

Supplementary information for

Boosting up phonon-induced luminescence in red fluoride phosphors via composition variation driven structural transformations

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Rietveld structural refinement on powder XRD pattern

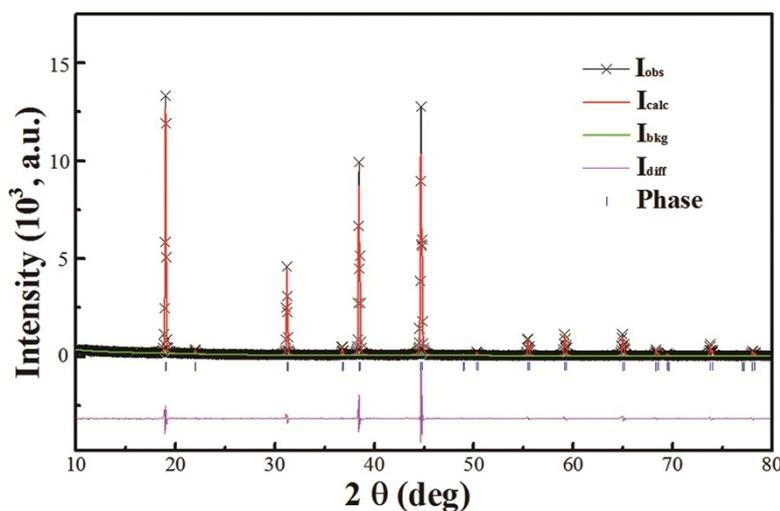


Figure S1 Measured and calculated XRD patterns on $\text{K}_2\text{SiF}_6:\text{Mn}^{4+}$ phosphor.

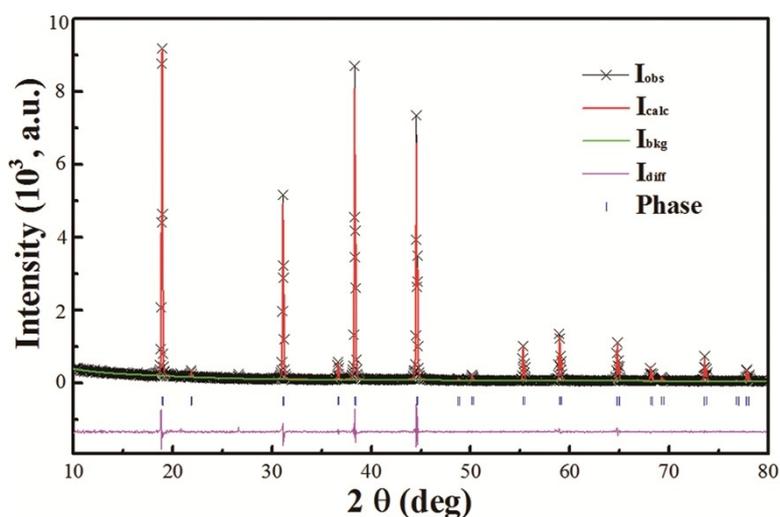


Figure S2 Measured and calculated XRD patterns on $(\text{K}_{0.75}\text{Na}_{0.25})_2\text{SiF}_6:\text{Mn}^{4+}$ phosphor.

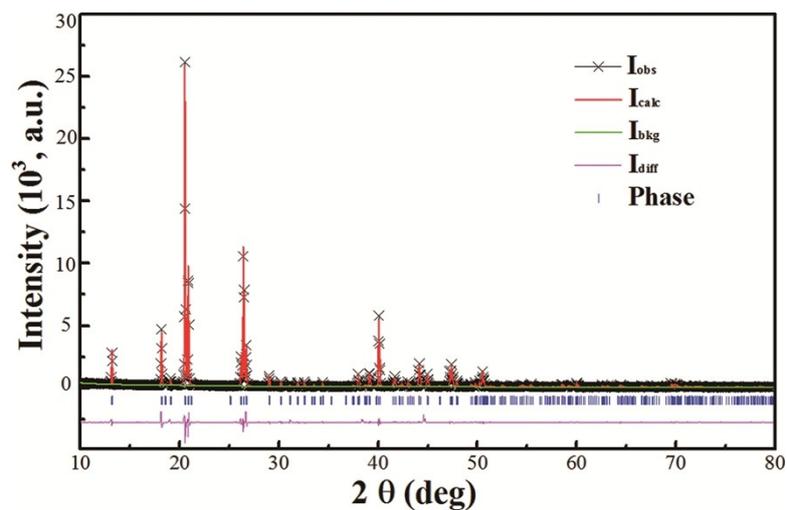


Figure S3 Measured and calculated XRD patterns on $\text{KNaSiF}_6:\text{Mn}^{4+}$ phosphor.

