Electronic Supplementary Material (ESI) for Dalton Transactions.

Released neighboring-cation stress induced blue-shift of Eu^{2+} emission in $(Ba,Sr)_3Lu(PO_4)_3:Eu^{2+}$ eulytite solid-solution phosphors

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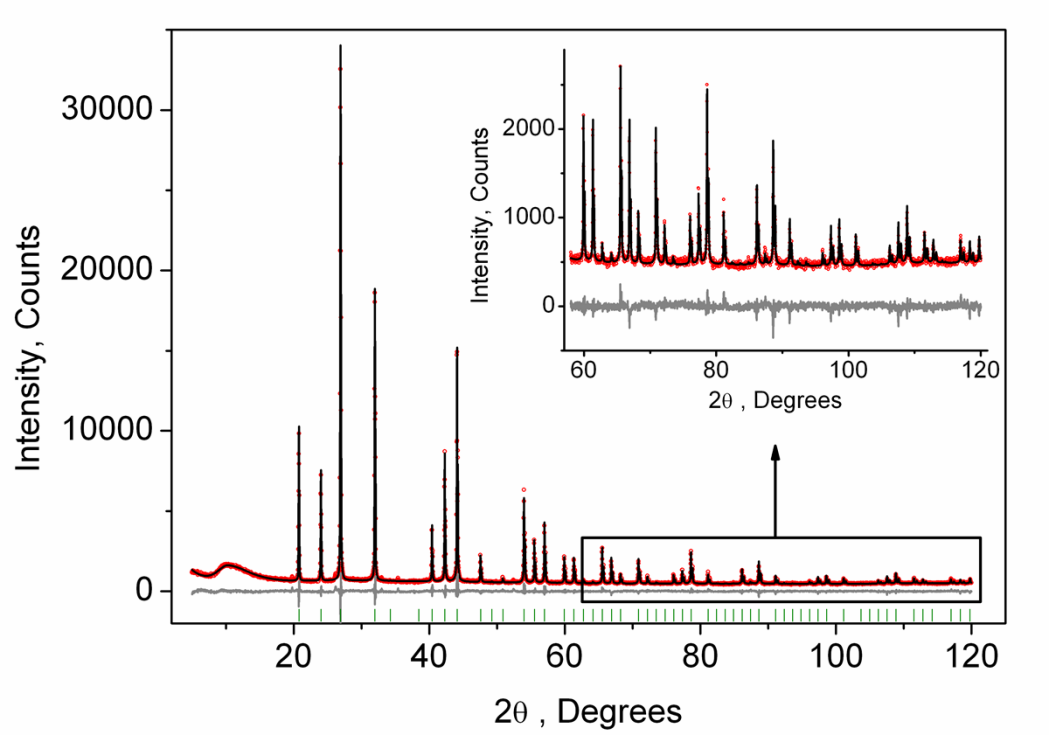

Figure S1. Powder XRD patterns for Rietveld structure analysis of $Ba_{(3-x)}Sr_xLu(PO_4)_3$:0.03Eu, x=0.

