

Appendix Figures in separate file.

Appendix Table A1. Polarized FTIR band areas and % integrated loss of OH in plagioclase during heating experiments.

Figure 2A

Temperature (°C)	800	
Experimental conditions	N ₂	
Slab thickness 2L (μm)	0.625 mm	
Slab orientation	perpendicular to (010)	
Cumulative heating time(hours)	Total polarized band area (X + Z)	% of initial OH remaining
0.00	285.3	100
2.03	277.7	97
9.45	265.9	93
30.20	258.1	90
54.20	237.0	83
78.08	239.1	84
125.30	240.4	84
433.48	209.4	73
599.48	204.5	72
863.48	Failed: ran out of gas	
Temperature (°C)	800	
Experimental conditions	N ₂	
Slab thickness 2L (μm)	0.300 mm	
Slab orientation	parallel to (010)	
Cumulative heating time(hours)	Total polarized band area (X + Y)	% of initial OH remaining
0.00	101.5	100
2.03	95.4	94
9.45	82.7	81
30.20	84.9	84
54.20	81.2	80
78.08	74	73
125.30	73.7	73
433.48	54.7	54
599.48	43.6	43

863.48	Failed: ran out of gas	
Temperature (°C)	800	
Experimental conditions	N ₂	
Slab thickness 2L (μm)	0.169 mm	
Slab orientation	perpendicular to (010)	
Cumulative heating time(hours)	Total polarized band area (X + Z)	% of initial OH remaining
0	79.5	100
166	47.3	59

Figure 2B

Temperature (°C)	900	
Experimental conditions	N ₂	
Slab thickness 2L (μm)	0.644 mm	
Slab orientation	perpendicular to (010)	
Cumulative heating time(hours)	Total polarized band area (X + Z)	% of initial OH remaining
0.00	283.4	100
1.00	269.6	95
2.00	262.8	93
4.17	257.8	91
7.17	252.8	89
13.17	241.3	85
28.17	225.3	79
45.25	212.2	75
60.00	200.8	71
80.00	183.7	65
104.08	168.9	60
131.08	146.3	52
179.08	102.4	36
227.63	81.9	29
297.40	68.7	24
392.82	56.6	20
488.85	45.8	16
582.60	43.0	15
848.93	Failed: ran out of gas	
Temperature (°C)	900	
Experimental conditions	N ₂	
Slab thickness 2L (μm)	0.521 mm	
Slab orientation	parallel to (010)	

Cumulative heating time(hours)	Total polarized band area (X + Y)	% of initial OH remaining
0.00	175.3	100
1.00	159.8	91
2.00	155.3	89
4.17	150.4	86
7.17	149.0	85
13.17	138.4	79
28.17	125.0	71
45.25	114.7	65
60.00	106.4	61
80.00	92.4	53
104.08	82.9	47
131.08	68.6	39
179.08	46.1	26
227.63	36.4	21
297.40	28.9	16
392.82	21.9	12
488.85	18.2	10
582.60	21.4	12
848.93	Failed: ran out of gas	

Temperature (°C)	900
Experimental conditions	N ₂
Slab thickness 2L (μm)	0.153 mm
Slab orientation	perpendicular to (010)

Cumulative heating time(hours)	Total polarized band area (X + Z)	% of initial OH remaining
0.00	70.7	100
1.00	53.2	75

Figure 2C

Temperature (°C)	1000	
Experimental conditions	N ₂	
Slab thickness 2L (μm)	0.858 mm	
Slab orientation	parallel to (010)	
Cumulative heating time(hours)	Total polarized band area (X + Y)	% of initial OH remaining
0.00	281.1	100
30.70	101.8	36
Temperature (°C)	1000	
Experimental conditions	N ₂	
Slab thickness 2L (μm)	0.787 mm	
Slab orientation	perpendicular to (010)	
Cumulative heating time(hours)	Total polarized band area (X + Z)	% of initial OH remaining
0.00	351.9	100
1.00	293.1	83
3.00	271.4	77
6.00	254.1	72
10.00	232.2	66
14.50	204.5	58
19.50	181.7	52
27.50	150.3	43
39.50	124.3	35
60.00	94.1	27
120.13	63.0	18
239.80	41.3	12
381.80	26.0	7
Temperature (°C)	1000	
Experimental conditions	N ₂	
Slab thickness 2L (μm)	0.644 mm	
Slab orientation	parallel to (010)	
Cumulative heating time(hours)	Total polarized band area (X + Y)	% of initial OH remaining
0.00	214.4	100
51.50	60.0	28
Temperature (°C)	1000	
Experimental conditions	N ₂	
Slab thickness 2L (μm)	0.499 mm	
Slab orientation	parallel to (010)	

