

Supplementary Table S1. Calculated powder XRD pattern for $K_2Ca_3(CO_3)_4$ (reflections with $I_{100} \geq 5$).

<i>h</i>	<i>k</i>	<i>l</i>	<i>d</i> (Å)	<i>I</i> ₁₀₀
0	0	2	8.241	5
1	0	1	6.744	6
0	1	2	6.020	6
1	1	0	5.664	7
1	1	1	5.356	5
1	2	0	3.786	11
2	0	0	3.695	11
2	0	2	3.372	9
1	2	3	3.117	97
0	1	5	3.088	14
0	2	4	3.010	35
2	1	3	2.896	100
0	3	1	2.893	11
1	1	5	2.849	26
2	2	0	2.832	21
1	2	4	2.788	33
2	0	4	2.751	14
0	0	6	2.747	34
1	3	0	2.731	16
1	3	1	2.694	47
2	2	2	2.678	18
2	1	4	2.626	37
0	3	3	2.591	13
2	2	3	2.517	5
2	0	5	2.460	41
3	1	0	2.373	92
2	2	4	2.334	7
2	3	0	2.300	8
3	1	2	2.280	6
2	0	6	2.205	6
0	3	5	2.193	9
3	1	3	2.178	5
1	4	1	2.095	14

0	1	8	2.006	5
2	2	6	1.972	14
1	4	3	1.971	13
0	4	4	1.943	21
2	1	7	1.937	7
1	3	6	1.937	19
1	1	8	1.936	11
3	1	5	1.926	5
3	3	0	1.888	23
2	4	1	1.880	7
0	2	8	1.866	8
3	3	2	1.840	8
0	3	7	1.837	5
1	2	8	1.810	10
3	2	5	1.801	7
2	0	8	1.799	16
4	1	1	1.798	5
3	1	6	1.796	9
0	1	9	1.793	23
1	3	7	1.783	9
0	5	1	1.753	6
4	0	3	1.751	8
2	4	4	1.720	8
4	1	3	1.718	6
3	3	4	1.716	9
4	2	1	1.695	5
4	0	5	1.612	6
0	6	0	1.469	6
5	2	3	1.358	5