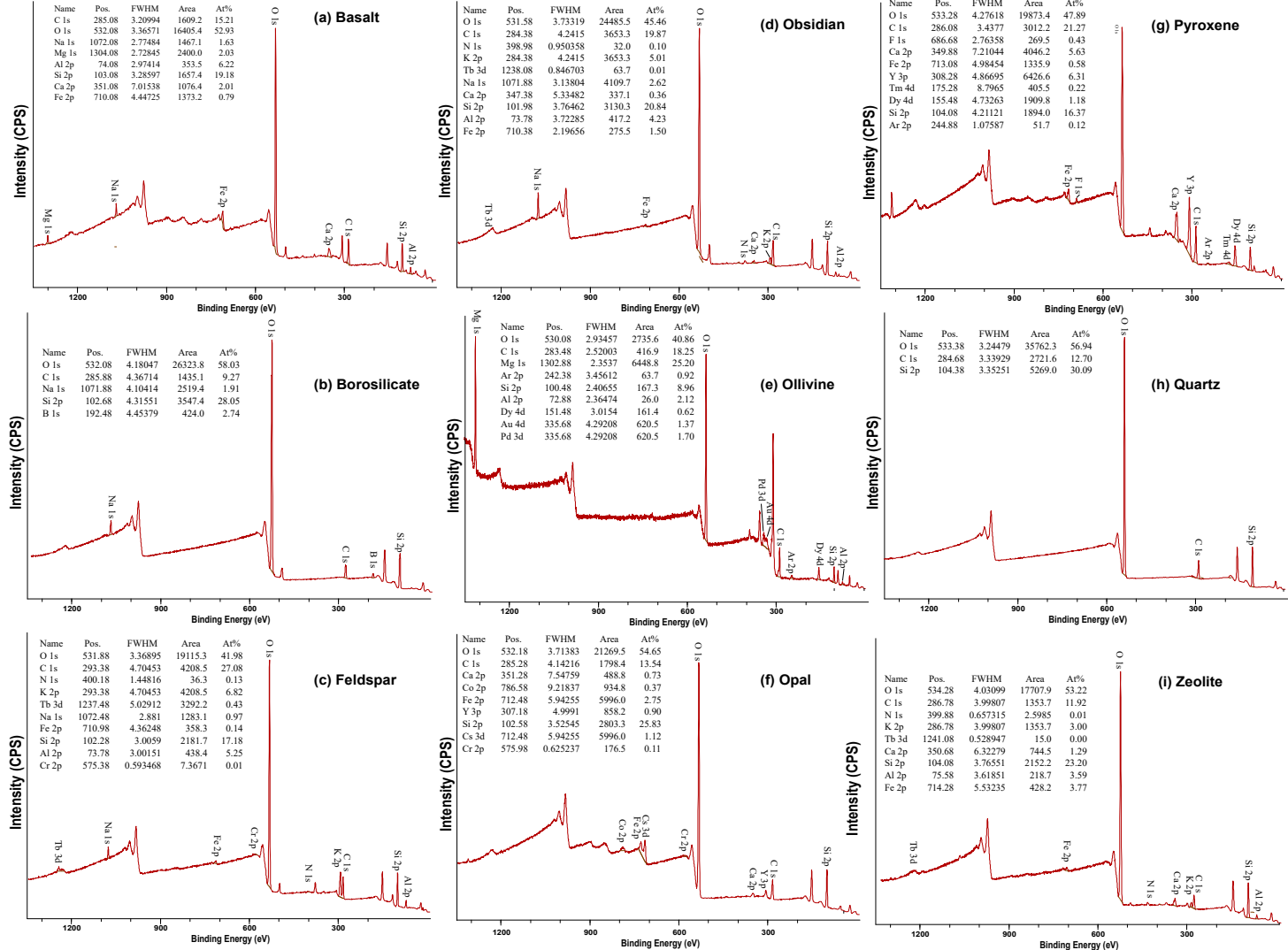
(a) Basalt
Name Pos. FWHM Area At%
C 1s 285.08 3.20994 1609.2 15.21
O 1s 532.08 3.36571 16405.4 52.93
Na 1s 1072.08 2.77484 1467.1 1.63
Mg 1s 1304.08 2.72845 2400.0 2.03
Al 2p 74.08 2.97414 353.5 6.22
Si 2p 103.08 3.28597 1657.4 19.18
Ca 2p 351.08 7.01538 1076.4 2.01
Fe 2p 710.08 4.44725 1373.2 0.79
(b) Borosilicate
Name Pos. FWHM Area At%
O 1s 532.08 4.18047 26323.8 58.03
C 1s 285.88 4.36714 1435.1 9.27
Na 1s 1071.88 4.10414 2519.4 1.91
Si 2p 102.68 4.31551 3547.4 28.05
B 1s 192.48 4.45379 424.0 2.74
(c) Feldspar
Name Pos. FWHM Area At%
O 1s 531.88 3.36895 19115.3 41.98
C 1s 293.38 4.70453 4208.5 27.08
N 1s 400.18 1.44816 36.3 0.13
K 2p 293.38 4.70453 4208.5 6.82
Tb 3d 1237.48 5.02912 3292.2 0.43
Na 1s 1072.48 2.881 1283.1 0.97
Fe 2p 710.98 4.36248 358.3 0.14
Si 2p 102.28 3.0059 2181.7 17.18
Al 2p 73.78 3.00151 438.4 5.25
Cr 2p 575.38 0.593468 7.3671 0.01
(d) Obsidian
Name Pos. FWHM Area At%
O 1s 531.58 3.73319 24485.5 45.46
C 1s 284.38 4.2415 3653.3 19.87
N 1s 398.98 0.950358 32.0 0.10
K 2p 284.38 4.2415 3653.3 5.01
Tb 3d 1238.08 0.846703 63.7 0.01
Na 1s 1071.88 3.13804 4109.7 2.62
Ca 2p 347.38 5.33482 337.1 0.36
Si 2p 101.98 3.76462 3130.3 20.84
Al 2p 73.78 3.72285 417.2 4.23
Fe 2p 710.38 2.19656 275.5 1.50
(e) Ollivine
Name Pos. FWHM Area At%
O 1s 530.08 2.93457 2735.6 40.86
C 1s 283.48 2.52003 416.9 18.25
Mg 1s 1302.88 2.3537 6448.8 25.20