Cumulative heating time(hours)	Total polarized band area (X + Y)	% of initial OH remaining
0.00	160.0	100
1.00	131.5	82
3.00	109.1	68
6.00	101.3	63
10.00	79.8	50
14.50	61.7	39
19.50	54.7	34
27.50	42.2	26
39.50	35.0	22
60.00	23.5	15
120.13	13.3	8
239.80	8.1	5
381.80	5.4	3

Temperature (°C)	1000
Experimental conditions	N ₂
Slab thickness 2L (μm)	0.406 mm
Slab orientation	parallel to (010)

Cumulative heating time(hours)	Total polarized band area (X + Y)	% of initial OH remaining
0.00	138.5	100
4.00	80.2	58

Temperature (°C)	1000
Experimental conditions	N ₂
Slab thickness 2L (μm)	0.311 mm
Slab orientation	parallel to (010)

Cumulative heating time(hours)	Total polarized band area (X + Y)	% of initial OH remaining
0.00	109.0	100
1.00	67.2	62
3.00	52.4	48
6.00	45.2	41
10.00	33.3	31
14.50	27.2	25
19.50	22.5	21
27.50	16.6	15
39.50	15.1	14
60.00	11.4	10
120.13	6.7	6
239.80	4.7	4
381.80	3.8	3

Figure 3A

Temperature (°C)	900
Experimental conditions	air
Slab thickness 2L (μm)	0.806 mm
Slab orientation	perpendicular to (010)

Cumulative heating time(hours)	Total polarized band area (X + Z)	% of initial OH remaining
0.00	359.4	100
2.00	345.6	96
5.00	340.4	95
15.00	320.8	89
30.00	305.8	85
50.00	303.1	84
85.00	281.1	78
125.00	269.6	75
165.00	258.3	72
205.00	245.8	68
273.57	214.2	60
440.22	194.6	54
1014.98	155.5	43
1358.09	139.1	39
1690.09	124.1	35

Temperature (°C)	900
Experimental conditions	air
Slab thickness 2L (μm)	0.385 mm
Slab orientation	parallel to (010)

Cumulative heating time(hours)	Total polarized band area (X + Y)	% of initial OH remaining
0.00	140.6	100
2.00	121.4	86
5.00	118.9	85
10.00	111.6	79
20.00	104.7	74
35.00	95.4	68
55.00	90.5	64
90.00	80.9	58
130.00	74.9	53
170.00	61.2	44
210.00	58.3	41
278.57	42.8	30
445.22	37.7	27
1019.98	27.2	19
1363.09	24.3	17

1695.09

20.3

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Figure 3B

Temperature (°C)	1000	
Experimental conditions	air	
Slab thickness 2L (μm)	1.083 mm	
Slab orientation	perpendicular to (010)	
Cumulative heating time(hours)	Total polarized band area (X + Z)	% of initial OH remaining
0.00	476.2	100
5.00	407.7	86
20.00	359.8	76
30.00	334.2	70
50.00	299.9	63
90.00	256.0	54
130.00	228.1	48
226.00	198.5	42
322.00	178.5	37
609.08	140.4	29
820.08	120.9	25
1130.42	85.9	18
Temperature (°C)	1000	
Experimental conditions	air	
Slab thickness 2L (μm)	0.725 mm	
Slab orientation	parallel to (010)	
Cumulative heating time(hours)	Total polarized band area (X + Y)	% of initial OH remaining
0.00	241.8	100
5.00	192.9	80
20.00	156.7	65
30.00	142.0	59
50.00	126.9	52
90.00	112.4	46
130.00	103.5	43
226.00	87.3	36
322.00	71.1	29
609.08	61.9	26
820.08	48.2	20
1130.42	40.4	17

Figure 4

Temperature (°C)	900	
Experimental conditions	FMQ buffer	
Slab thickness 2L (μm)	0.532 mm	
Slab orientation	parallel to (010)	
Cumulative heating time(hours)	Total polarized band area (X + Y)	% of initial OH remaining
0.00	220.8	100
71.00	172.3	78
Temperature (°C)	900	
Experimental conditions	FMQ buffer	
Slab thickness 2L (μm)	0.390 mm	
Slab orientation	perpendicular to (010)	
Cumulative heating time(hours)	Total polarized band area (X + Z)	% of initial OH remaining
0.00	168.8	100
1.00	160.5	95
2.50	155.6	92
17.50	136.7	81
88.50	116.7	69
208.50	93.9	56
519.50	60.0	36
855.50	Failed: ran out of gas	
Temperature (°C)	900	
Experimental conditions	FMQ buffer	
Slab thickness 2L (μm)	0.292 mm	
Slab orientation	parallel to (010)	
Cumulative heating time(hours)	Total polarized band area (X + Y)	% of initial OH remaining
0.00	123.2	100
1.00	113.0	92
2.50	105.8	86
17.50	94.1	76
88.50	79.4	64
208.50	58.2	47
519.50	44.9	36
855.50	Failed: ran out of gas	