



Spectroscopic and Luminescence Properties of Pr^{3+} -Doped ACaF_3 ($A = \text{K}, \text{Rb}, \text{Cs}$) Fluorides.

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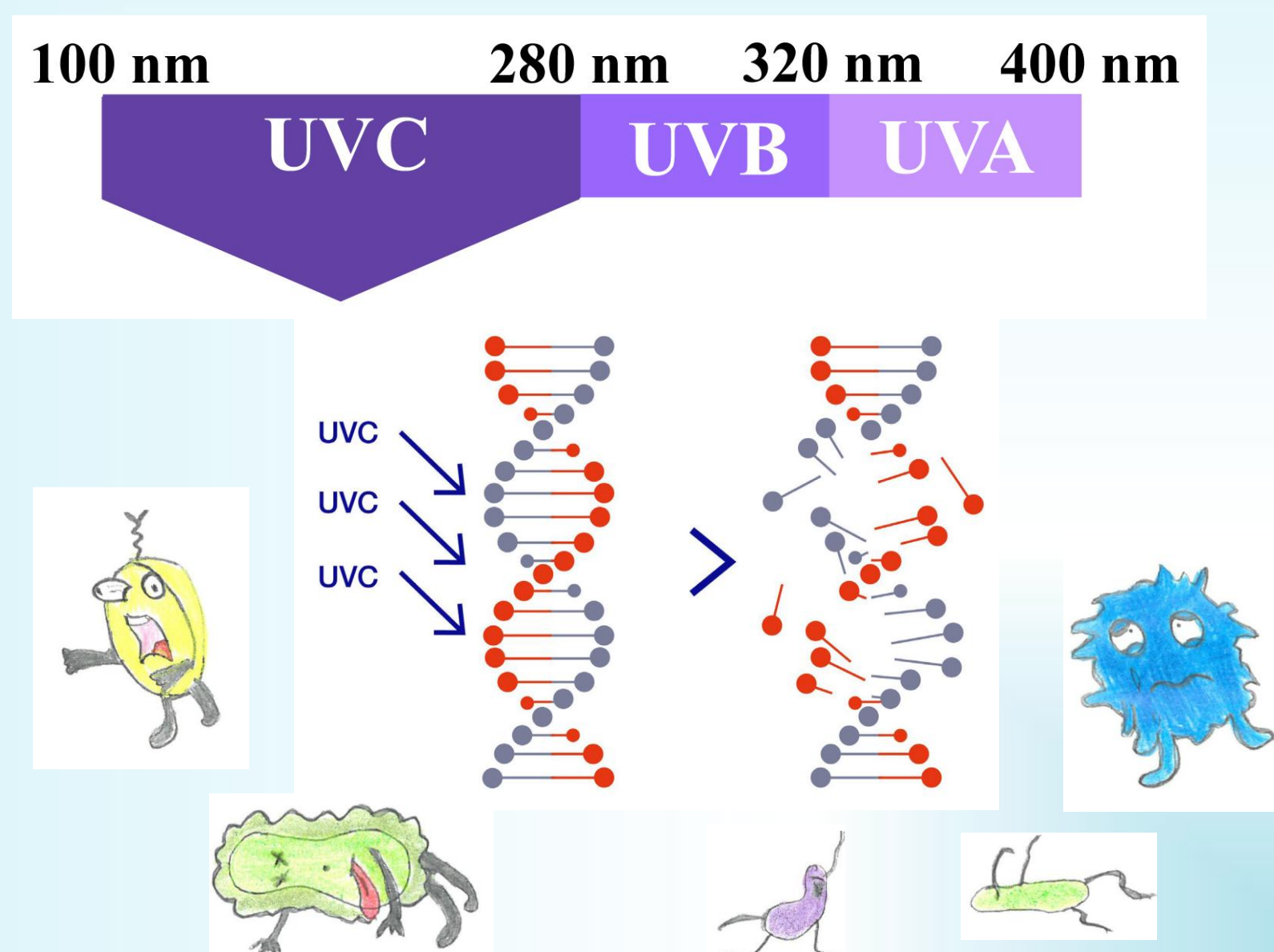
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Introduction