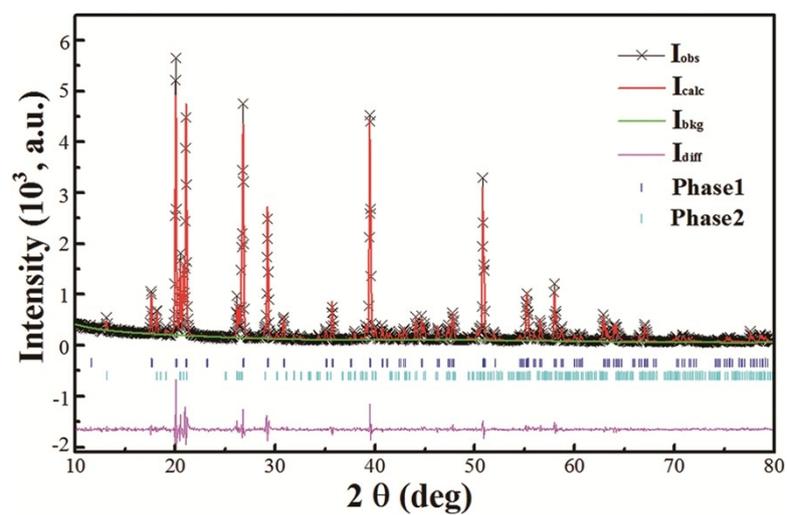


Figure S4 Measured and calculated XRD patterns on $(\text{K}_{0.25}\text{Na}_{0.75})_2\text{SiF}_6:\text{Mn}^{4+}$ phosphor.

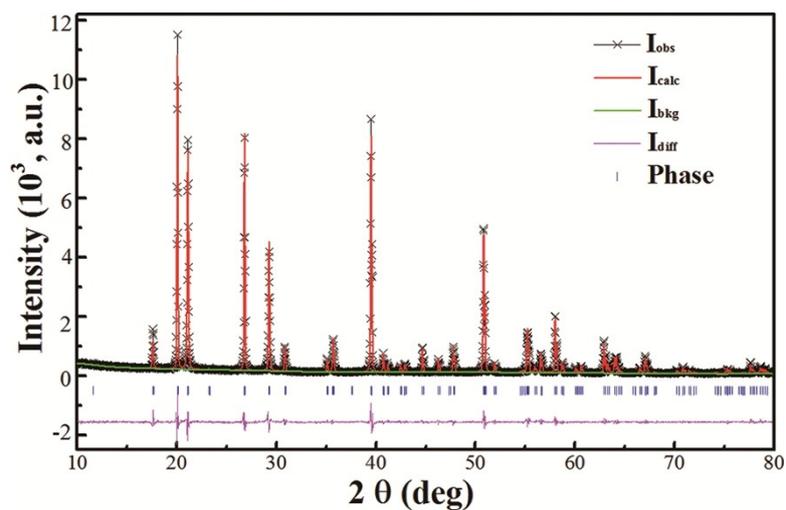


Figure S5 Measured and calculated XRD patterns on Na₂SiF₆:Mn⁴⁺ phosphor.

Table S1. Rietveld structural refinement results for each phosphor.

| Samples | Rwp | Rp | Reduced χ^2 |
|---|--------|--------|------------------|
| K ₂ SiF ₆ :Mn ⁴⁺ | 0.1161 | 0.0885 | 2.695 |
| (K _{0.75} Na _{0.25}) ₂ SiF ₆ :Mn ⁴⁺ | 0.1039 | 0.0789 | 1.915 |
| KNaSiF ₆ :Mn ⁴⁺ | 0.1298 | 0.0900 | 4.742 |
| (K _{0.25} Na _{0.75}) ₂ SiF ₆ :Mn ⁴⁺ | 0.0968 | 0.0737 | 2.367 |
| Na ₂ SiF ₆ :Mn ⁴⁺ | 0.0985 | 0.0750 | 2.835 |