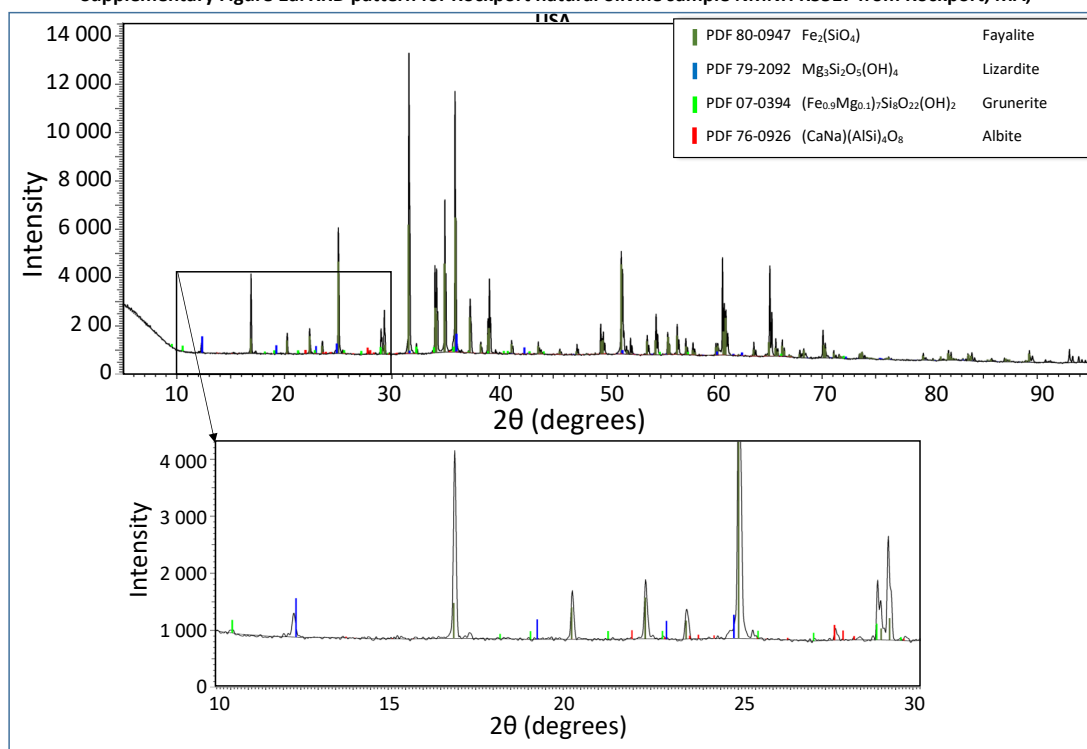
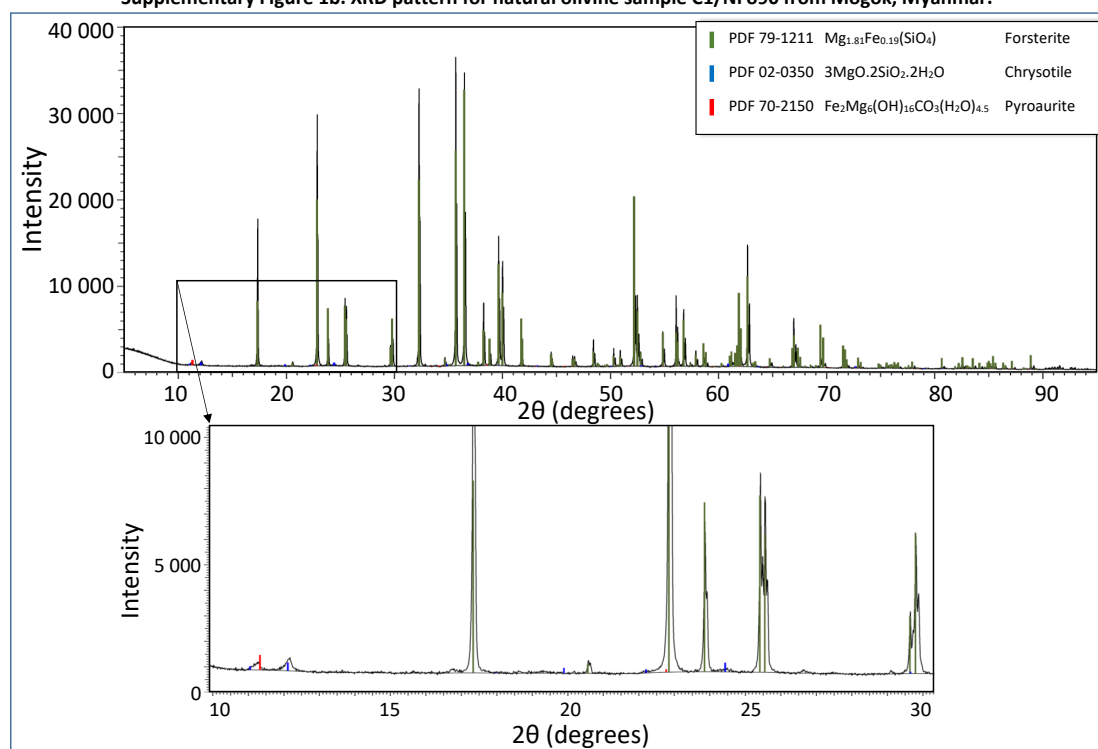


Geiger et al. (2021) Are the Thermodynamic Properties of Natural and Synthetic Olivines the Same?  
**Supplementary Figure 1a. XRD pattern for Rockport natural olivine sample NMNH R3517 from Rockport, MA,**



Supplementary Fig. 1a

Geiger et al. (2021) Are the Thermodynamic Properties of Natural and Synthetic Olivines the Same?  
**Supplementary Figure 1b. XRD pattern for natural olivine sample C1/NFo90 from Mogok, Myanmar.**



Supplementary Fig. 1b

Geiger et al. (2021) Are the Thermodynamic Properties of Natural and Synthetic Olivines the Same?								
Supplementary Table 1a: PPMS Data								
Natural Olivine Sample NMNH R-3517 from Rockport, MA, USA								
Formula Weight 203.199 g/mol								
Sample Weight 15.47 mg								
PPMS-1			PPMS-2			PPMS-3		
T (K)	Cp (J/mol.K)	1 sigma (J/mol.K)	T (K)	Cp (J/mol.K)	1 sigma (J/mol.K)	T (K)	Cp (J/mol.K)	1 sigma (J/mol.K)
2.20	0.0068	0.0002	2.20	0.0068	0.0002	2.20	0.0068	0.0002
2.38	0.0080	0.0002	2.38	0.0080	0.0002	2.38	0.0081	0.0002
2.58	0.0097	0.0002	2.58	0.0097	0.0002	2.58	0.0098	0.0002
2.79	0.0123	0.0003	2.79	0.0123	0.0003	2.80	0.0124	0.0003
3.02	0.0167	0.0004	3.02	0.0166	0.0004	3.03	0.0169	0.0004
3.27	0.0241	0.0005	3.27	0.0241	0.0005	3.28	0.0242	0.0004
3.54	0.0366	0.0006	3.54	0.0366	0.0006	3.56	0.0376	0.0007
3.84	0.0579	0.0009	3.84	0.0583	0.0001	3.85	0.0588	0.0009
4.16	0.0926	0.0012	4.16	0.0929	0.0012	4.16	0.0930	0.0012
4.51	0.1471	0.0019	4.51	0.1475	0.0019	4.52	0.1486	0.0017
4.89	0.2281	0.0027	4.89	0.2284	0.0027	4.90	0.2299	0.0024
