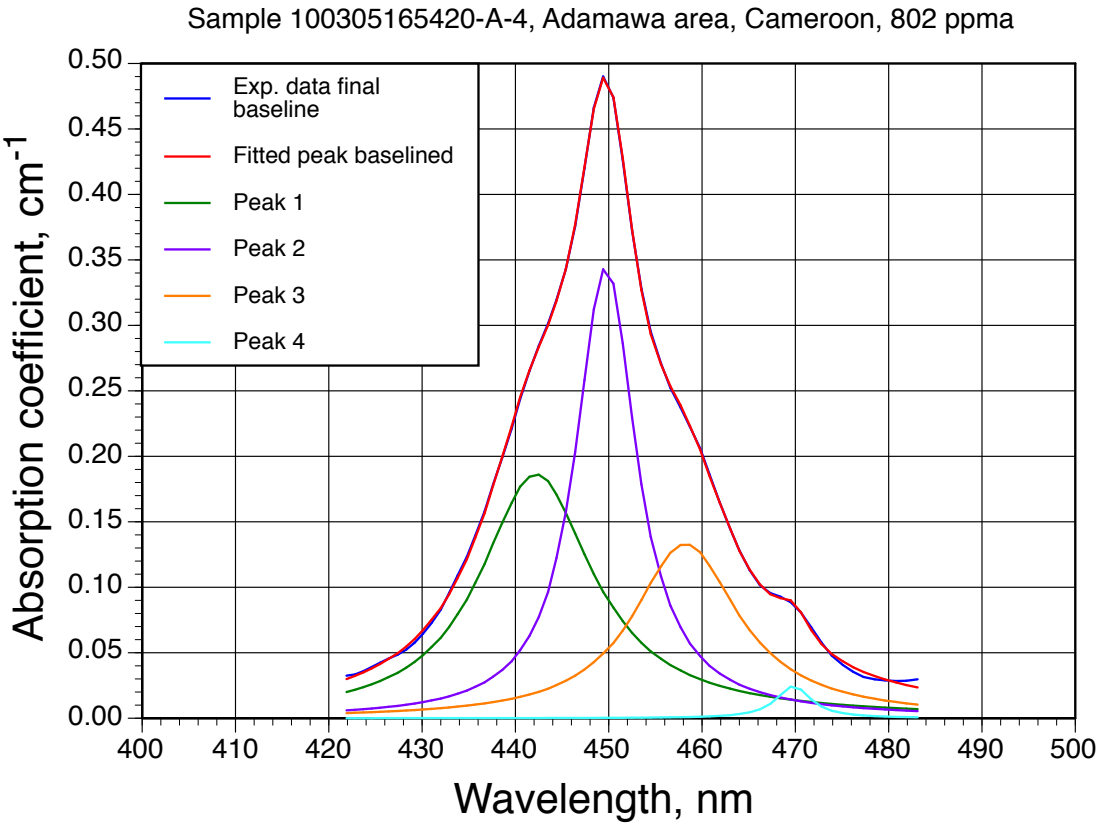

Sample 1050, Burma, 194 ppma Fe
Exp. data final baseline
Fitted peak baselined
Peak 1
Peak 2
Peak 3
Peak 4
Absorption coefficient, cm-1
Wavelength, nm
0.14
0.12
0.1
0.08
0.06
0.04
0.02
0
400
410
420
430
440
450
460
470
480
490
500

