Supporting Information

A narrow band blue phosphor $NaBa_4Al_2B_8O_{18}Cl_3:Eu^{2+}$ for white light emitting diodes

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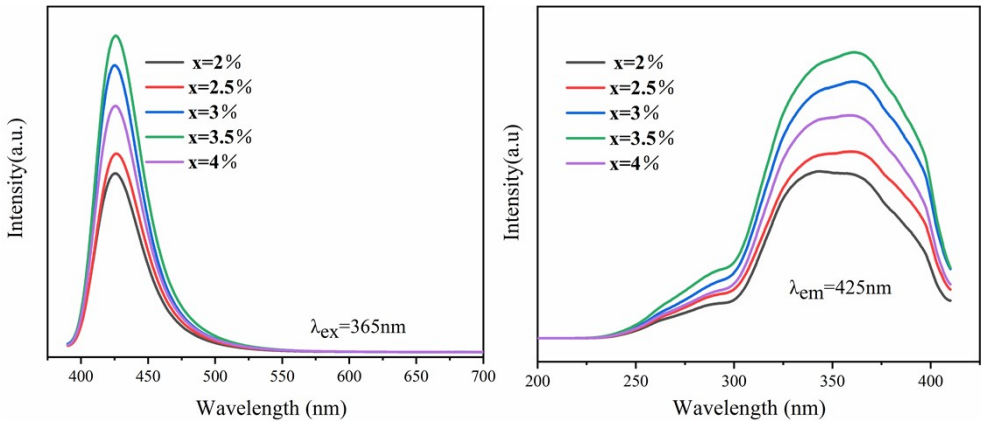

Fig. S1 Excitation and emission spectra of NABC with different Eu^{2+} doping concentrations

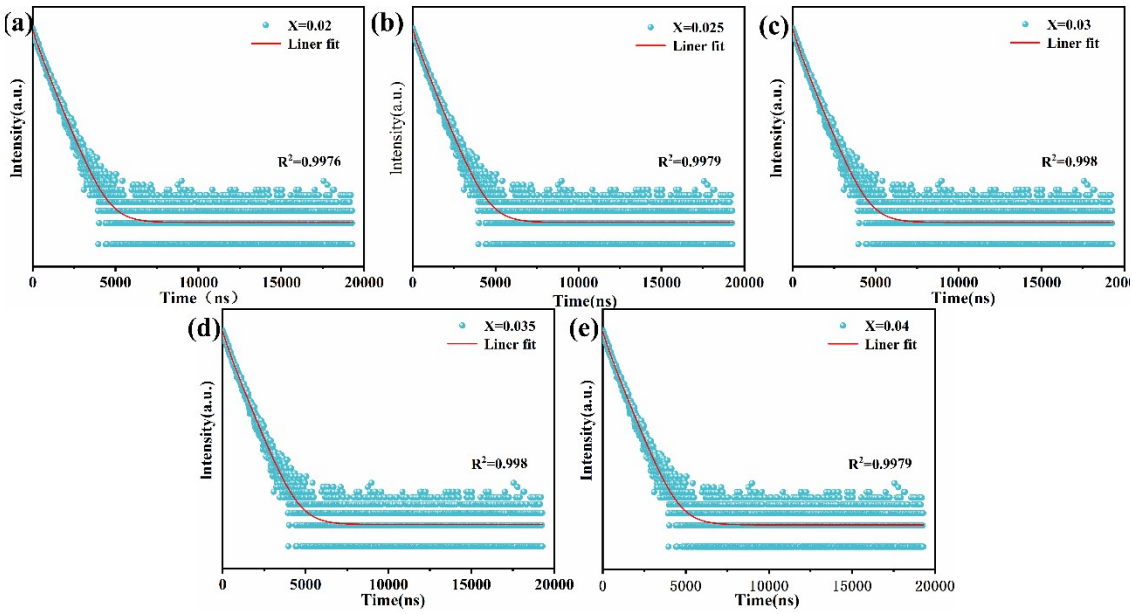

Fig. S2 Fluorescence decay curves and fitted residuals of bi-exponential functions of NBAC:xEu^{2+} were monitored at 425 nm using an excitation wavelength of 365 nm at room temperature