X-ray luminescence

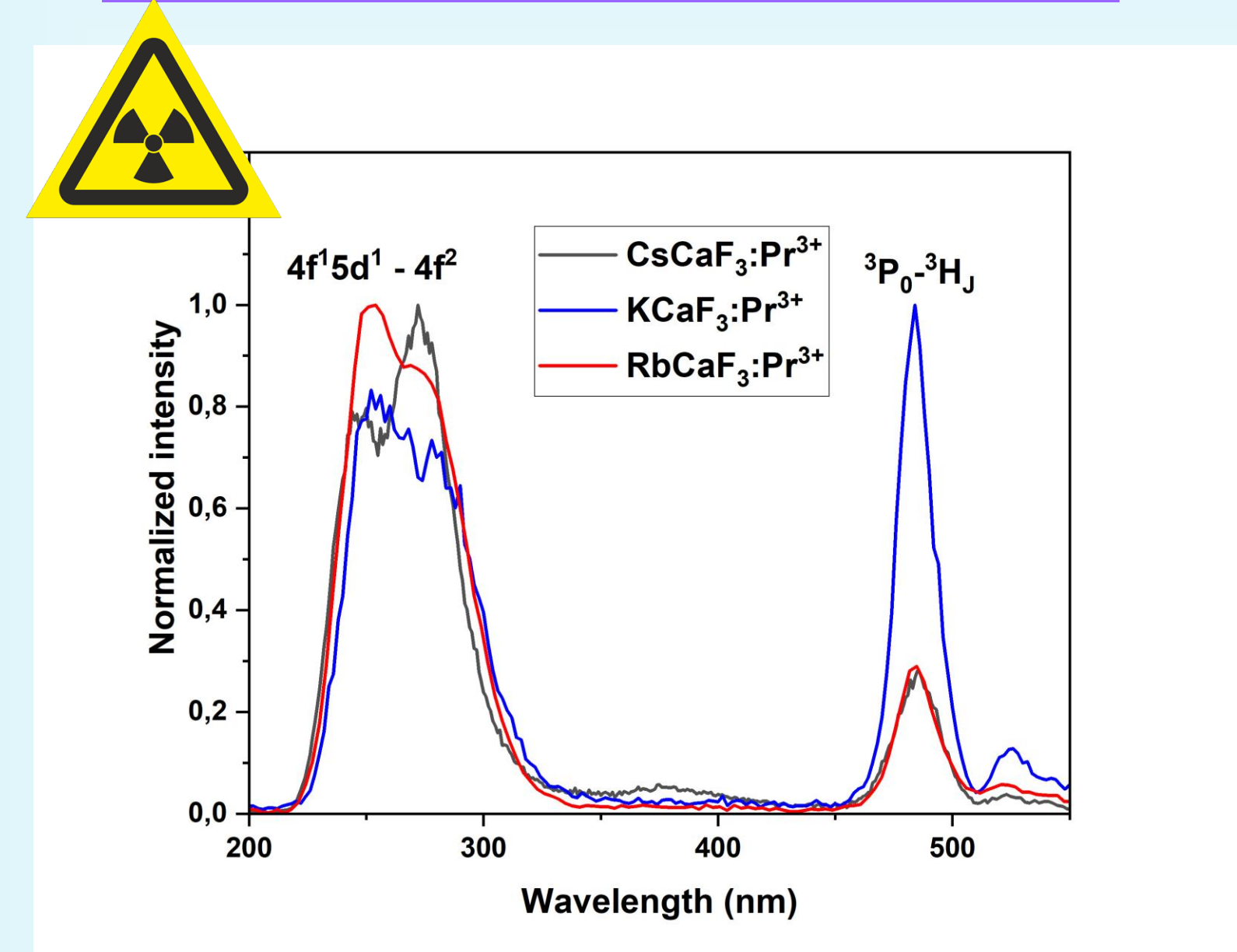


Fig. 3. X-ray luminescence of 0.5% Pr^{3+} doped ACaF_3 .