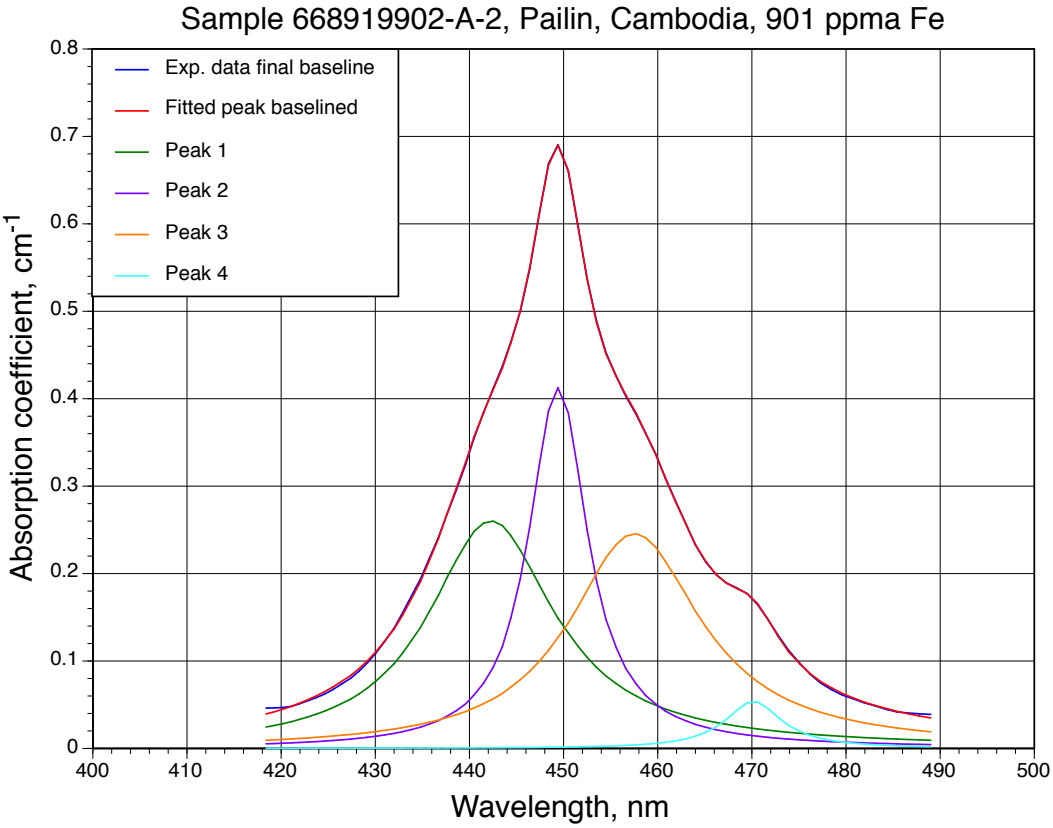

Sample 669313402-A-4, Elahera, SriLanka, 298 ppma
Exp. data final baseline
Fitted peak baselined
Peak 1
Peak 2
Peak 3
Absorption coefficient, cm-1
0.200
0.175
0.150
0.125
0.100
0.075
0.050
0.025
0.000
400
410
420
430
440
450
460
470
480
490
500
Wavelength, nm

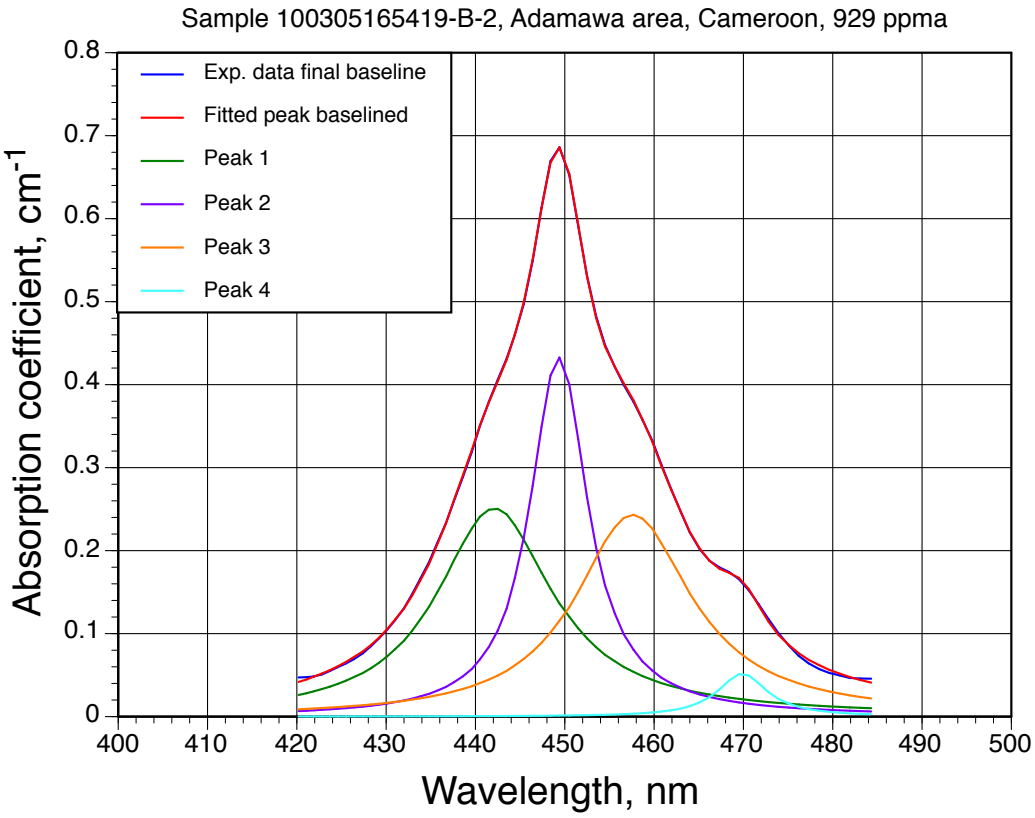

Sample 1017, Burma, 447 ppma Fe
Exp. data final baseline
Fitted peak baselined
Peak 1
Peak 2
Peak 3
Peak 4
Absorption coefficient, cm-1
0.3
0.25
0.2
0.15
0.1
0.05
0
400
410
420
430
440
450
460
470
480
490
500
Wavelength, nm