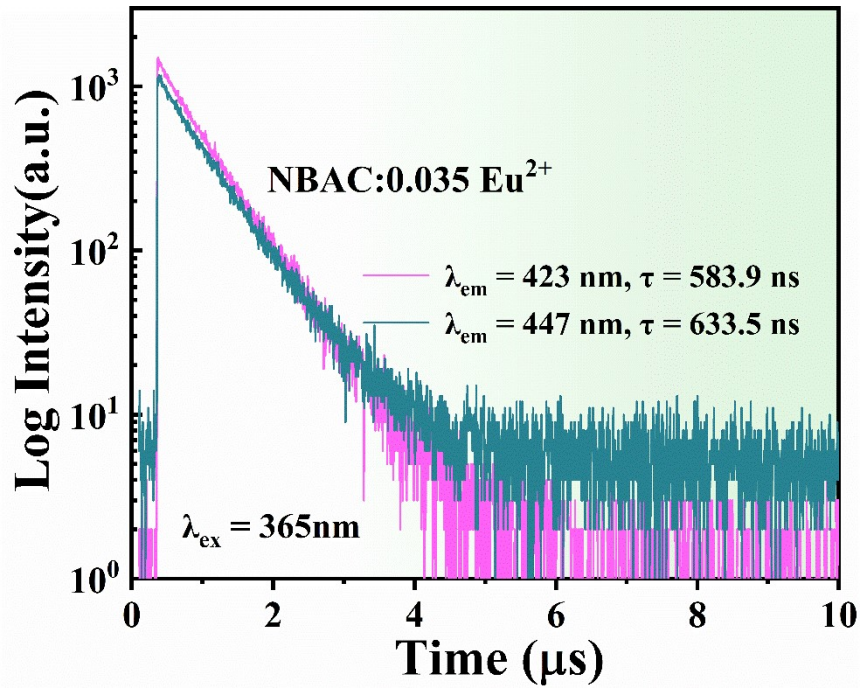

Fig. S3 Comparison of different emission decay curves for emissions at 423 and 547 nm.

