SUPPORTING INFORMATION (SI)

Thermodynamics of mansfieldite, $AlAsO_4 \cdot 2H_2O$, angelellite, $Fe_4(AsO_4)_2O_3$, and kamarizaite, $Fe_3(AsO_4)_2(OH)_3 \cdot 3H_2O$

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Table S1. Molar heat capacity of mansfieldite, measured by relaxation calorimetry for composition $AlAsO_4 \cdot 2H_2O$, molecular mass 201.931 $g \cdot mol^{-1}$.

T (K)	C_p ($J \cdot mol^{-1} \cdot K^{-1}$)	T (K)	C_p ($J \cdot mol^{-1} \cdot K^{-1}$)	T (K)	C_p ($J \cdot mol^{-1} \cdot K^{-1}$)
2.02930	0.00166028	7.25793	0.0535321	25.8951	3.36652
2.02970	0.00159995	7.26008	0.0536744	25.8959	3.36069
2.03069	0.00144988	7.26067	0.0533383	25.9085	3.36223
2.20983	0.00197866	7.89856	0.0698942	28.1891	4.22880
2.21075	0.00184229	7.89983	0.0697471	28.1964	4.23323
2.21119	0.00187922	7.90178	0.0701600	28.1994	4.25815
2.40733	0.00218800	8.59698	0.0917730	30.6807	5.26145
2.40845	0.00235581	8.59908	0.0919087	30.6843	5.25989
2.40916	0.00223273	8.60059	0.0925927	30.6939	5.26101
2.61958	0.00282758	9.35635	0.122367	33.3892	6.47558
2.62014	0.00279373	9.35876	0.122055	33.3990	6.48838
2.62035	0.00295940	9.36085	0.121848	33.4033	6.53470
2.85129	0.00351676	10.1838	0.161868	36.3425	7.90247
2.85160	0.00368069	10.1866	0.163224	36.3454	7.92089
2.85367	0.00347339	10.1867	0.162371	36.3658	7.93166
3.10349	0.00466092	11.0846	0.216472	39.558	9.60791
3.10510	0.00440940	11.0874	0.217777	39.5669	9.60911
3.10599	0.00429353	11.0879	0.217437	39.5876	9.64737
3.38322	0.00576417	12.0659	0.291193	43.0605	11.6127
3.38384	0.00583683	12.0688	0.292159	43.0609	11.6160
3.38453	0.00555588	12.0694	0.291097	43.0849	11.6291
3.68263	0.00723004	13.1336	0.387931	46.8676	13.9072
3.68264	0.00773489	13.1358	0.391470	46.8680	13.9175
3.68305	0.00703228	13.1361	0.390472	46.8845	13.9689
4.00678	0.00889827	14.3020	0.523412	51.0149	16.5684
4.00758	0.00857028	14.3060	0.523919	51.0158	16.5762
4.00781	0.00907210	14.3063	0.525089	51.0423	16.6292
4.36243	0.0117409	15.5658	0.701466	55.5251	19.6725
4.36254	0.0113871	15.5696	0.700280	55.5263	19.6881
4.36260	0.0113514	15.5718	0.702997	55.5410	19.7608
4.74779	0.0149178	16.9459	0.929276	60.4393	23.1779
4.74912	0.0143928	16.9512	0.930385	60.4403	23.1663
4.75002	0.0151006	16.9546	0.931835	60.4589	23.2419
5.16823	0.0182608	18.4509	1.22403	65.7788	27.2414
5.16856	0.0188786	18.4548	1.22510	65.7926	27.1822
5.16882	0.0189138	18.4579	1.23226	65.8088	27.2378
5.63586	0.0247055	20.0923	1.59331	71.6138	31.6251
5.64164	0.0250125	20.0943	1.59519	71.6145	31.6667
5.65271	0.0264485	20.1058	1.60484	71.6338	31.6711
6.13468	0.0320728	21.8598	2.06876	77.9538	36.7384
6.13573	0.0321603	21.8631	2.05959	77.9601	36.5675
6.13862	0.0315322	21.8674	2.06684	77.9781	36.7476
6.68693	0.0422554	23.7912	2.64408	84.8518	42.1573
6.68750	0.0421171	23.7922	2.63698	84.8592	42.0874
6.68940	0.0417319	23.8031	2.65596	84.8796	42.1390

Table S1. continued

T (K)	C_p (J·mol^{-1}·K^{-1})	T (K)	C_p (J·mol^{-1}·K^{-1})	T (K)	C_p (J·mol^{-1}·K^{-1})
92.3499	48.1639	141.162	85.4635	215.749	132.769
92.3609	48.0477	141.167	85.4469	215.821	132.582
92.3935	48.0626	141.199	85.5434	215.826	132.563
100.538	54.5538	153.666	94.4387	234.842	143.095
100.550	54.5718	153.671	94.5388	234.956	142.942
100.564	54.5968	153.687	94.4146	234.962	142.775
109.436	61.6650	167.288	103.816	255.614	153.221
109.447	61.5479	167.297	103.732	255.785	152.974
109.480	61.7822	167.298	103.903	255.788	153.215
119.142	69.1912	182.088	112.993	278.241	163.622
119.148	69.0182	182.101	113.199	278.468	163.749
119.176	69.1549	182.105	113.050	278.473	163.771
129.703	77.1429	198.195	122.597	302.963	174.214
129.707	77.1107	198.231	122.791	303.112	174.300
129.734	77.1387	198.240	122.616	303.114	174.125

Table S2. Molar heat capacity of mansfieldite, measured by differential scanning calorimetry for composition $AlAsO_4 \cdot 2H_2O$, molecular mass 201.931 g·mol^{-1}.

T (K)	C_p (J·mol^{-1}·K^{-1})
282.155	164.614
286.627	166.559
291.108	168.500
295.596	170.716