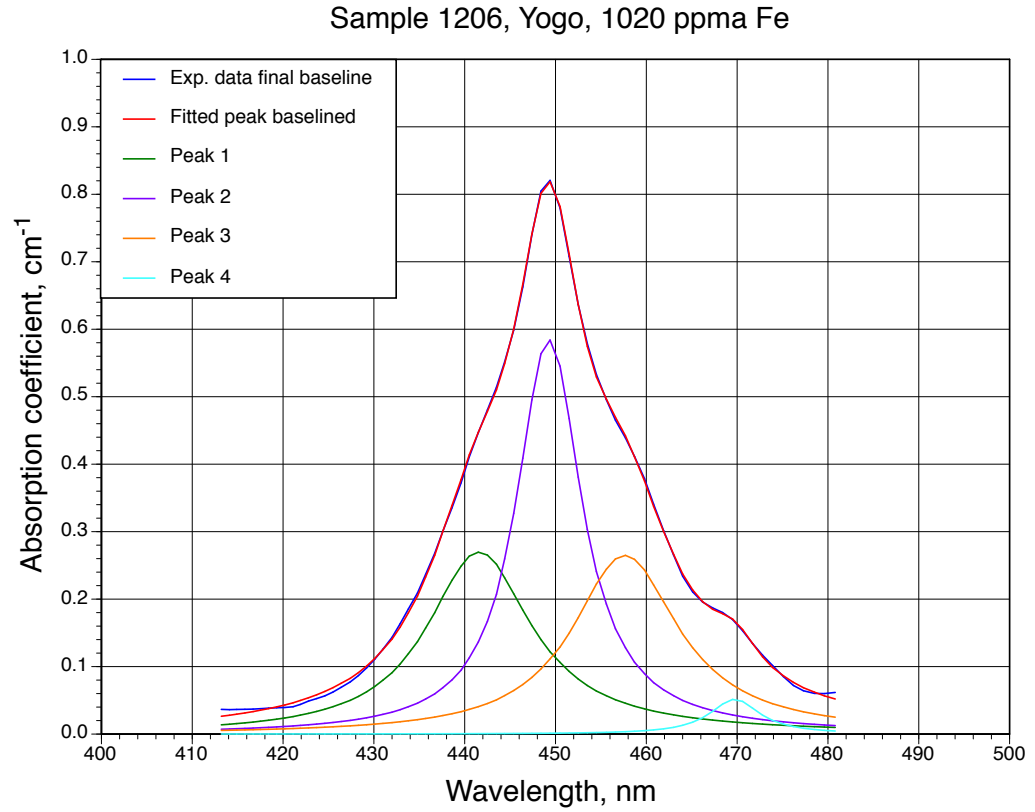

Sample 1049, Burma, 571 ppma Fe
Exp. data final baseline
Fitted peak baselined
Peak 1
Peak 2
Peak 3
Peak 4
Absorption coefficient, cm-1
Wavenumber, cm-1
0.4
0.35
0.3
0.25
0.2
0.15
0.1
0.05
0
25000
24500
24000
23500
23000
22500
22000
21500
21000
20500
20000

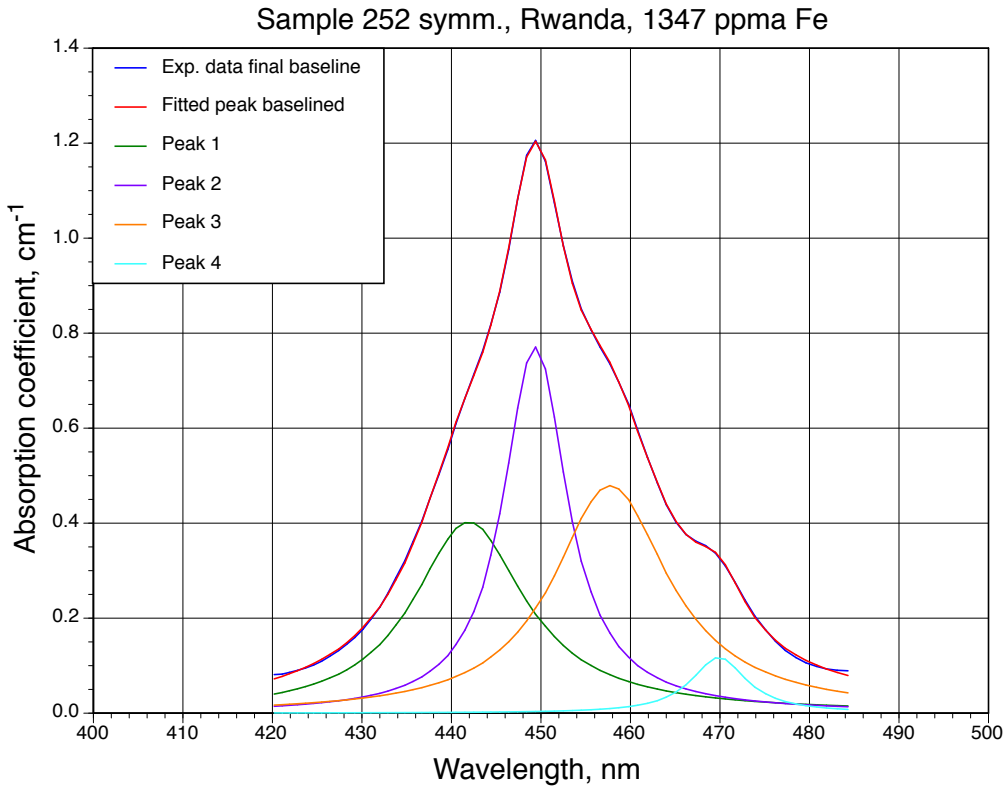

Sample 100309934813-A-4, Nigeria, 741 ppma Fe
Exp. data final baseline
Fitted peak baselined
Peak 1
Peak 2
Peak 3
Peak 4
Absorption coefficient, cm-1
Wavelength, nm
0.6
0.5
0.4
0.3
0.2
0.1
0
400
410
420
430
440
450
460
470
480
490
500