5.31	0.3439	0.0036	5.31	0.3447	0.0039	5.32	0.3457	0.0033
5.77	0.5062	0.0051	5.78	0.5070	0.0055	5.78	0.5074	0.0044
6.27	0.7208	0.0072	6.28	0.7225	0.0072	6.28	0.7177	0.0059
6.82	1.0004	0.0098	6.82	0.9989	0.0096	6.83	0.9987	0.0085
7.41	1.3344	0.0114	7.41	1.3392	0.0131	7.41	1.3382	0.0129
8.05	1.7392	0.0154	8.05	1.7429	0.0170	8.06	1.7422	0.0169
8.76	2.2158	0.0200	8.76	2.2215	0.0217	8.76	2.2224	0.0217
9.52	2.7615	0.0258	9.53	2.7608	0.0268	9.53	2.7601	0.0266
10.36	3.3500	0.0324	10.36	3.3548	0.0319	10.36	3.3542	0.0319
11.26	3.9786	0.0389	11.26	3.9749	0.0392	11.27	3.9776	0.0384
12.25	4.6135	0.0462	12.25	4.6138	0.0451	12.25	4.6196	0.0452
13.32	5.2579	0.0529	13.32	5.2562	0.0524	13.32	5.2573	0.0527
14.48	5.8798	0.0598	14.49	5.9095	0.0610	14.50	5.8737	0.0587
15.74	6.5071	0.0670	15.76	6.5207	0.0675	15.78	6.4785	0.0574
17.14	6.9134	0.0114	17.16	6.9102	0.0128	17.17	6.7812	0.0132
18.62	7.4938	0.0122	18.64	7.5036	0.0143	18.68	7.5259	0.0635
20.30	8.1667	0.0173	20.30	8.2270	0.0271	20.32	7.8208	0.0382
22.07	8.9081	0.0196	22.07	8.8544	0.0173	22.12	8.5896	0.0420
24.02	9.6664	0.0163	24.03	9.6696	0.0162	24.04	9.5823	0.0190
26.13	10.6953	0.0188	26.15	10.6894	0.0186	26.15	10.6029	0.0318
28.44	11.9478	0.0216	28.44	11.9868	0.0426	28.45	11.9561	0.0219
30.95	13.4968	0.0265	30.95	13.5651	0.0375	30.95	13.5059	0.0262
33.67	15.4585	0.0314	33.67	15.6108	0.0496	33.68	15.4695	0.0310
36.64	17.8513	0.0376	36.65	17.9522	0.0526	36.65	17.8434	0.0381
39.87	20.8453	0.0443	39.88	20.8375	0.0450	39.88	20.9730	0.0667
43.38	24.4836	0.0534	43.39	24.4936	0.0539	43.40	24.6192	0.0805