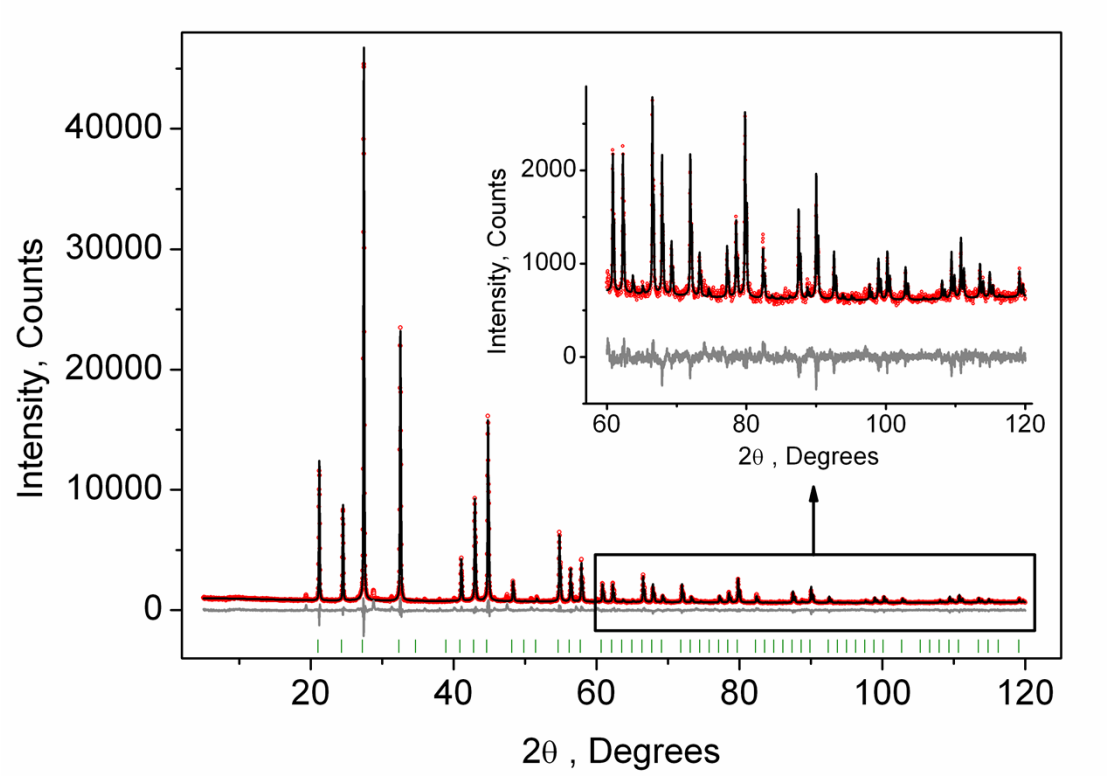

Figure S2. Powder XRD patterns for Rietveld structure analysis of $Ba_{(3-x)}Sr_xLu(PO_4)_3$:0.03Eu, x=1.

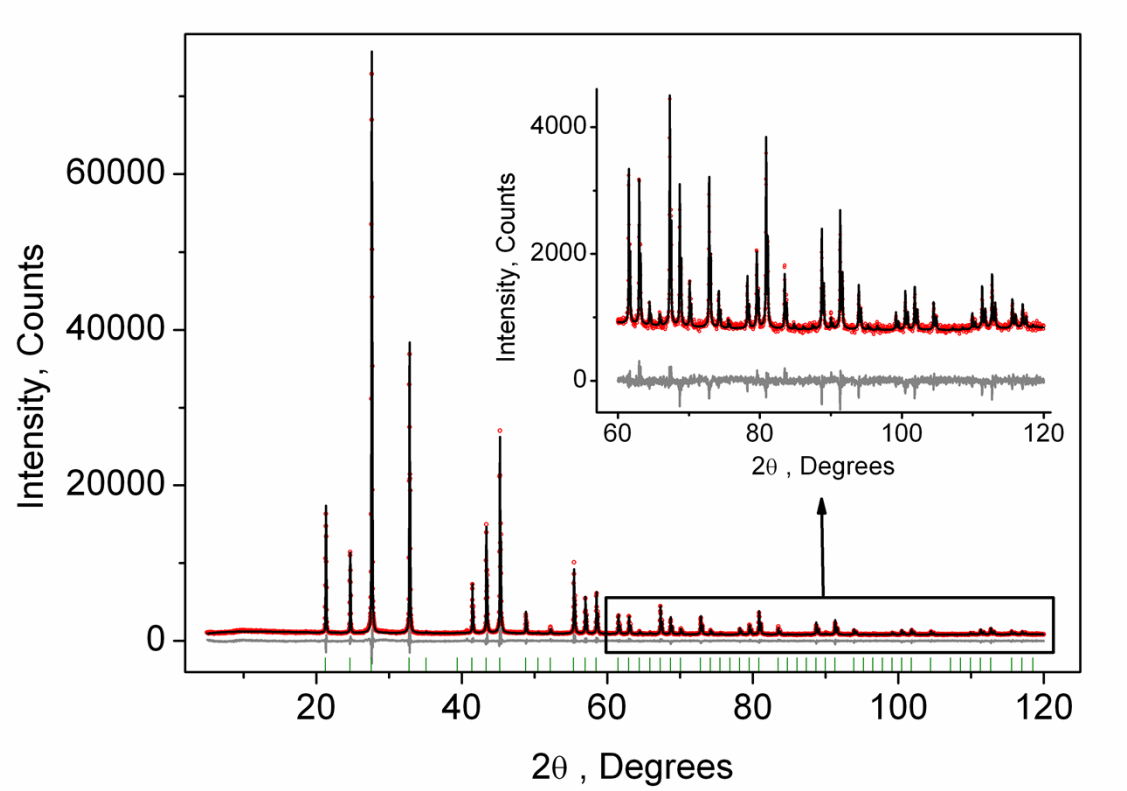

Figure S3. Powder XRD patterns for Rietveld structure analysis of $Ba_{(3-x)}Sr_xLu(PO_4)_3$:0.03Eu, x=2.