Vis luminescence

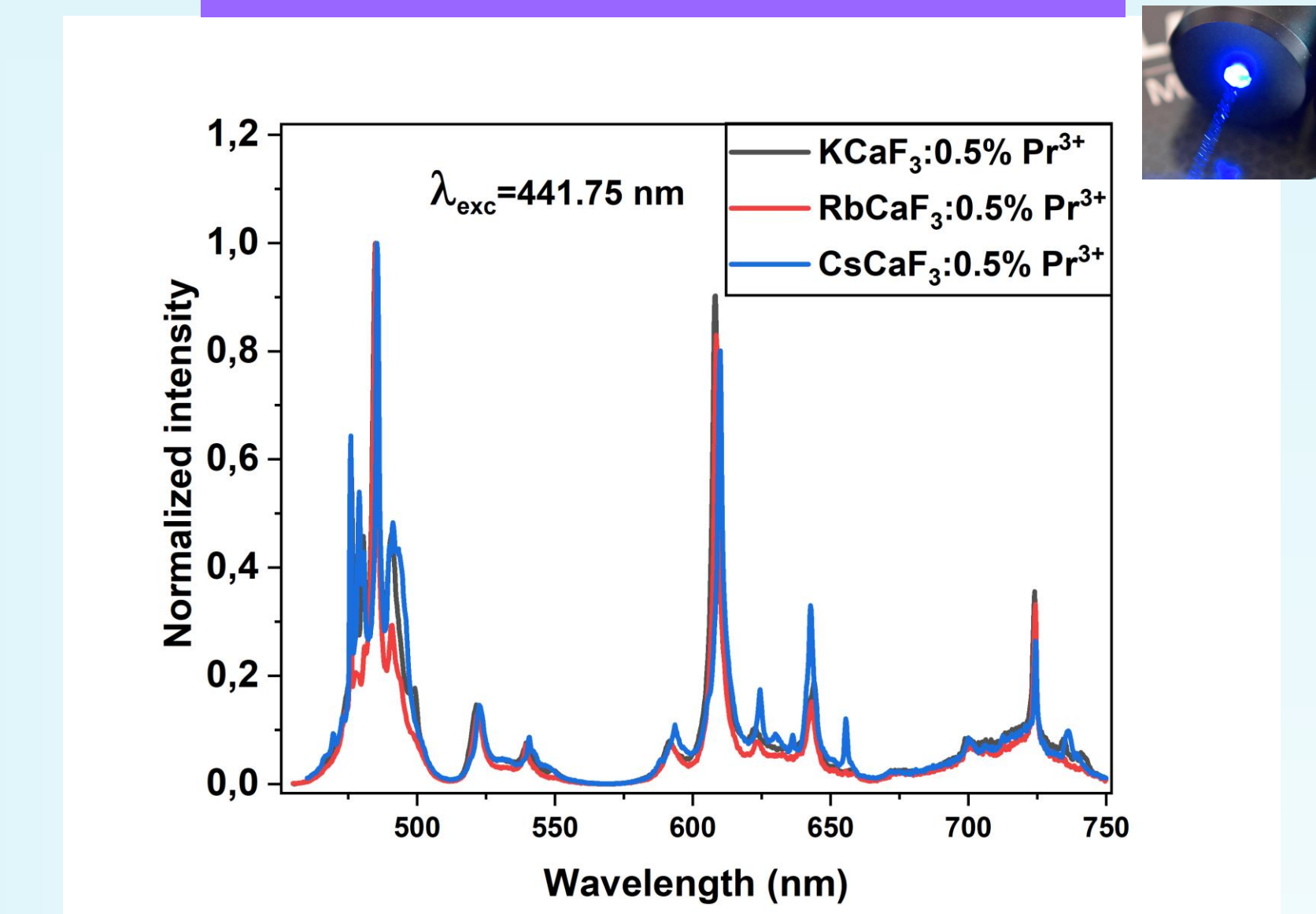


Fig. 4. The emission spectra of 0.5% Pr^{3+} doped ACaF_3 under 441 nm excitation.

