

Supporting Information

Site Preference and Defect Engineering of a Highly Efficient Blue-Emitting Phosphor $\text{Sr}_2\text{SiO}_4:\text{Ce}^{3+}/\text{K}^+$ Toward Thermally Enhanced Luminescence

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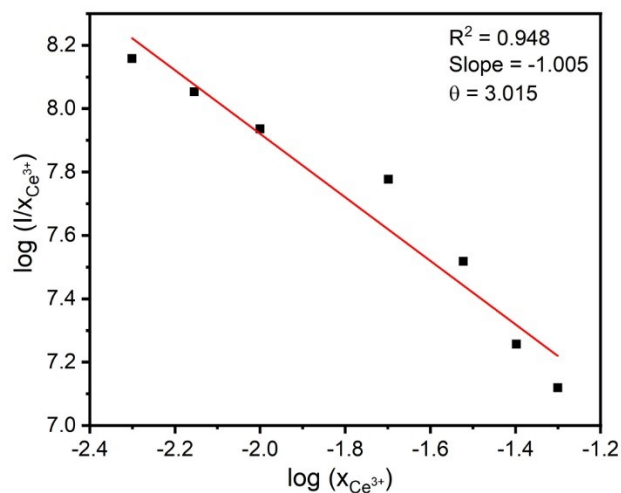


Figure S1. Fitting results of $\log(I/x)$ as a function of $\log(x)$ for $\text{Sr}_2\text{SiO}_4:0.02\text{Ce}^{3+}/0.02\text{K}^+$

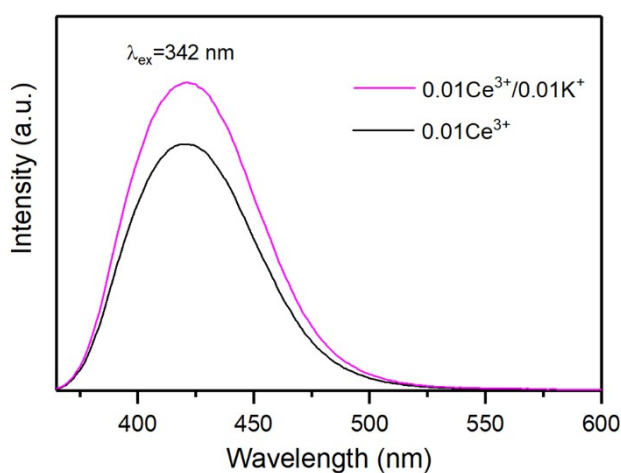


Figure S2. The comparison of emission intensity of $\text{Sr}_2\text{SiO}_4:0.01\text{Ce}^{3+}$ and $\text{Sr}_2\text{SiO}_4:0.01\text{Ce}^{3+}/0.01\text{K}^+$

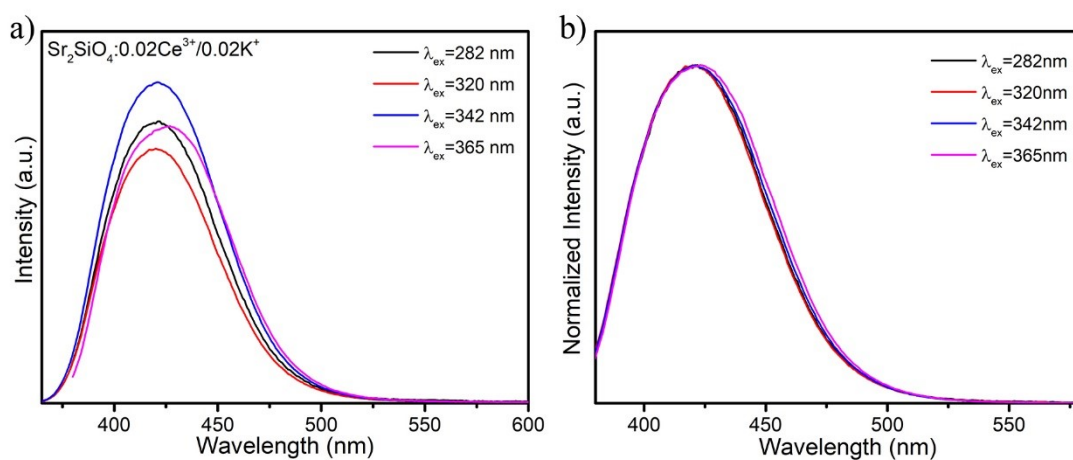


Figure S3. a) PL spectra and b) normalized PL spectra of $\text{Sr}_2\text{SiO}_4:0.02\text{Ce}^{3+}/0.02\text{K}^+$ at different excitation wavelengths.