47.20	29.0521	0.0639	47.20	29.0571	0.0644	47.24	29.0730	0.0685
51.36	34.8574	0.0782	51.36	34.8503	0.0793	51.41	34.8735	0.0814
55.89	42.6333	0.1011	55.89	42.6257	0.1014	55.96	42.7261	0.1050
60.74	55.1386	0.1802	60.82	55.4469	0.1598	60.83	55.4948	0.1621
66.15	39.6367	0.0897	66.17	39.2105	0.0694	66.19	39.2024	0.0708
72.01	39.9202	0.0927	72.02	39.6035	0.0844	72.03	39.6440	0.0900
78.36	42.4239	0.0941	78.36	42.6452	0.0983	78.38	42.4516	0.0919
85.26	46.6527	0.1250	85.28	46.0886	0.1400	85.30	45.8705	0.1124
92.78	50.3582	0.1149	92.78	50.7406	0.1242	92.79	50.2828	0.1105
100.95	55.0453	0.1216	100.96	54.9349	0.1332	100.96	55.3364	0.1315
109.86	60.1981	0.1551	109.86	60.2876	0.1319	109.87	60.5970	0.1655
119.52	66.1514	0.1697	119.55	66.1321	0.1568	119.56	65.6792	0.1466
130.07	71.6593	0.1634	130.09	71.4437	0.1591	130.09	71.4813	0.1597
141.58	77.2592	0.1710	141.58	77.2863	0.1680	141.59	77.0910	0.1624
154.05	83.0177	0.1707	154.07	83.1261	0.1763	154.10	82.9307	0.1685
167.66	89.3509	0.1988	167.67	89.2028	0.1863	167.70	89.3459	0.1801
182.47	95.8952	0.2188	182.48	95.8418	0.1968	182.51	95.7908	0.1978
198.56	102.1175	0.2127	198.57	102.1106	0.2033	198.58	102.1659	0.2096
216.05	108.5412	0.2241	216.09	108.4266	0.2132	216.10	108.2839	0.2178
235.08	114.6084	0.2075	235.16	114.6105	0.2192	235.17	114.5771	0.2254
255.81	120.8214	0.2208	255.92	120.9454	0.2274	255.92	120.9204	0.2361
278.35	127.8001	0.2539	278.49	127.6240	0.2634	278.50	127.7032	0.2648
302.92	133.1141	0.2400	303.04	133.2912	0.2532	303.05	133.3933	0.2580

Geiger et al. (2021) Are the Thermodynamic Properties of Natural and Synthetic Olivines the Same?								