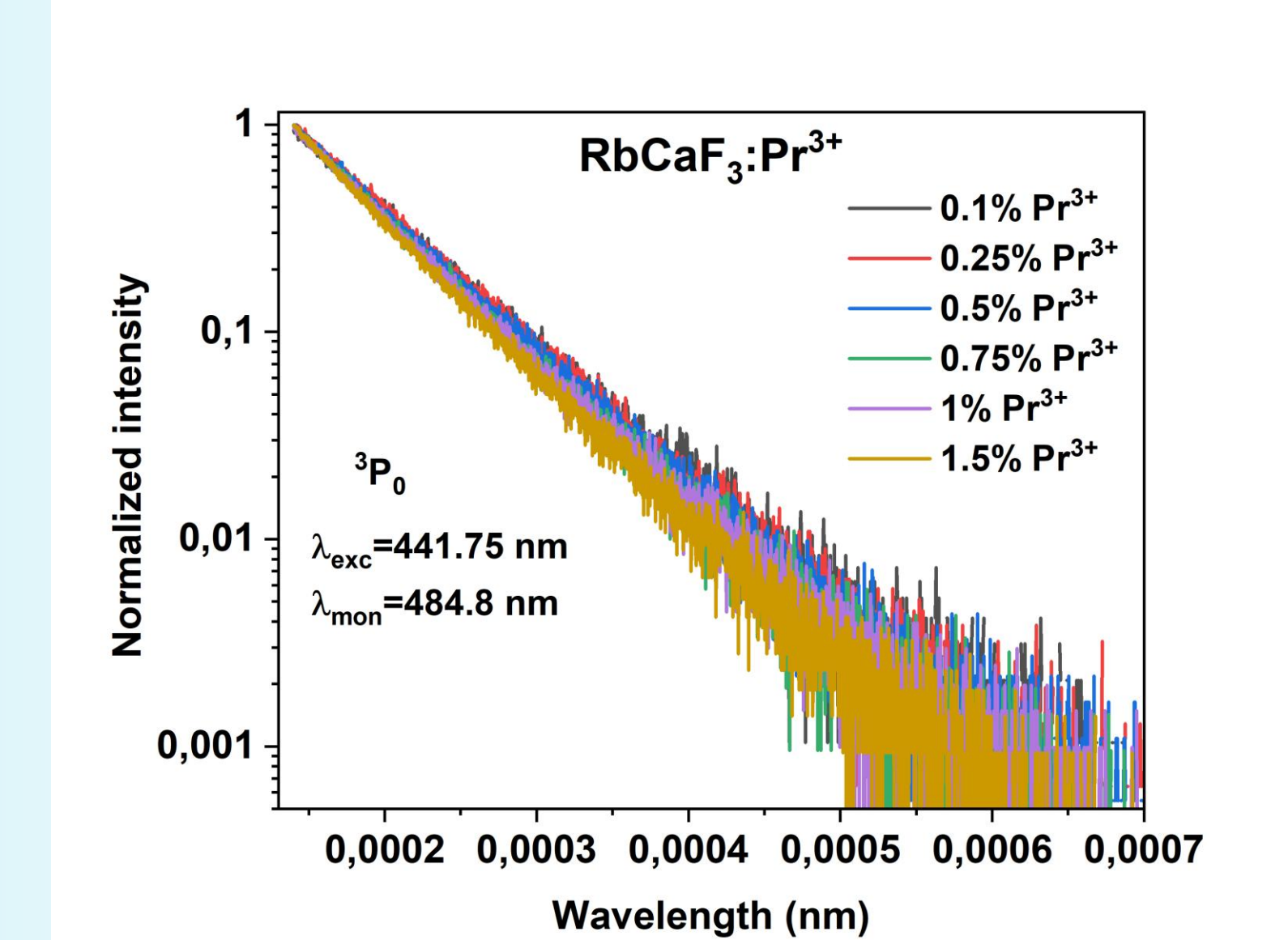


Fig. 5. The decay curves of $3P_0$ for $\text{RbCaF}_3:\text{Pr}^{3+}$ under 441 nm excitation.

