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## Luminescent properties of $\text{Pr}^{3+}$ -doped $\text{SrF}_2$ at different synthesis

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### Abstract content (Max 300 words)

Lanthanide-based luminescent materials have been extensively investigated due to their contribution to a different range of applications [1, 2]. These fluoride based luminescent materials are prominent amongst other candidates because they have lesser energy losses due to non-radiative relaxation processes [1]. Recently, the trivalent praseodymium ( $\text{Pr}^{3+}$ ) is found to be a promising ion in the lanthanide-based luminescent materials for enhancing the solar cell efficiency [3]. In addition, the emission intensity of  $\text{Pr}^{3+}$  was found to be strongly dependant on the synthesizing procedures [2]. Nano-structure fluoride of  $\text{SrF}_2\text{:Pr}^{3+}$  was prepared by both the hydrothermal and combustion methods. X-ray diffraction patterns indicate that the samples were completely crystalized with pure face-centered cubic (space group:  $\text{Fm}\bar{3}\text{m}$ ). Both  $\text{SrF}_2\text{:Pr}^{3+}$  samples exhibit green-red emission centered at 488 nm under excitation wavelength 439 nm at room temperature. The dependence of the  $\text{Pr}^{3+}$  emission and excitation on the sintering temperature were also investigated and the phosphorescence lifetimes for both synthetic techniques are reported.

#### References

- [1] Bryan M. van der Ende, L. Aarts and A. Meijerink. Adv. Mater. **21**, 3073, (2009).
- [2] T. Murakami and S. Tanabe. J. Cerm. Soc. J **115** [10], 605, (2007).
- [3] Bryan M. van der Ende, L. Aarts and A. Meijerink. Phys. Chem. Chem. Phys. **11**, 11081, (2009).

### Apply to be considered for a student award (Yes / No)?

yes

### Level for award (Hons, MSc, PhD)?

PhD

### Main supervisor (name and email) and his / her institution

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### Would you like to submit a short paper for the Conference Proceedings (Yes / No)?

yes

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