Supplementary Table 1b: PPMS Data								
Natural Olivine Sample C1/NFo90 from Mogok, Myanmar								
Formula Weight 146.441 g/mol								
Sample Weight 30.57 mg								
PPMS-1			PPMS-2			PPMS-3		
T (K)	Cp (J/mol.K)	1 sigma (J/mol.K)	T (K)	Cp (J/mol.K)	1 sigma (J/mol.K)	T (K)	Cp (J/mol.K)	1 sigma (J/mol.K)
2.20	0.3741	0.0010	2.22	0.3746	0.0011	2.22	0.3745	0.0011
2.38	0.3764	0.0009	2.39	0.3763	0.0010	2.39	0.3763	0.0010
2.57	0.3747	0.0008	2.59	0.3744	0.0009	2.59	0.3744	0.0009
2.78	0.3703	0.0007	2.80	0.3700	0.0008	2.80	0.3700	0.0008
3.02	0.3654	0.0007	3.03	0.3649	0.0007	3.03	0.3649	0.0007
3.27	0.3618	0.0008	3.29	0.3601	0.0007	3.29	0.3601	0.0007
3.54	0.3557	0.0007	3.56	0.3554	0.0007	3.56	0.3553	0.0006
3.84	0.3505	0.0006	3.86	0.3504	0.0006	3.86	0.3502	0.0006
4.16	0.3453	0.0006	4.18	0.3449	0.0006	4.18	0.3449	0.0006
4.51	0.3413	0.0006	4.53	0.3407	0.0005	4.53	0.3407	0.0005
4.90	0.3387	0.0006	4.91	0.3390	0.0005	4.92	0.3389	0.0005
5.32	0.3411	0.0006	5.33	0.3411	0.0005	5.33	0.3408	0.0005
5.78	0.3465	0.0006	5.79	0.3454	0.0004	5.79	0.3454	0.0004
6.29	0.3569	0.0006	6.30	0.3566	0.0004	6.31	0.3514	0.0008
6.84	0.3755	0.0005	6.85	0.3759	0.0005	6.85	0.3757	0.0005
7.40	0.3995	0.0006	7.42	0.3998	0.0006	7.42	0.4000	0.0005
8.05	0.4321	0.0007	8.06	0.4324	0.0006	8.07	0.4326	0.0006
8.75	0.4720	0.0008	8.76	0.4726	0.0007	8.77	0.4725	0.0007
9.52	0.5226	0.0009	9.53	0.5226	0.0007	9.53	0.5225	0.0008
10.35	0.5801	0.0010	10.36	0.5813	0.0009	10.37	0.5812	0.0008
11.26	0.6471	0.0011	11.28	0.6476	0.0010	11.28	0.6480	0.0009
12.25	0.7193	0.0013	12.27	0.7200	0.0011	12.27	0.7199	0.0010
13.33	0.7973	0.0014	13.34	0.7964	0.0011	13.34	0.7975	0.0011
14.49	0.8811	0.0015	14.51	0.8834	0.0013	14.51	0.8803	0.0011
15.76	0.9693	0.0017	15.77	0.9681	0.0012	15.78	0.9692	0.0012
17.15	1.0602	0.0013	17.15	1.0622	0.0017	17.17	1.0612	0.0012
18.64	1.1589	0.0015	18.66	1.1601	0.0015	18.67	1.1667	0.0018
20.29	1.2672	0.0021	20.30	1.2656	0.0016	20.32	1.2565	0.0029
22.07	1.3857	0.0025	22.08	1.3957	0.0023	22.10	1.3819	0.0018