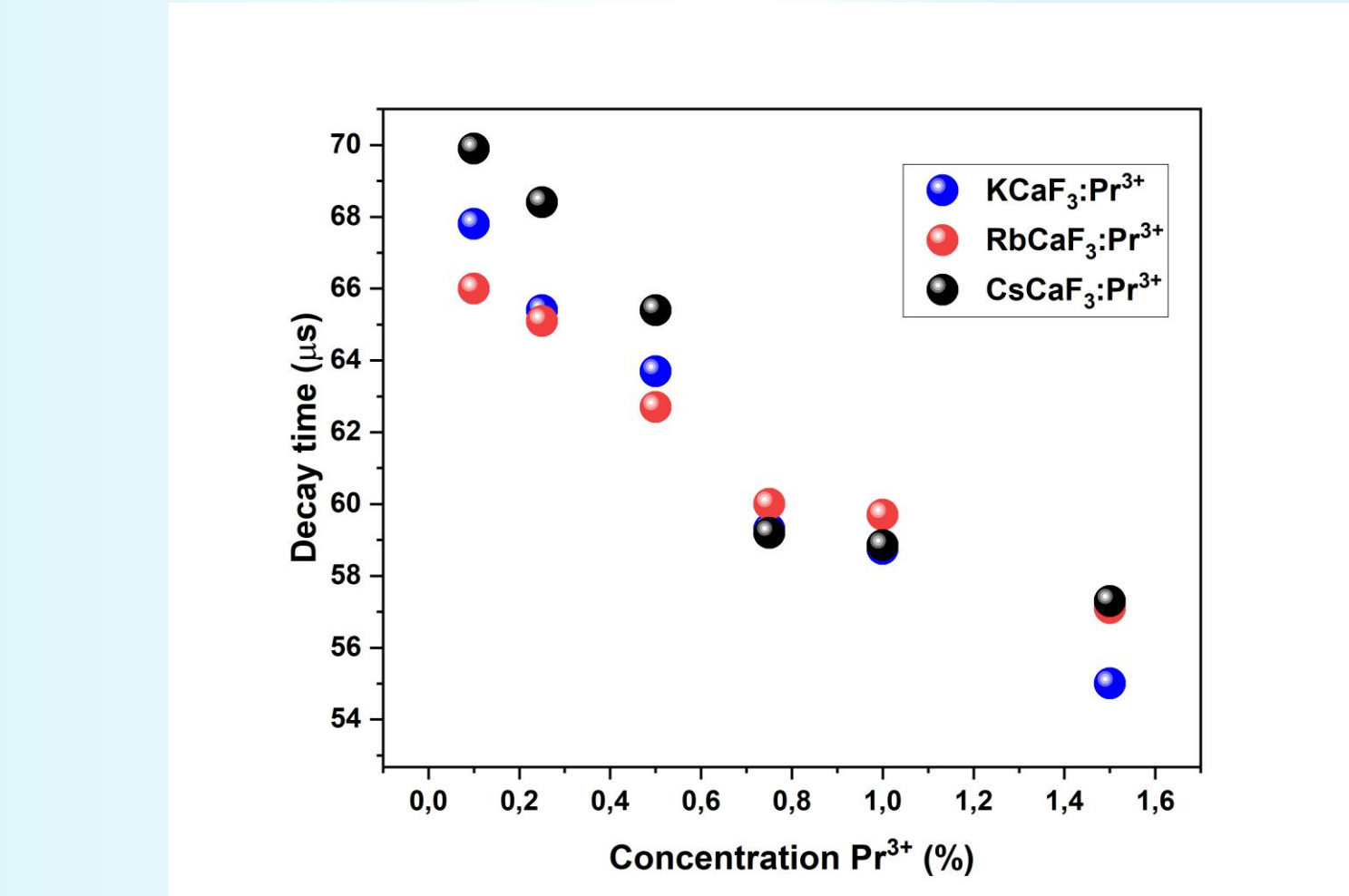


Fig. 6. Concentration dependence of the decay times of $3P_0$ emission for $\text{ACaF}_3:\text{Pr}^{3+}$ ($A = \text{K}, \text{Rb}, \text{Cs}$).

Acknowledgements

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Synthesis and crystal structure