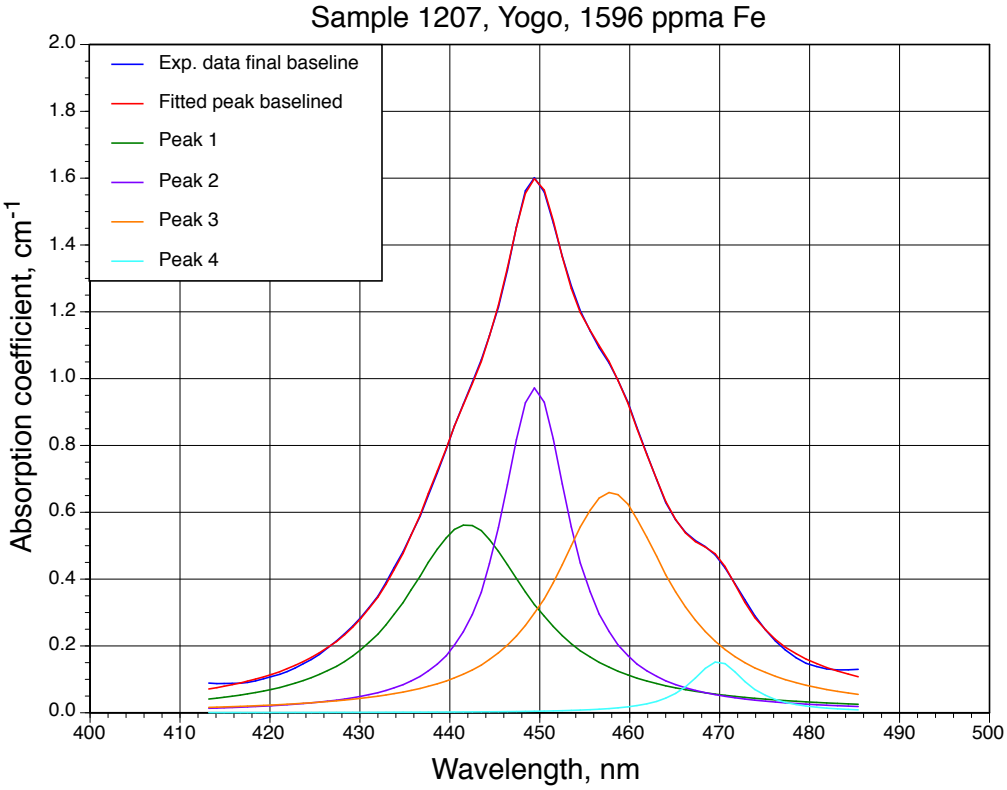

Sample 100305165420-A-4, Adamawa area, Cameroon, 802 ppma
Exp. data final baseline
Fitted peak baselined
Peak 1
Peak 2
Peak 3
Peak 4
Absorption coefficient, cm-1
Wavelength, nm

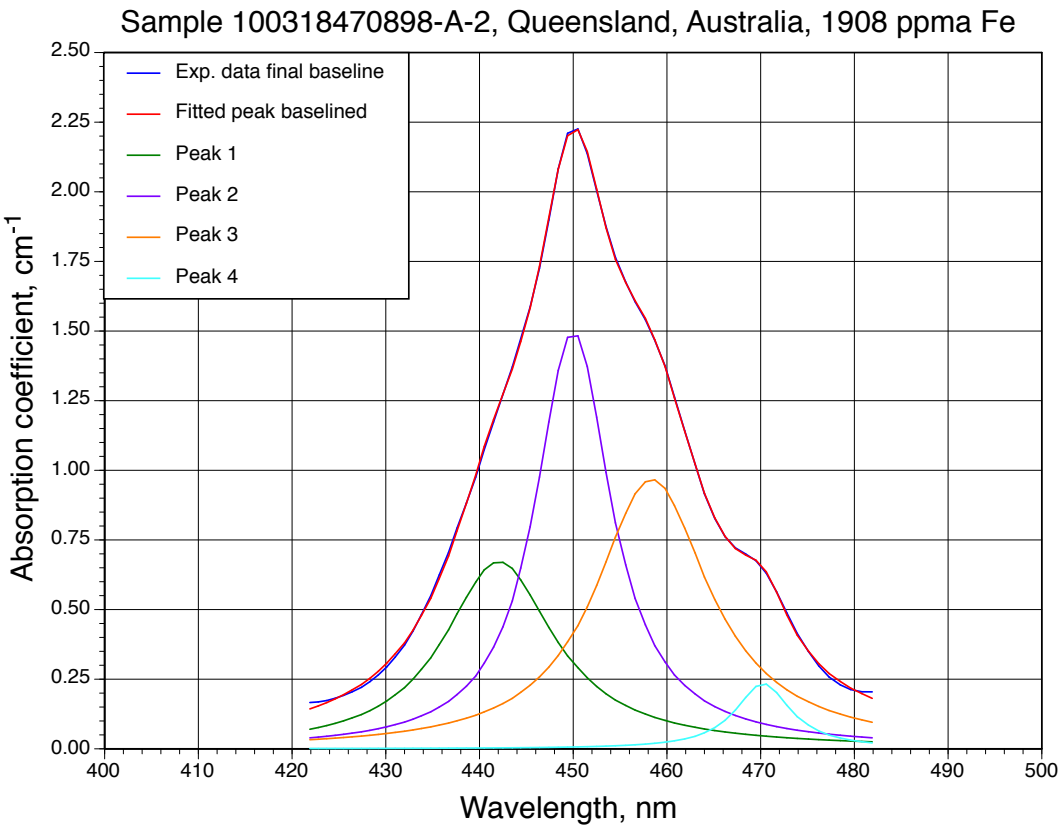

Sample 668919902-A-2, Pailin, Cambodia, 901 ppma Fe
Exp. data final baseline
Fitted peak baselined
Peak 1
Peak 2
Peak 3
Peak 4
Absorption coefficient, cm-1
Wavelength, nm

