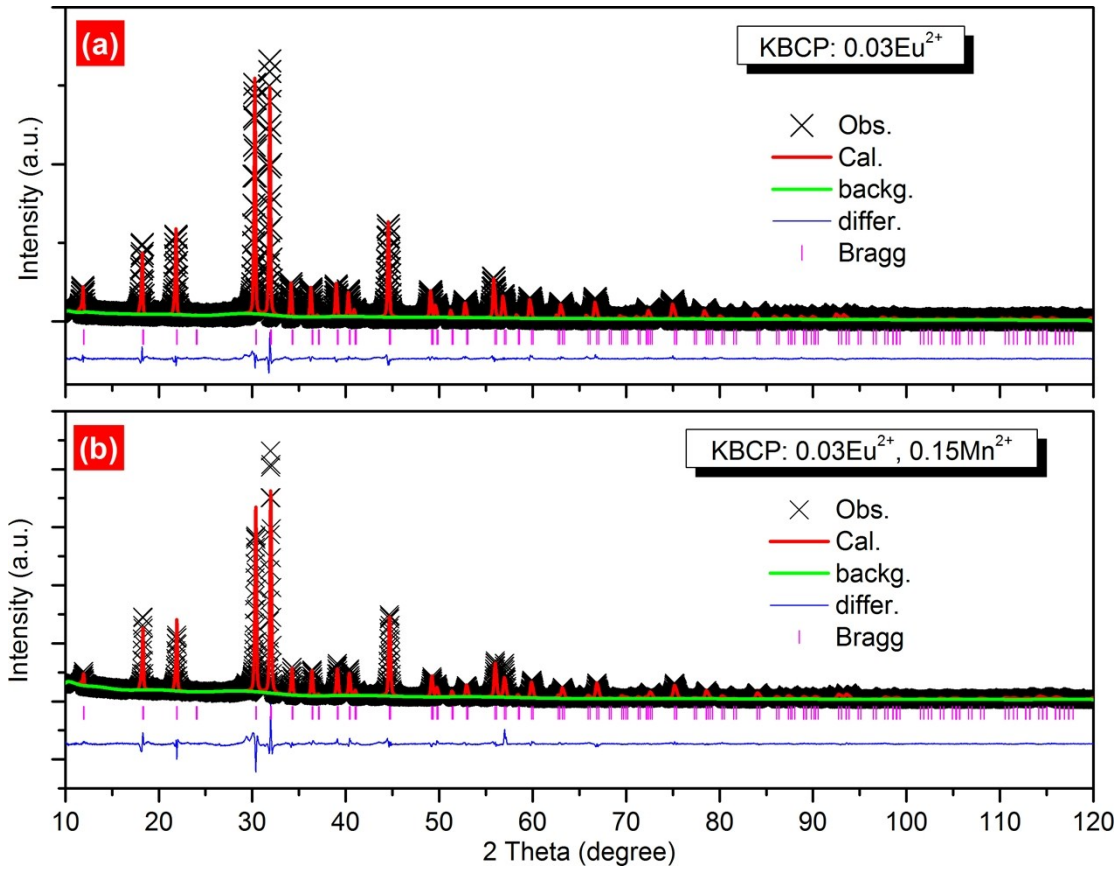

Figure S1 Rietveld refinement of the XRD profile of KBCP: $0.03Eu^{2+}$ (a) and KBCP: $0.03Eu^{2+}$, $0.05Mn^{2+}$ sample (b)

Table S1 Main processing and refinement parameters of $K_2BaCa(PO_4)_2$: $0.03Eu^{2+}$ sample from the Rietveld Structure Analysis

Phase data						
Composition	$K_{2-0.03}BaCa(PO_4)_2$: $0.03Eu^{2+}$					
Space group	Trigonal, *P*-3*m*1(164)					
Cell parameters	a = 5.6040 Å, c = 7.4161 Å, V = 201.70 Å^3, Z = 1					
Final agreement factors	R_{wp} = 8.71 %, R_p = 7.37 %, χ^2 = 3.969					
Atomic parameters						
Atom	Wyck.	S.O.F	*x*	*y*	*z*	*U* (Å^2)
Ba1	1b	1	0	0	1/2	0.0255
Ca2	2d	0.5	1/3	2/3	0.82025	0.0221
K2	2d	0.5	1/3	2/3	0.82025	0.0221
K3	1a	0.97	0	0	0	0.0080
Eu3	1a	0.03	0	0	0	0.0080
P1	2d	1	1/3	2/3	0.27285	0.0115
O1	2d	1	1/3	2/3	0.48471	0.0308
O2	6i	1	0.18594	0.81424	0.19836	0.0362

Table S2 Main processing and refinement parameters of $K_2BaCa(PO_4)_2$: $0.03Eu^{2+}$, $0.15Mn^{2+}$ sample from the Rietveld Structure Analysis

Phase data						
Composition	$K_{2-0.18}BaCa(PO_4)_2$: $0.03Eu^{2+}$, $0.05Mn^{2+}$					
Space group	Trigonal, *P*-3*m*1(164)					
Cell parameters	a = 5.5927 Å, c = 7.4005 Å, V = 200.47 Å^3, Z = 1					
Final agreement factors	R_{wp} = 10.92 %, R_p = 8.06 %, χ^2 = 7.958					
Atomic parameters						
Atom	Wyck.	S.O.F	x	y	z	U (Å^2)
Ba1	1b	1	0	0	1/2	0.0208
Ca2	2d	0.475	1/3	2/3	0.82447	0.0160
K2	2d	0.525	1/3	2/3	0.82447	0.0160
K3	1a	0.82	0	0	0	0.0006
Eu3	1a	0.03	0	0	0	0.0006
Mn3	1a	0.15	0	0	0	0.0006
P1	2d	1	1/3	2/3	0.26808	0.0078
O1	2d	1	1/3	2/3	0.48072	0.0057
O2	6i	1	0.17965	0.82055	0.19151	0.0337