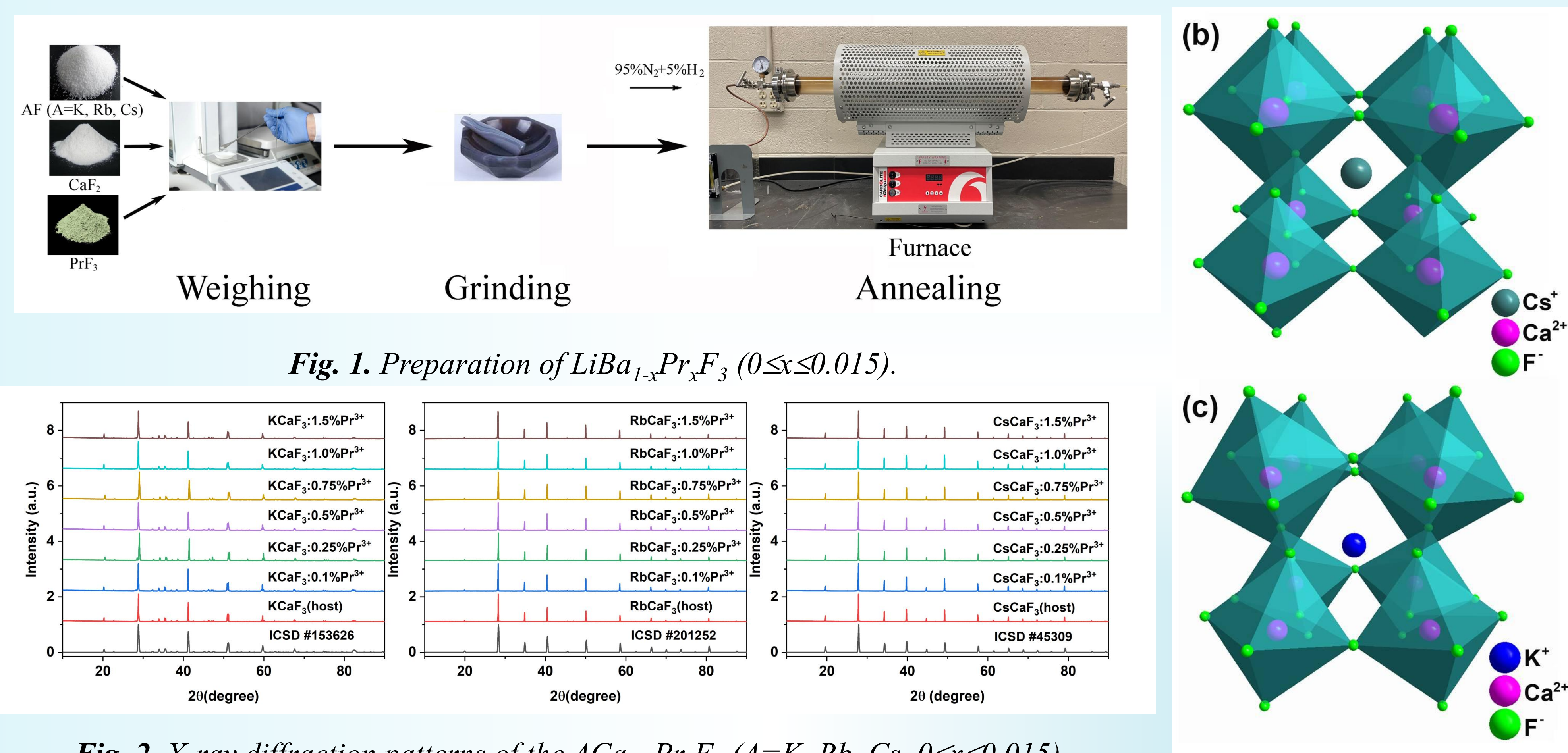


Fig. 1. Preparation of $\text{LiBa}_{1-x}\text{Pr}_x\text{F}_3$ ($0 \leq x \leq 0.015$).

Fig. 2. X-ray diffraction patterns of the $\text{ACa}_{1-x}\text{Pr}_x\text{F}_3$ ($A = \text{K}, \text{Rb}, \text{Cs}$, $0 \leq x \leq 0.015$).

Vis-to-UVC upconversion

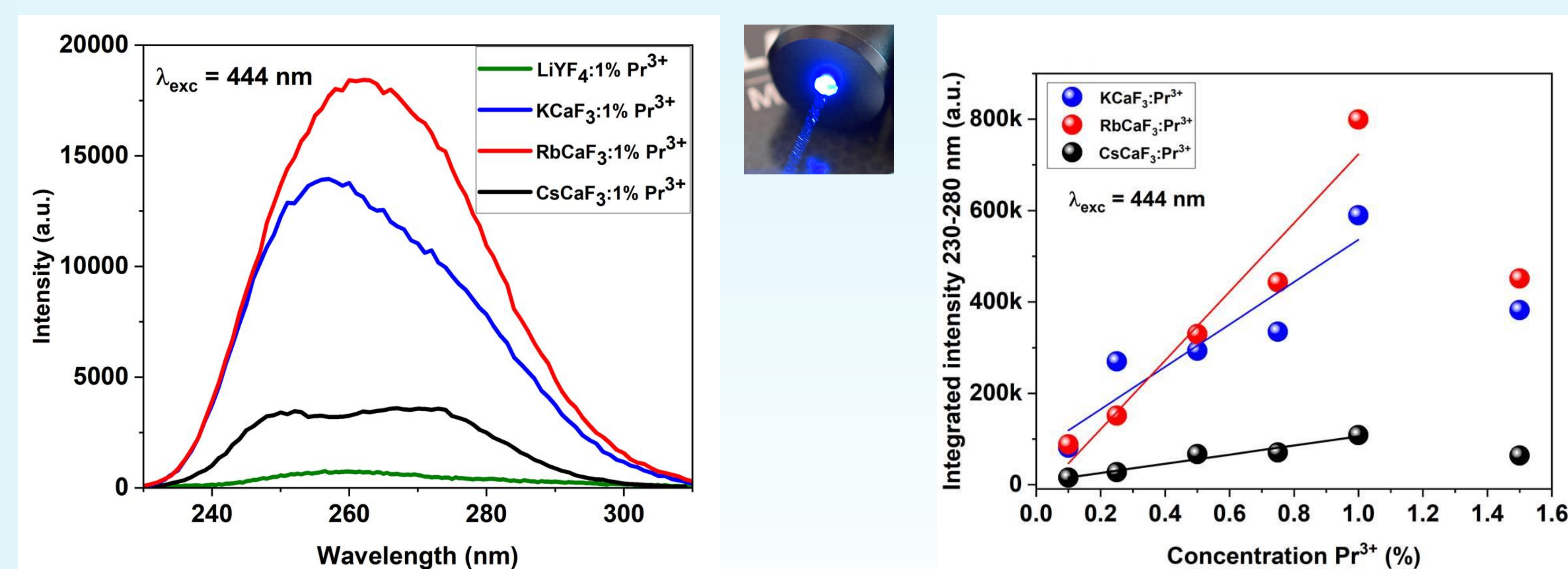


Fig. 7. Upconversion emission spectra of 1% Pr^{3+} doped ACaF_3 under continuous wavelength excitation at 444 nm.