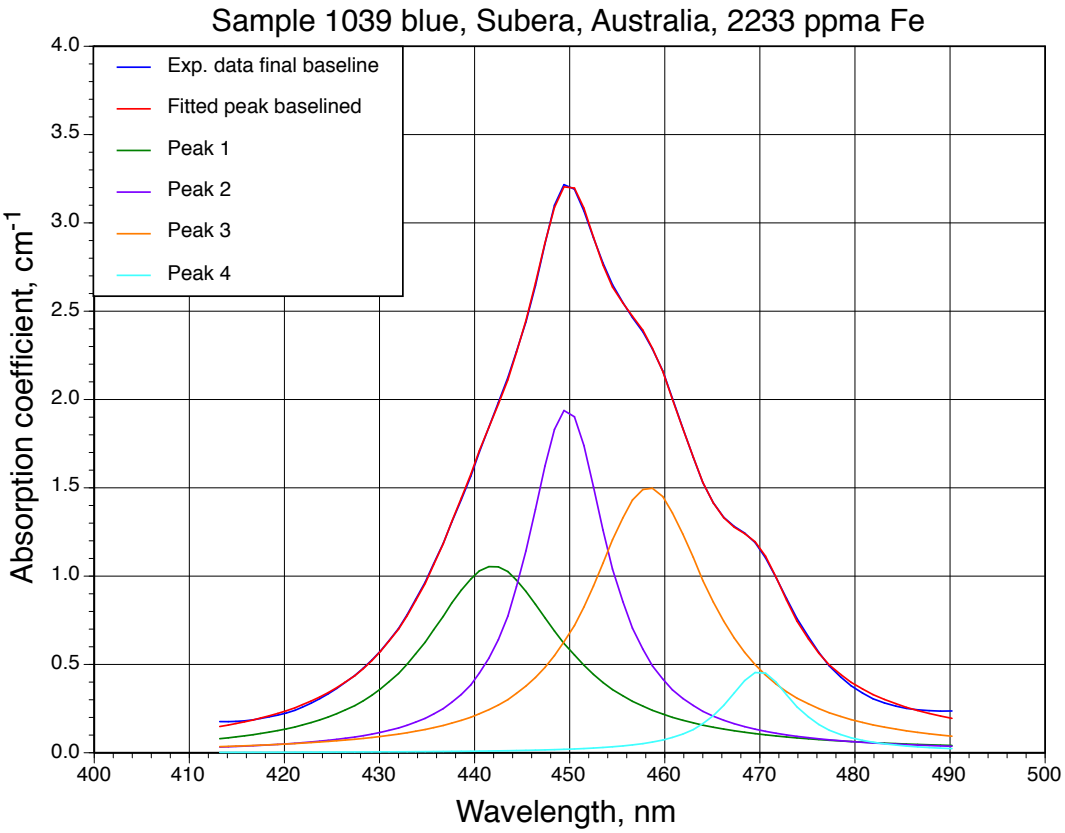

Sample 100305165419-B-2, Adamawa area, Cameroon, 929 ppma
Exp. data final baseline
Fitted peak baselined
Peak 1
Peak 2
Peak 3
Peak 4
Absorption coefficient, cm-1
Wavelength, nm
0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
400
410
420
430
440
450
460
470
480
490
500

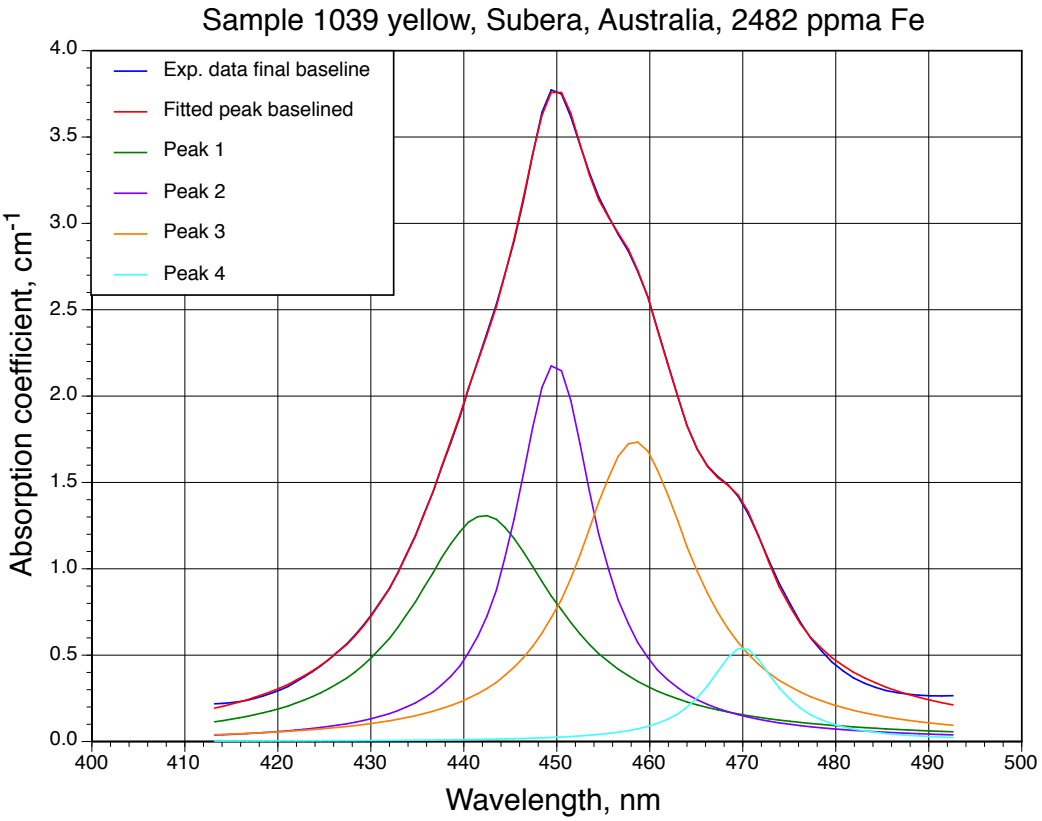

Sample 1206, Yogo, 1020 ppma Fe
Exp. data final baseline
Fitted peak baselined
Peak 1
Peak 2
Peak 3
Peak 4
Absorption coefficient, cm-1
Wavelength, nm
0.0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1.0
400
410
420
430
440
450
460
470
480
490
500