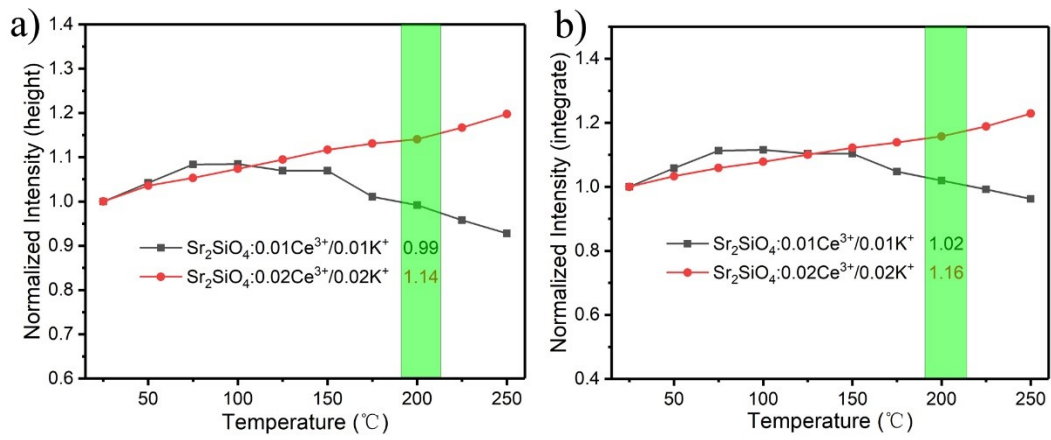


Figure S4. Comparison of thermal stability of $\text{Sr}_2\text{SiO}_4:\text{xCe}^{3+}/\text{xK}^+$ under the excitation at 342 nm. (a) peak intensity, and (b) integrated intensity.

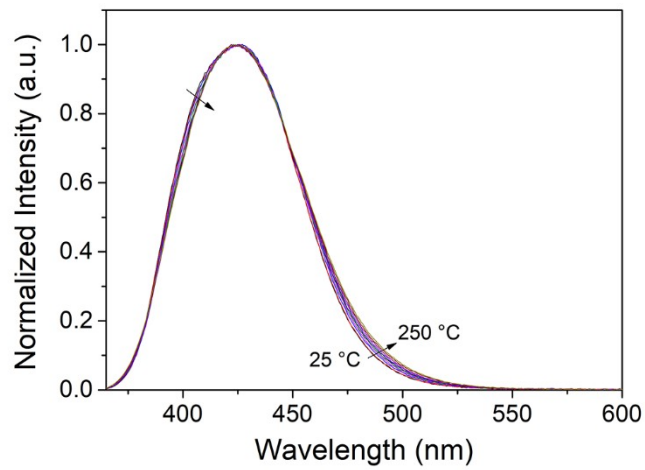


Figure S5. The normalized temperature-dependent PL spectra of $\text{Sr}_2\text{SiO}_4:0.02\text{Ce}^{3+}/0.02\text{K}^+$

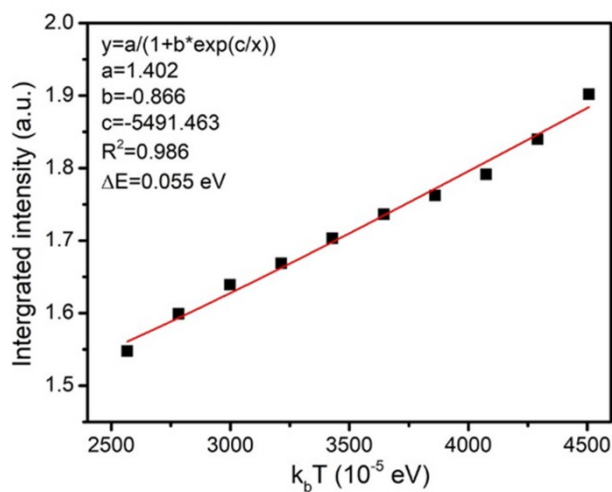


Figure S6. The fitting of I_T again kT for activation energy ΔE

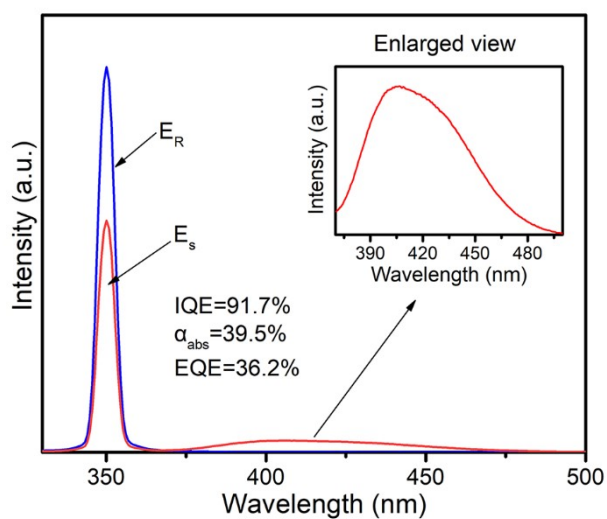


Figure S7. The measured spectra of $\text{Sr}_2\text{SiO}_4:0.02\text{Ce}^{3+}/0.02\text{K}^+$ and the calculated quantum efficiencies.

Table S1. Lifetime fitting values under different Ce^{3+} concentrations

y	0.005	0.007	0.01	0.02	0.03	0.04	0.05
y_0	11.55	12.53	12.90	12.69	13.44	13.62	15.88
A	9597.73	9826.21	9896.56	9674.01	9817.82	9879.12	9767.34
τ (ns)	27.84	28.08	28.19	28.44	28.83	28.65	27.98