Fig. 8. Integrated upconversion intensity of $\text{ACaF}_3:\text{Pr}^{3+}$ ($A = \text{K}, \text{Rb}, \text{Cs}$) versus the Pr^{3+} concentration.

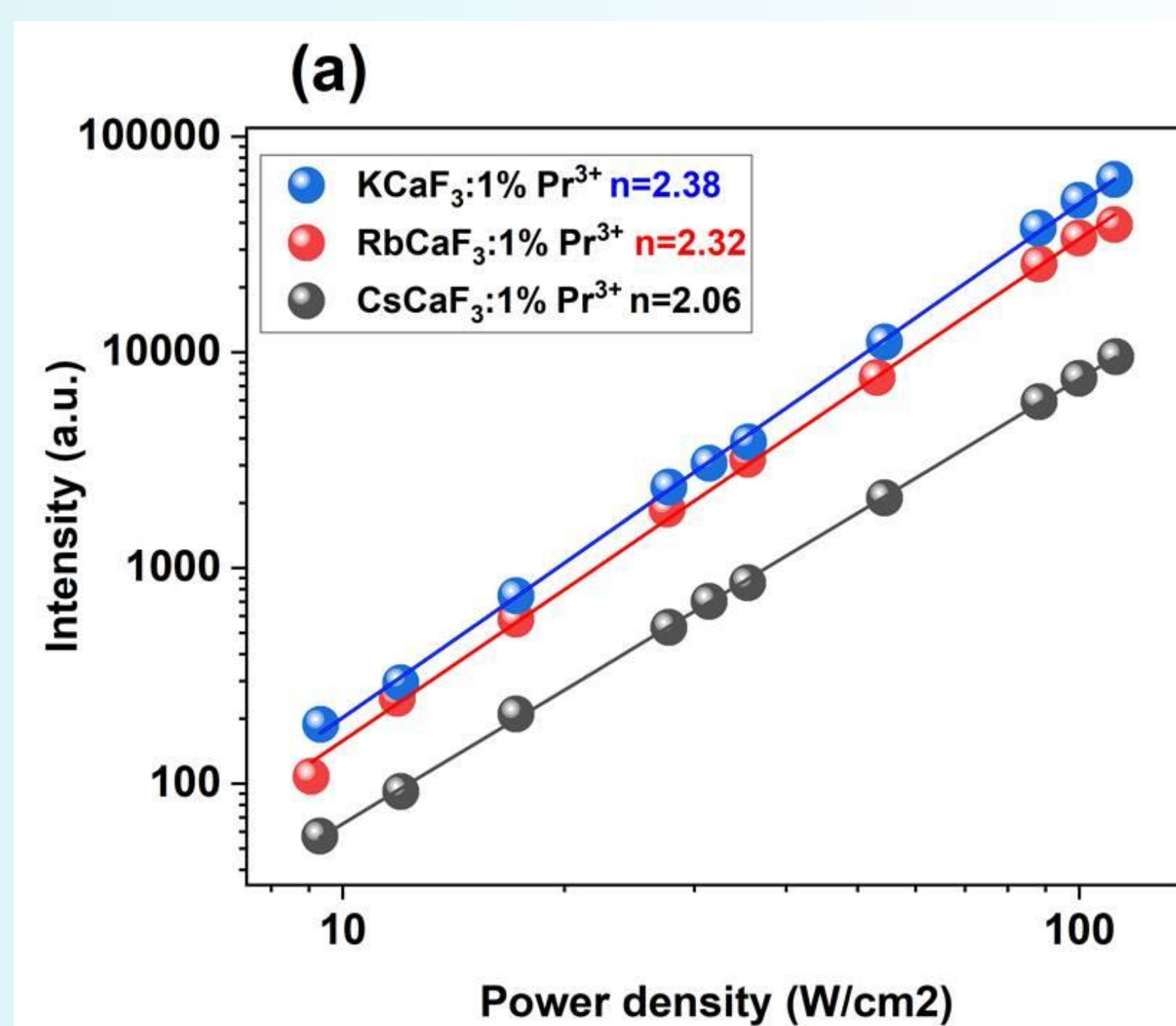


Fig. 9. Integrated upconversion intensity of $\text{ACaF}_3:\text{Pr}^{3+}$ ($A = \text{K}, \text{Rb}, \text{Cs}$) versus the Pr^{3+} concentration.