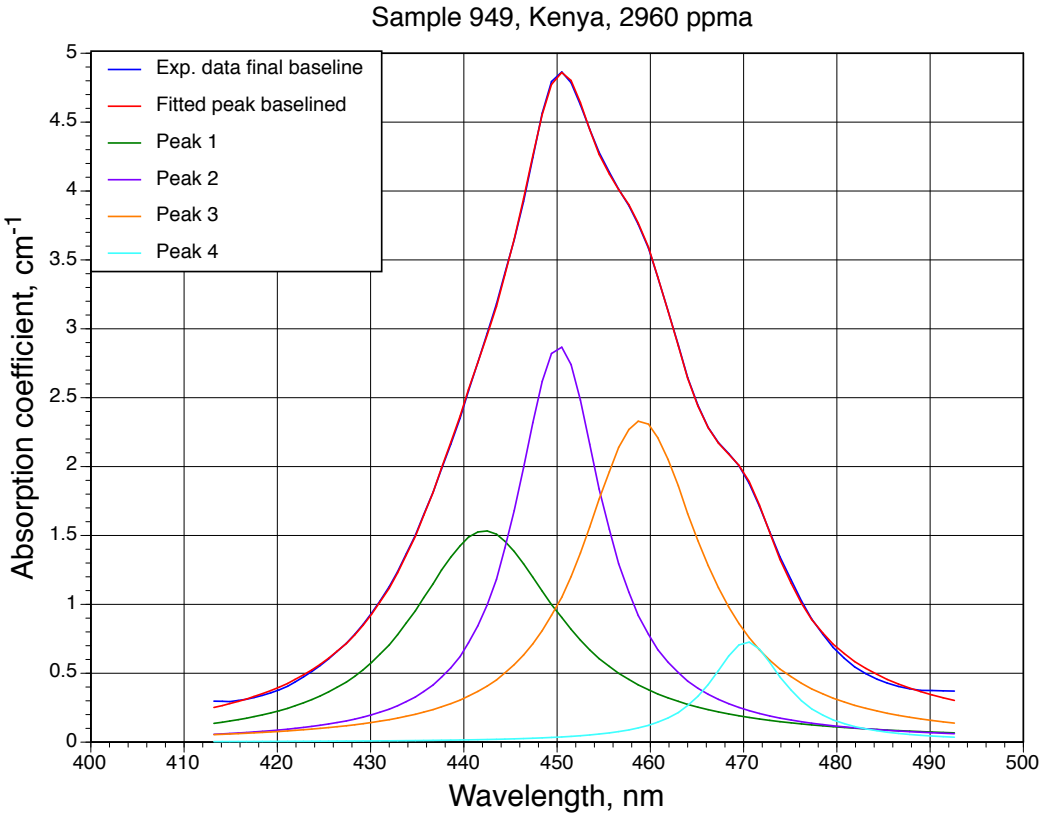

Sample 252 symm., Rwanda, 1347 ppma Fe
Exp. data final baseline
Fitted peak baselined
Peak 1
Peak 2
Peak 3
Peak 4
Absorption coefficient, cm-1
Wavelength, nm
0.0
0.2
0.4
0.6
0.8
1.0
1.2
1.4
400
410
420
430
440
450
460
470
480
490
500

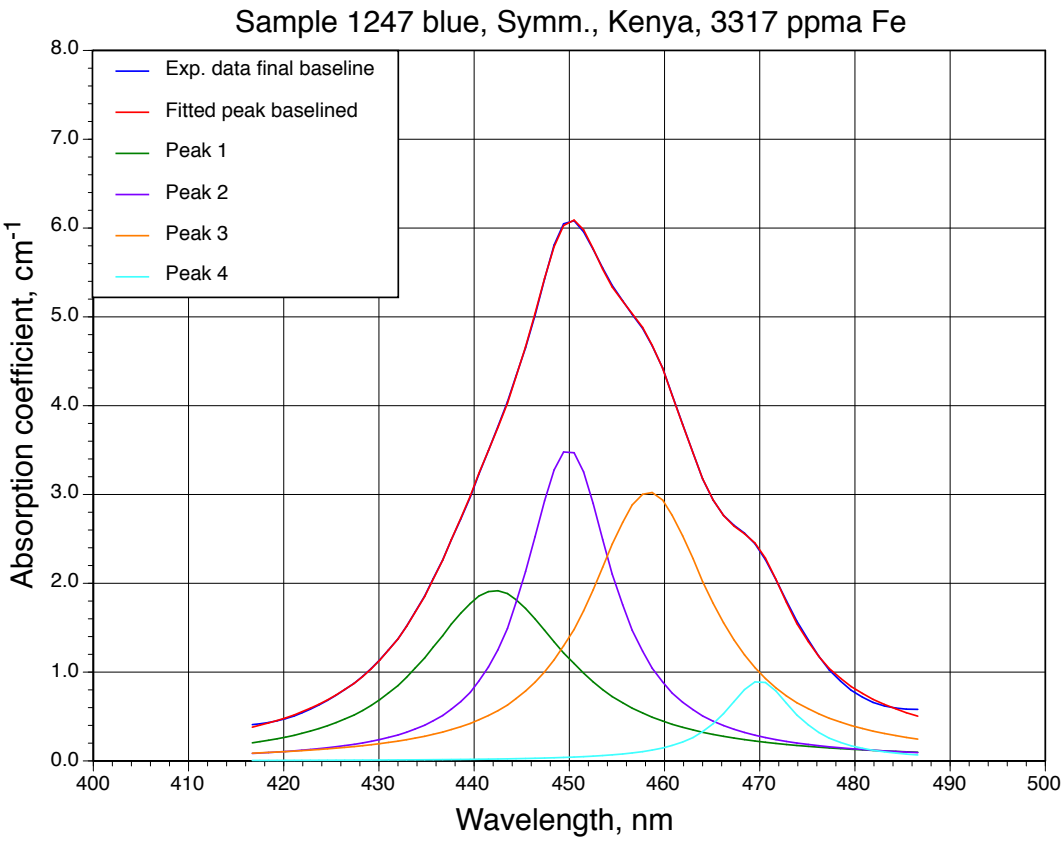

Sample 1207, Yogo, 1596 ppma Fe
Exp. data final baseline
Fitted peak baselined
Peak 1
Peak 2
Peak 3
Peak 4
Absorption coefficient, cm-1
Wavelength, nm
0.0
0.2
0.4
0.6
0.8
1.0
1.2
1.4
1.6
1.8
2.0
400
410
420
430
440
450
460
470
480
490
500