Ar 2p 242.38 3.45612 63.7 0.92
Si 2p 100.48 2.40655 167.3 8.96
Al 2p 72.88 2.36474 26.0 2.12
Dy 4d 151.48 3.0154 161.4 0.62
Au 4d 335.68 4.29208 620.5 1.37
Pd 3d 335.68 4.29208 620.5 1.70
(f) Opal
Name Pos. FWHM Area At%
O 1s 532.18 3.71383 21269.5 54.65
C 1s 285.28 4.14216 1798.4 13.54
Ca 2p 351.28 7.54759 488.8 0.73
Co 2p 786.58 9.21837 934.8 0.37
Fe 2p 712.48 5.94255 5996.0 2.75
Y 3p 307.18 4.9991 858.2 0.90
Si 2p 102.58 3.52545 2803.3 25.83
Cs 3d 712.48 5.94255 5996.0 1.12
Cr 2p 575.98 0.625237 176.5 0.11
(g) Pyroxene
Name Pos. FWHM Area At%
O 1s 533.28 4.27618 19873.4 47.89
C 1s 286.08 3.4377 3012.2 21.27
F 1s 686.68 2.76358 269.5 0.43
Ca 2p 349.88 7.21044 4046.2 5.63
Fe 2p 713.08 4.98454 1335.9 0.58
Y 3p 308.28 4.86695 6426.6 6.31
Tm 4d 175.28 8.7965 405.5 0.22
Dy 4d 155.48 4.73263 1909.8 1.18
Si 2p 104.08 4.21121 1894.0 16.37
Ar 2p 244.88 1.07587 51.7 0.12
(h) Quartz
Name Pos. FWHM Area At%
O 1s 533.38 3.24479 35762.3 56.94
C 1s 284.68 3.33929 2721.6 12.70
Si 2p 104.38 3.35251 5269.0 30.09
(i) Zeolite
Name Pos. FWHM Area At%
O 1s 534.28 4.03099 17707.9 53.22
C 1s 286.78 3.99807 1353.7 11.92
N 1s 399.88 0.657315 2.5985 0.01
K 2p 286.78 3.99807 1353.7 3.00
Tb 3d 1241.08 0.528947 15.0 0.00
Ca 2p 350.68 6.32279 744.5 1.29
Si 2p 104.08 3.76551 2152.2 23.20
Al 2p 75.58 3.61851 218.7 3.59
Fe 2p 714.28 5.53235 428.2 3.77
Intensity (CPS)
Binding Energy (eV)
1200
900
600
300