24.00	1.5319	0.0023	24.01	1.5319	0.0026	24.04	1.5068	0.0035
26.12	1.7124	0.0025	26.12	1.7350	0.0045	26.16	1.7032	0.0027
28.42	1.9476	0.0034	28.44	1.9501	0.0029	28.45	1.9293	0.0053
30.92	2.2617	0.0041	30.95	2.2647	0.0035	30.96	2.2374	0.0065
33.65	2.6820	0.0045	33.67	2.6831	0.0043	33.67	2.6685	0.0066
36.61	3.2347	0.0054	36.63	3.2205	0.0080	36.63	3.2356	0.0052
39.84	3.9760	0.0082	39.84	3.9709	0.0070	39.86	3.9699	0.0067
43.36	4.9101	0.0080	43.36	4.9457	0.0093	43.37	4.9144	0.0079
47.18	6.1083	0.0101	47.18	6.1577	0.0119	47.19	6.1098	0.0098
51.33	7.6026	0.0125	51.34	7.6515	0.0136	51.34	7.6045	0.0120
55.85	9.4486	0.0150	55.86	9.5348	0.0187	55.87	9.4500	0.0147
60.77	11.6749	0.0181	60.78	11.7758	0.0222	60.79	11.6727	0.0175
66.13	14.3422	0.0216	66.14	14.4550	0.0267	66.15	14.3345	0.0212
71.96	17.4638	0.0248	71.98	17.5456	0.0290	71.98	17.4479	0.0240
78.29	21.0272	0.0288	78.30	21.0562	0.0333	78.32	21.2053	0.0380
85.19	25.2178	0.0355	85.20	25.1929	0.0351	85.21	25.3134	0.0406
92.71	29.6847	0.0446	92.71	29.7228	0.0417	92.73	29.9075	0.0516
100.86	34.6914	0.0418	100.88	34.6930	0.0475	100.89	34.8604	0.0474
109.77	40.1889	0.0503	109.77	40.3561	0.0519	109.80	40.4910	0.0638
119.44	46.1130	0.0525	119.46	46.0715	0.0534	119.46	46.0247	0.0695
129.98	52.3869	0.0580	129.98	52.4046	0.0607	129.98	52.4847	0.0666
141.46	58.9585	0.0647	141.46	59.1419	0.0857	141.47	58.9270	0.0649
153.91	65.7995	0.0726	153.93	65.4681	0.0701	153.93	65.5457	0.0721
167.41	72.6399	0.0770	167.41	72.5775	0.0713	167.46	72.5135	0.0754
182.14	79.7860	0.0871	182.15	79.5801	0.0782	182.20	79.5904	0.0807
198.18	86.6540	0.0858	198.19	86.5538	0.0786	198.20	86.6685	0.0824
215.63	93.6645	0.0874	215.65	93.5563	0.0868	215.65	93.6308	0.0864
234.56	100.6279	0.0943	234.61	100.6279	0.0921	234.62	100.5808	0.0918
255.16	107.2416	0.1031	255.25	107.2130	0.1002	255.26	107.2119	0.0953
277.56	114.1500	0.1285	277.70	114.1214	0.1239	277.71	114.0653	0.1095
302.11	120.2111	0.1116	302.12	120.3084	0.1062	302.13	120.1889	0.1071