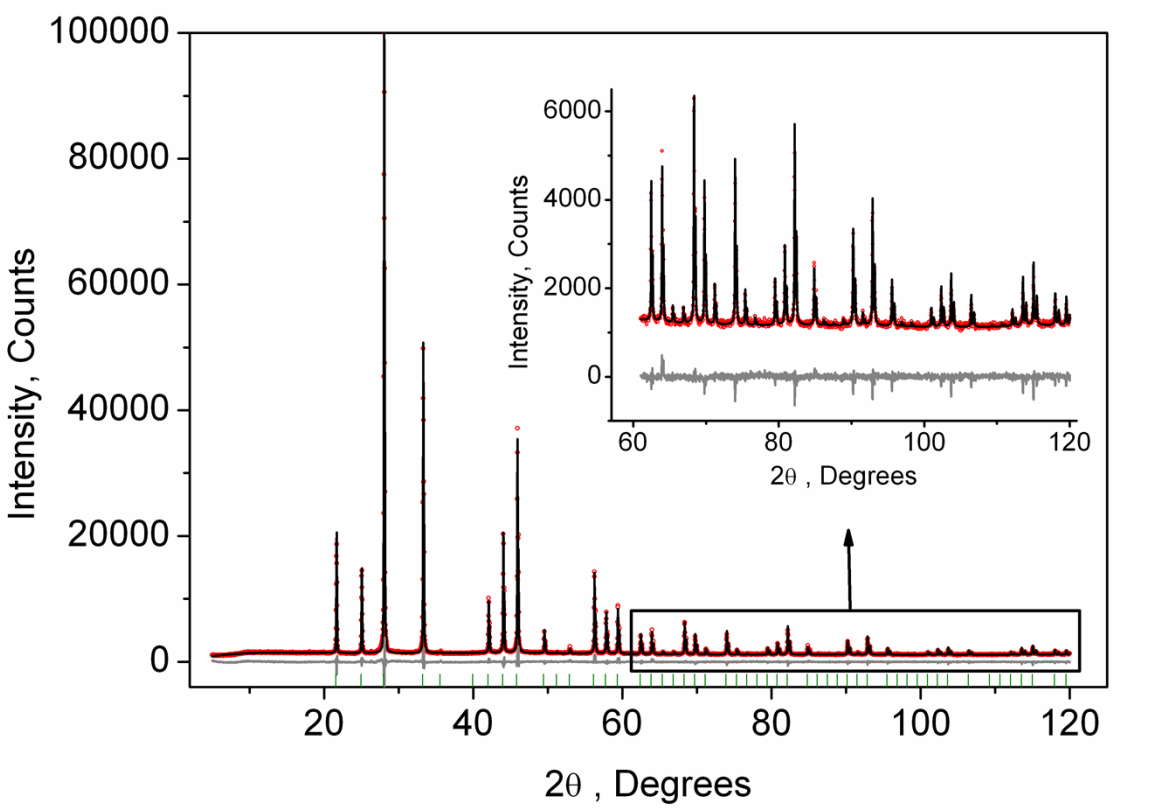

Figure S4. Powder XRD patterns for Rietveld structure analysis of $Ba_{(3-x)}Sr_xLu(PO_4)_3$:0.03Eu, x=3.

Table S1. Main parameters of processing and refinement of the $Ba_{(3-x)}Sr_xLu(PO_4)_3$:0.03Eu (x=0, 1, 2, 3) samples

x	0	1	2	3
Sp.Gr.	*I-43d*	*I-43d*	*I-43d*	*I-43d*
a, Å	10.46040(8)	10.3454(2)	10.22147(7)	10.09020(6)
V, Å^3	1144.58(3)	1107.25(5)	1067.92(2)	1027.30(2)
Z	4	4	4	4
2θ-interval, º	5-120	5-120	5-120	5-120
Number of reflections	87	83	79	77
Number of parameters of refinement	46	41	41	41
R_{wp}, %	5.73	6.36	5.07	4.67
R_p, %	4.48	4.51	3.95	3.59
R_{exp}, %	3.55	3.17	2.81	2.40
χ^2	1.61	2.00	1.81	1.95
R_B, %	1.47	1.70	1.46	1.69

