

Supplementary Materials: Preparation and Luminescence Properties of Ba₅Si₈O₂₁ Long Persistent Phosphors Doped with Rare-Earth Elements

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Table S1. Most important peaks of NaCl, BaCO₃ in the sample C before the heat treatment compared with the reference data [18].

	NaCl (theo)			NaCl (exp)		
d (Å)	2.81	1.99	3.24	2.81	1.99	3.23
I (%)	100	55	10	83	27	6
	BaCO ₃ (theo)			BaCO ₃ (exp)		
d (Å)	3.72	3.66	2.62	3.70	3.65	2.62
I (%)	100	50	30	100	34	27

Table S2. Most important peaks of Ba₅Si₈O₂₁, Ba₄Si₆O₁₆, BaSi₂O₅ compared with the reference data [18].

	A	B	C	D	E	F	G	H	
Ba₅Si₈O₂₁									
d (Å)	3.80	3.81	3.82	3.84	3.79	3.81	3.84	3.83	3.82
I (%)	100	37	100	33	51	98	82	100	99
I(Counts)	/	1134	1522	1295	2408	2530	1155	2344	3117
d (Å)	3.27	3.28	3.28	3.30	3.27	3.27	3.27	3.29	3.29
I (%)	82	64	69	26	66	100	65	58	47
I(Counts)	/	1953	1052	1020	3111	2573	919	1363	1491
d (Å)	3.73	3.75	3.75	3.75	3.73	3.73	3.76	3.76	3.74
I (%)	74	100	55	26	100	99	62	59	86
I(Counts)	/	3070	845	1036	4738	2539	867	1387	2730
d (Å)	6.88	6.85	6.85	6.88	6.88	6.89	6.88	6.86	6.85
I (%)	13	12	14	100	13	71	100	77	33
I(Counts)	/	380	447	3925	628	2010	1406	1810	1038
Ba₄Si₆O₁₆									
d (Å)	3.74	3.75	3.78	3.75	3.73	3.73	3.76	3.76	3.74
I (%)	100	100	84	26	100	99	62	59	86
I(Counts)	/	3070	1274	1036	4738	2539	867	1387	2730
d (Å)	3.67	3.68	/	/	/	/	/	/	/
I (%)	51	80	/	/	/	/	/	/	/
I(Counts)	/	2452	/	/	/	/	/	/	/
d (Å)	3.25	3.25	3.25	3.26	/	3.22	3.25	3.24	3.24
I (%)	45	52	55	24	/	68	72	43	59
I(Counts)	/	1601	1504	932	/	3065	1010	1012	1860
d (Å)	3.29	3.28	3.28	3.30	3.27	3.27	3.27	3.29	3.29
I (%)	41	64	69	26	66	100	65	58	47
I(Counts)	/	1953	1052	1020	3111	2573	919	1363	1491

BaSi ₂ O ₅									
d (Å)	3.10	3.10	3.13	3.12	3.11	3.10	3.12	3.12	3.11
I (%)	100	43	59	21	21	43	53	47	100
I(Counts)	/	1318	900	811	995	1108	748	1094	3162
d (Å)	3.97	3.98	4.02	4.00	3.96	3.97	4.02	3.99	3.99
I (%)	85	58	53	30	9	63	28	13	48
I(Counts)	/	1779	807	1169	415	1628	388	297	1521
d (Å)	3.34	3.35	3.36	3.36	3.34	3.35	3.36	3.36	3.36
I (%)	70	48	31	14	9	38	34	30	23
I(Counts)	/	1470	479	538	434	988	478	703	718
d (Å)	3.42	3.43	3.44	3.41	3.42	3.43	3.41	3.44	3.44
I (%)	50	34	25	36	3	56	20	14	19
I(Counts)	/	1054	758	1416	157	2045	279	330	616

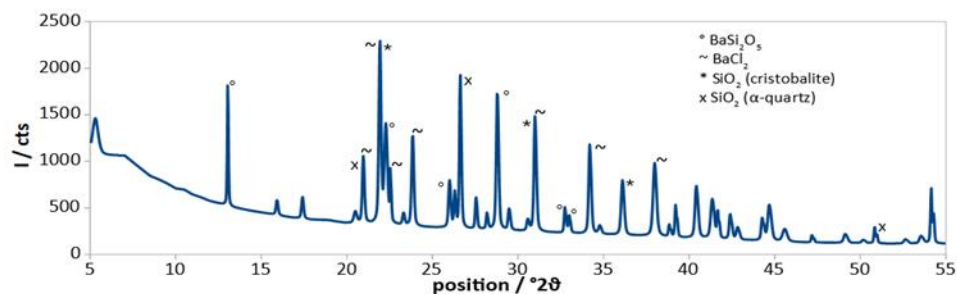


Figure S1. XRD of sample synthesised with SiO₂, BaCl₂ as precursor with molar ratio Ba/Si = 0.625; H₃BO₃ as flux agent; Eu₂O₃, Dy₂O₃ as dopants with molar ratios Eu/Si = 2.8 × 10⁻³ and Dy/Si = 3.6 × 10⁻³. Thermal treatment conditions are 1200 °C for 12 h. The crucible is in alumina.

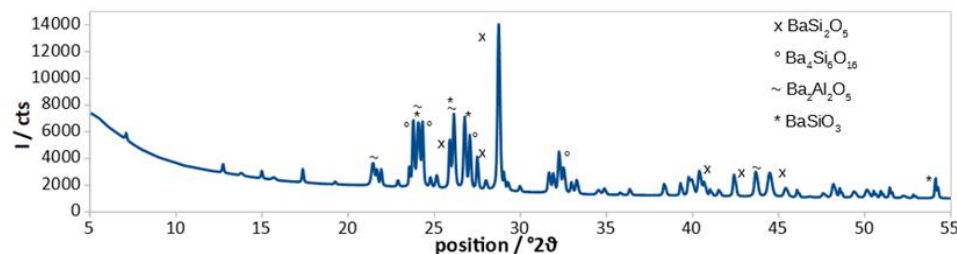


Figure S2. XRD of sample synthesised with Na₂SiO₃, BaCO₃ and NH₄Cl as precursor with molar ratio Ba/Si = 0.7; Eu₂O₃, Dy₂O₃ as dopants with molar ratios Eu/Si = 2.8 × 10⁻³ and Dy/Si = 3.6 × 10⁻³. Thermal treatment conditions are 1100 °C for 12 h. The crucible is in alumina.