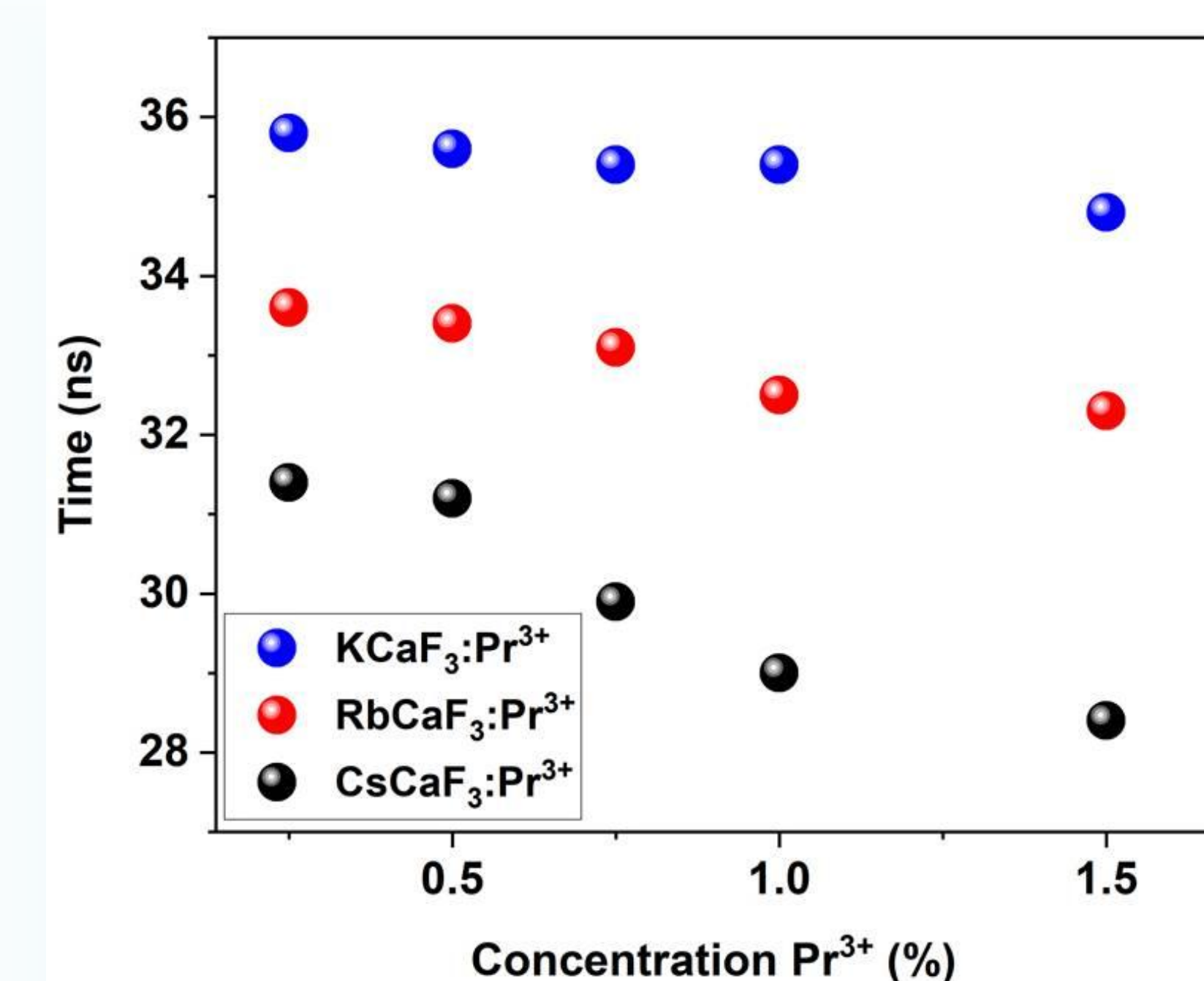


Fig. 10. Concentration dependence of the decay times of upconversion for $\text{ACaF}_3:\text{Pr}^{3+}$ ($A = \text{K}, \text{Rb}, \text{Cs}$).

Conclusions