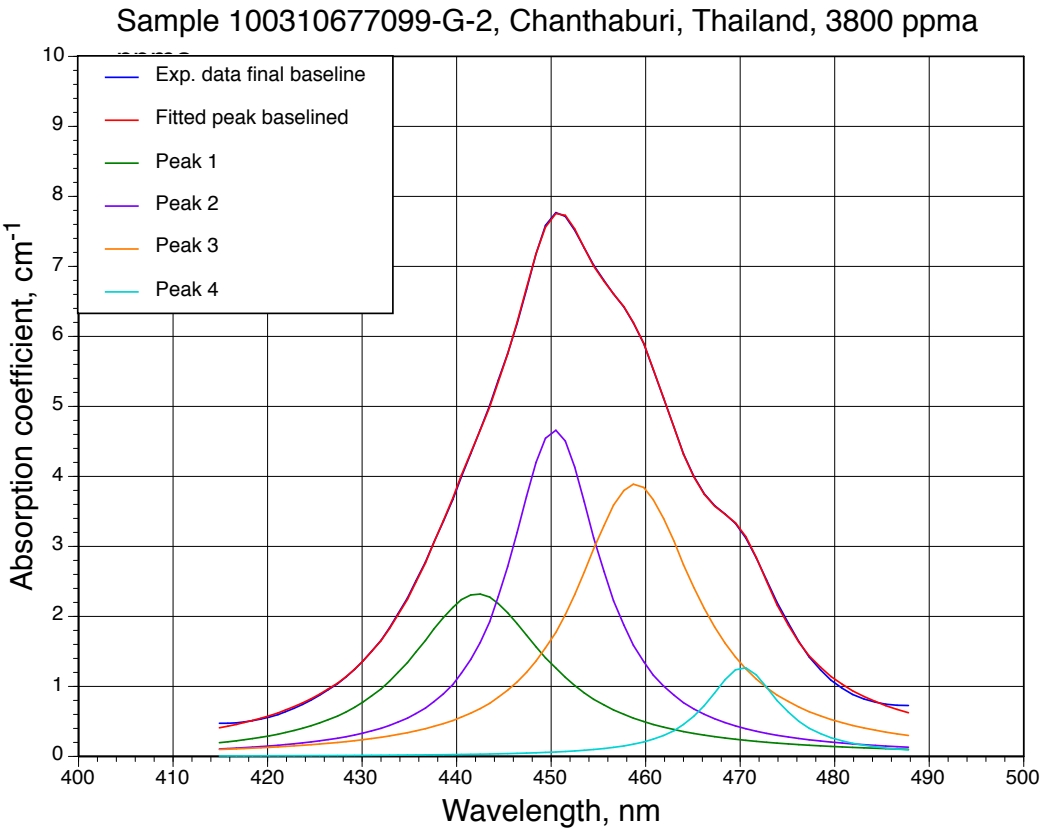

Sample 100318470898-A-2, Queensland, Australia, 1908 ppma Fe
Exp. data final baseline
Fitted peak baselined
Peak 1
Peak 2
Peak 3
Peak 4
Absorption coefficient, cm-1
Wavelength, nm
2.50
2.25
2.00
1.75
1.50
1.25
1.00
0.75
0.50
0.25
0.00
400
410
420
430
440
450
460
470
480
490
500