Table S2. Fractional atomic coordinates and isotropic displacement parameters (Å^2) of $Ba_{(3-x)}Sr_xLu(PO_4)_3$:0.03Eu

	x	*y*	*z*	B_{iso}	Occ.
			x=0		
Ba	0.06744 (8)	0.06744 (8)	0.06744 (8)	2.0 (3)	0.7425
Lu	0.06744 (8)	0.06744 (8)	0.06744 (8)	2.0 (3)	0.25
Eu	0.06744 (8)	0.06744 (8)	0.06744 (8)	2.0 (3)	0.0075
P	0.375	0	0.25	3.0 (4)	1
O1	0.309 (2)	-0.002 (2)	0.103 (3)	4.4 (6)	0.507 (12)
O2	0.275 (2)	0.074 (2)	0.178 (2)	4.4 (6)	0.493 (12)
			x=1		
Ba	0.06749 (9)	0.06749 (9)	0.06749 (9)	2.0 (4)	0.495
Sr	0.06749 (9)	0.06749 (9)	0.06749 (9)	2.0 (4)	0.2475
Lu	0.06749 (9)	0.06749 (9)	0.06749 (9)	2.0 (4)	0.25
Eu	0.06749 (9)	0.06749 (9)	0.06749 (9)	2.0 (4)	0.0075
P	0.375	0	0.25	3.0 (5)	1
O1	0.306 (2)	-0.006 (2)	0.106 (3)	5.0 (6)	0.524 (13)
O2	0.283 (2)	0.071 (2)	0.182 (3)	5.0 (6)	0.476 (13)
			x=2		
Ba	0.06777 (6)	0.06777 (6)	0.06777 (6)	2.0 (3)	0.2475
Sr	0.06777 (6)	0.06777 (6)	0.06777 (6)	2.0 (3)	0.495
Lu	0.06777 (6)	0.06777 (6)	0.06777 (6)	2.0 (3)	0.25
Eu	0.06777 (6)	0.06777 (6)	0.06777 (6)	2.0 (3)	0.0075
P	0.375	0	0.25	2.2 (3)	1
O1	0.3013 (19)	-0.012 (2)	0.1169 (19)	4.7 (5)	0.474 (16)
O2	0.2875 (18)	0.074 (2)	0.1588 (14)	4.7 (5)	0.526 (16)
			x=3		
Sr	0.06733 (6)	0.06733 (6)	0.06733 (6)	2.0 (3)	0.7425
Lu	0.06733 (6)	0.06733 (6)	0.06733 (6)	2.0 (3)	0.25
Eu	0.06733 (6)	0.06733 (6)	0.06733 (6)	2.0 (3)	0.0075
P	0.375	0	0.25	2.0 (3)	1
O1	0.3029 (15)	-0.0149 (19)	0.1101 (15)	5.0 (4)	0.503 (12)
O2	0.2870 (17)	0.0760 (18)	0.1539 (13)	5.0 (4)	0.497 (12)

Table S3. Main bond lengths (Å) of $Ba_{(3-x)}Sr_xLu(PO_4)_3$:0.03Eu

		x=0	
Ba/Lu/Eu—O1^i	2.323(2)	Ba/Lu/Eu—O1	2.653(2)
Ba/Lu/Eu—O2	2.458(2)	Ba/Lu/Eu—O2^i	2.968(2)
		x=1	

Ba/Sr/Lu/Eu— O1^{i}	2.348(3)	Ba/Sr/Lu/Eu —O1	2.611(3)
Ba/Sr/Lu/Eu —O2	2.519(3)	Ba/Sr/Lu/Eu —O2^{i}	2.937(3)
x=2			
Ba/Sr/Lu/Eu — O1^{i}	2.432(2)	Ba/Sr/Lu/Eu — O1	2.571(2)
Ba/Sr/Lu/Eu —O2	2.453(2)	Ba/Sr/Lu/Eu —O2^{i}	2.749(2)
x=3			
Sr/Lu/Eu— O1^{i}	2.368(2)	Sr/Lu/Eu— O1	2.554(2)
Sr/Lu/Eu—O2	2.384(2)	Sr/Lu/Eu—O2^{i}	2.654(2)

Symmetry codes: (i) 1/2-*x*, *y*, -*z*