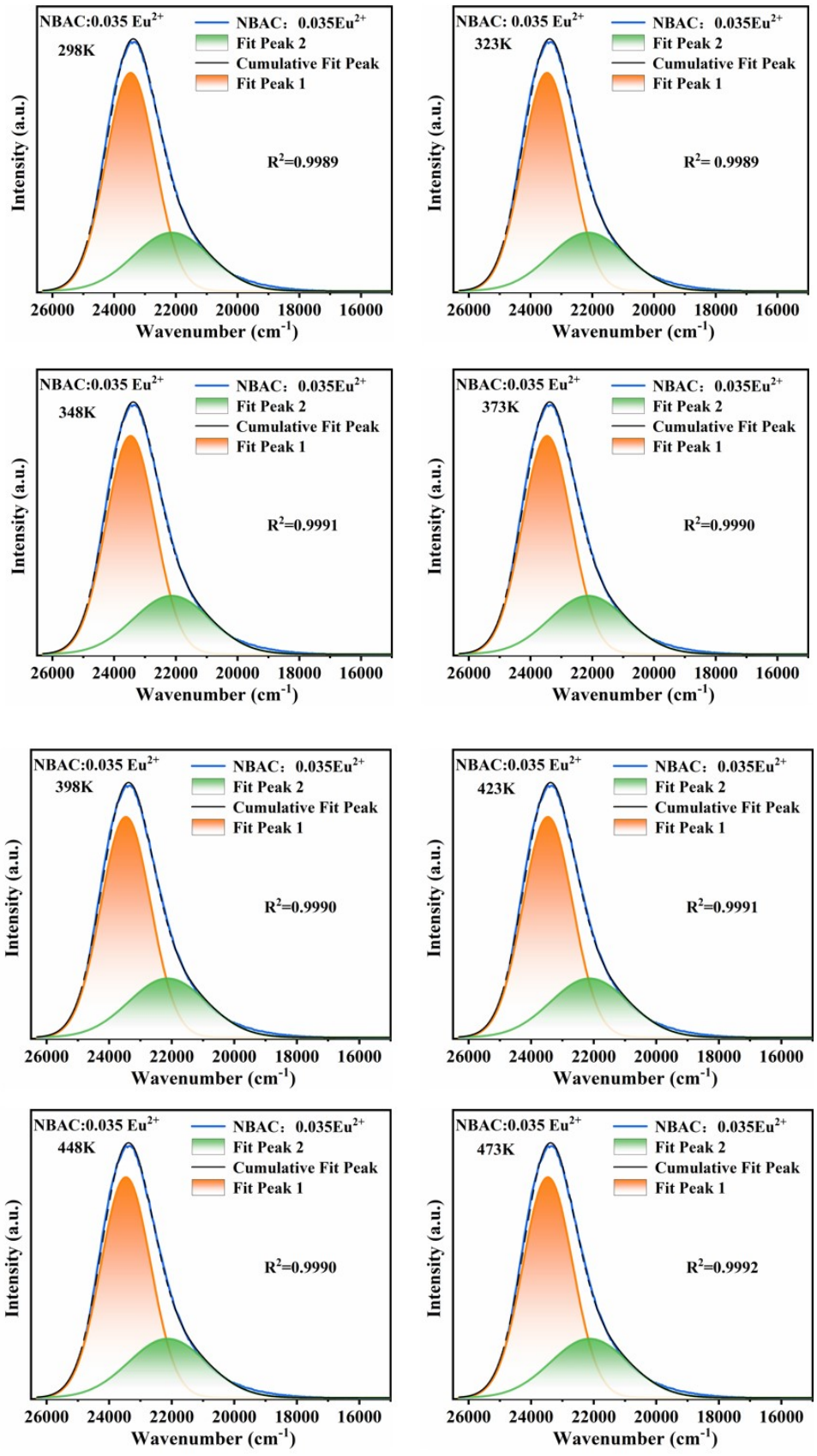

Fig. S4 Gaussian fitting for temperature-dependent emission spectra of NBAC:0.035Eu^{2+}

Table S1 Crystallographic data for NBAC: $0.035Eu^{2+}$ based on Rietveld refinement

Formula	$NaBa_4AlB_8O_{18}Cl_3:0.035Eu^{2+}$
Space group	$P4_2nm$
a(Å)	12.0480 (16)
b(Å)	12.0480 (2)
c(Å)	6.8165 (11)
Z	2
V($Å^3$)	989.4 (3)
R_{wp}%	8.41%
R_p%	6.39%
χ^2	4.881

Table S2 Lists of the luminescent decay times (τ_1, τ_2), fitting constants (A1, A2), average decay times (τ_{av}) and R-Square (R^2) during the fitting of the decay curves of NBAC:xEu^{2+} samples

Sample	τ_1(ns)	A_1	τ_2(ns)	A_2	R^2
X=0.02	290.8	0.2032	751.1	0.7251	0.9976
X=0.025	245.6	0.1534	743.7	0.8179	0.9979
X=0.03	228.3	0.1416	731.9	0.8309	0.9980
X=0.035	438.7	0.3713	803.3	0.6217	0.9980
X=0.04	267.6	0.1775	745.2	0.7843	0.9979

Sample	Decay Lifetime (ns)
X=0.02	709.3
X=0.025	713.6
X=0.03	706.4
X=0.035	714.7
X=0.04	706.1

Table S3 Lists of the luminescent decay times (τ_1, τ_2), fitting constants (A1, A2), average decay times (τ_{av}) and R-Square (R^2) during the fitting of the decay curves of NBAC:0.035Eu^{2+} samples different emission decay curves for emissions at 423 and 447 nm

Sample	τ_1(ns)	A_1	τ_2(ns)	A_2	R^2
λ_{ex}=423nm	167.6	0.934	649.13	1.5400	0.9984
λ_{ex}=447nm	303.3	0.4017	673.8	1.4828	0.9976

Sample	Decay Lifetime (ns)
λ_{ex}=423nm	583.9
λ_{ex}=447nm	633.5

Table S4 The CIE chromaticity coordinates and the chromaticity shift of NBAC:0.035Eu^{2+} at temperatures from 298K to 423K

Temperature (K)	CIE(*x*,*y*)	Δ*E*
298	(0.1611, 0.0416)	-
323	(0.1610, 0.0423)	2.11×10^{-3}
348	(0.1609, 0.0433)	5.03×10^{-3}
373	(0.1608, 0.0441)	7.28×10^{-3}
398	(0.1607, 0.0448)	9.38×10^{-3}
423	(0.1607, 0.0455)	1.13×10^{-2}