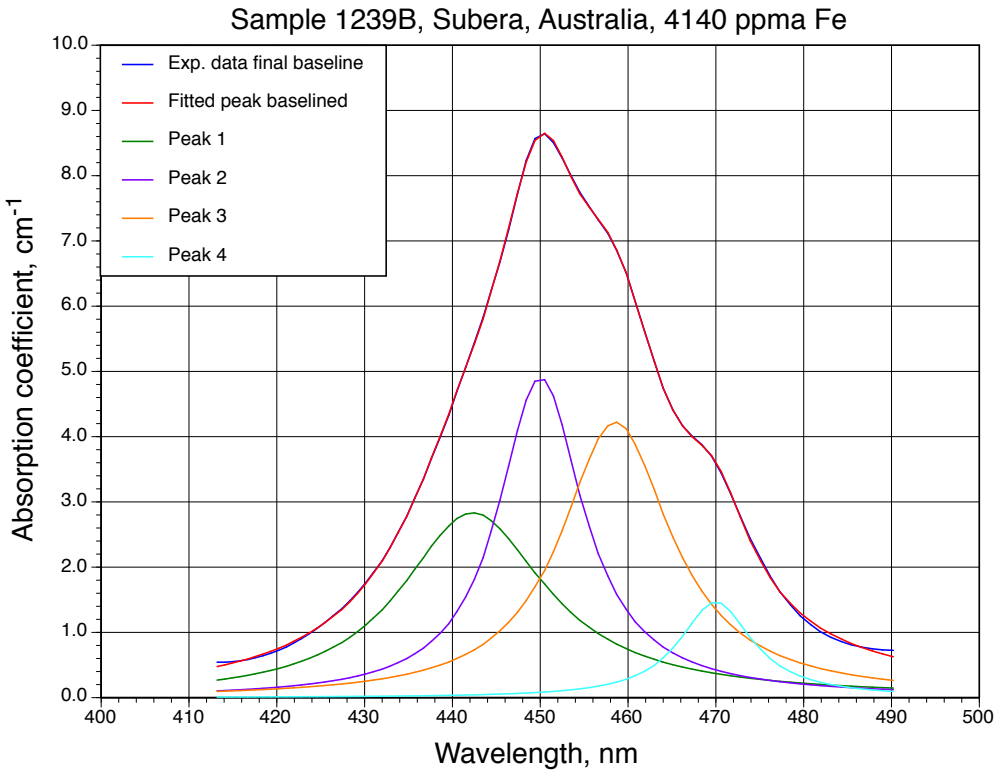

Sample 1039 blue, Subera, Australia, 2233 ppma Fe
Exp. data final baseline
Fitted peak baselined
Peak 1
Peak 2
Peak 3
Peak 4
Absorption coefficient, cm-1
Wavelength, nm
4.0
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
400
410
420
430
440
450
460
470
480
490
500

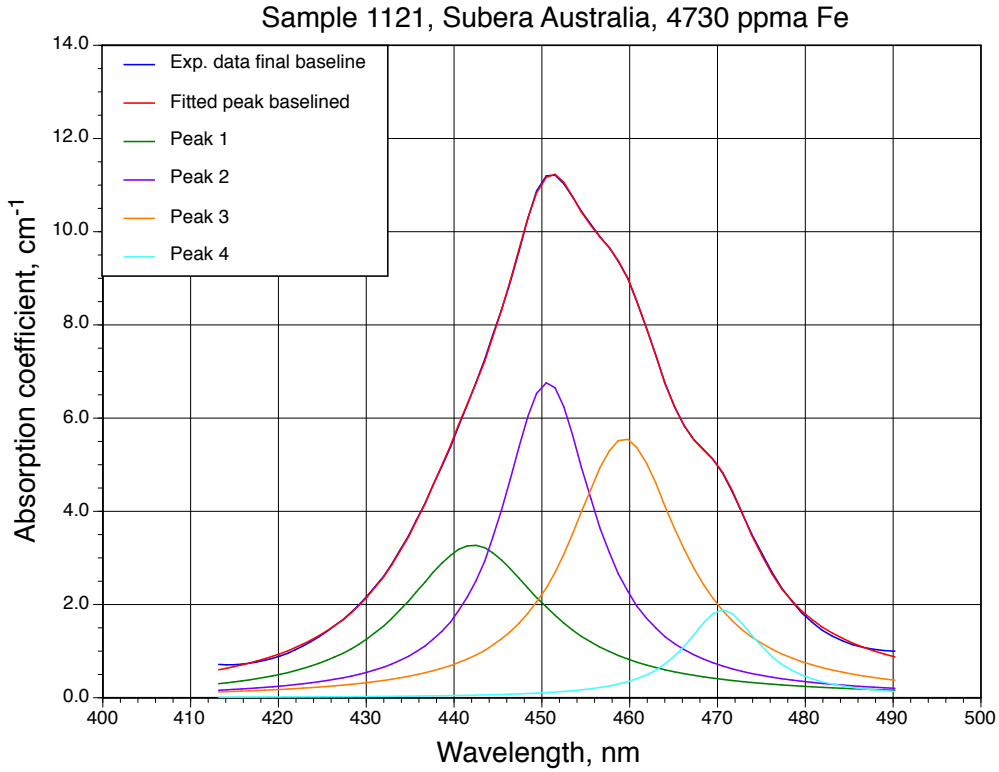

Sample 1039 yellow, Subera, Australia, 2482 ppma Fe
Exp. data final baseline
Fitted peak baselined
Peak 1
Peak 2
Peak 3
Peak 4
Absorption coefficient, cm-1
Wavelength, nm
4.0
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
400
410
420
430
440
450
460
470
480
490
500


Sample 949, Kenya, 2960 ppma
Exp. data final baseline
Fitted peak baselined
Peak 1
Peak 2
Peak 3
Peak 4
Absorption coefficient, cm-1
Wavelength, nm
5
4.5
4
3.5
3
2.5
2
1.5
1
0.5
0
400
410
420
430
440
450
460
470
480
490
500


Sample 1247 blue, Symm., Kenya, 3317 ppma Fe
Exp. data final baseline
Fitted peak baselined
Peak 1
Peak 2
Peak 3
Peak 4
Absorption coefficient, cm-1
Wavelength, nm
8.0
7.0
6.0
5.0
4.0
3.0
2.0
1.0
0.0
400
410
420
430
440
450
460
470
480
490
500


Sample 100310677099-G-2, Chanthaburi, Thailand, 3800 ppma
Exp. data final baseline
Fitted peak baselined
Peak 1
Peak 2
Peak 3
Peak 4
Absorption coefficient, cm-1
Wavelength, nm
10
9
8
7
6
5
4
3
2
1
0
400
410
420
430
440
450
460
470
480
490
500


Sample 1239B, Subera, Australia, 4140 ppma Fe
Exp. data final baseline
Fitted peak baselined
Peak 1
Peak 2
Peak 3
Peak 4
Absorption coefficient, cm-1
Wavelength, nm
10.0
9.0
8.0
7.0
6.0
5.0
4.0
3.0
2.0
1.0
0.0
400
410
420
430
440
450
460
470
480
490
500


Sample 1121, Subera Australia, 4730 ppma Fe
Exp. data final baseline
Fitted peak baselined
Peak 1
Peak 2
Peak 3
Peak 4
Absorption coefficient, cm-1
Wavelength, nm
14.0
12.0
10.0
8.0
6.0
4.0
2.0
0.0
400
410
420
430
440
450
460
470
480
490
500