

Supporting Information

Title: $\text{Sr}_3\text{GdNa}(\text{PO}_4)_3\text{F}:\text{Eu}^{2+},\text{Mn}^{2+}$: A potential color tunable phosphor for white LEDs

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Table S1. Final refined structure parameters of SGNPF derived from the Rietveld

refinement of X-ray diffraction data

Atom	Wyckoff position	x	Y	z	Frac	Uiso
Gd1	2d	0.33330(0)	0.66670(0)	0.52168(6)	1.00	0.025
Na1	2d	0.33330(0)	0.66670(0)	0.06343(3)	1.00	0.025
Sr1	6g	0.24017(1)	0.25491(5)	0.24894(0)	1.00	0.025
P1	6g	0.37790(5)	0.41299(6)	0.74358(0)	1.00	0.025
O1	6g	0.48997(2)	0.34390(2)	0.79081(5)	1.00	0.025
O2	6g	0.45383(7)	0.59344(9)	0.78831(9)	1.00	0.025
O3	6g	0.25982(2)	0.30814(5)	0.89823(8)	1.00	0.025
O4	6g	0.25641(9)	0.35467(1)	0.55275(2)	1.00	0.025
F1	2c	0.0000	0.0000	0.22180(0)	1.00	0.025

Cell parameters: $a = b = 9.5728 \text{ \AA}$, $c = 7.1167 \text{ \AA}$,
 $V = 564.795 \text{ \AA}^3$; $Z = 2$;
 space group: $P-3$ (no.147);
 Reliability factors: $\chi^2 = 3.009$, $R_{\text{wp}} = 4.24\%$, $R_p = 3.22\%$

Table S2. Final refined structure parameters of SGNPF:0.01Eu²⁺ derived from the

Rietveld refinement of X-ray diffraction data

Atom	Wyckoff position	x	Y	z	Frac	Uiso
Gd1	2d	0.33330(0)	0.66670(0)	0.51901(5)	1.00	0.025
Na1	2d	0.33330(0)	0.66670(0)	0.06391(9)	1.00	0.025
Sr1	6g	0.23944(2)	0.25431(2)	0.24382(8)	0.99	0.025
P1	6g	0.37002(6)	0.40574(8)	0.74255(4)	1.00	0.025
O1	6g	0.49646(1)	0.34802(0)	0.76985(5)	1.00	0.025
O2	6g	0.43936(4)	0.57095(1)	0.78364(7)	1.00	0.025
O3	6g	0.26381(6)	0.32924(4)	0.91154(6)	1.00	0.025
O4	6g	0.25304(6)	0.34151(4)	0.56235(5)	1.00	0.025
F1	2c	0.0000	0.0000	0.22591(9)	1.00	0.025
Eu1	6g	0.23944(2)	0.25431(2)	0.24382(8)	0.01	0.025

Cell parameters: $a = b = 9.5749 \text{ \AA}$, $c = 7.1138 \text{ \AA}$,
 $V = 564.804 \text{ \AA}^3$; $Z = 2$;
 space group: $P-3$ (no.147);

Reliability factors: $\chi^2 = 3.139$, $R_{wp} = 3.76\%$, $R_p = 2.80\%$

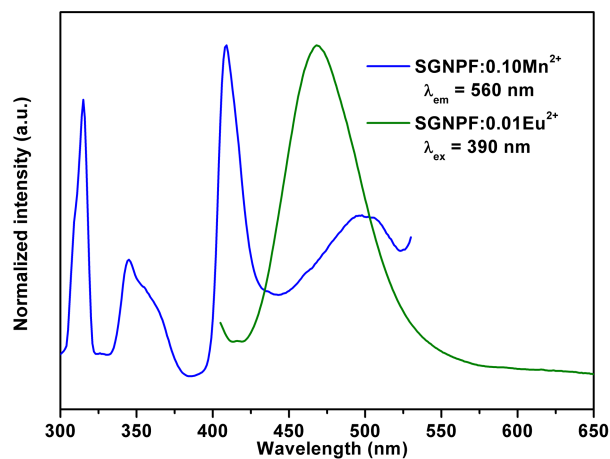


Figure S1. Spectra overlap between the PL of SGNPF:0.01Eu²⁺ and PLE of SGNPF:0.10Mn²⁺ phosphors.

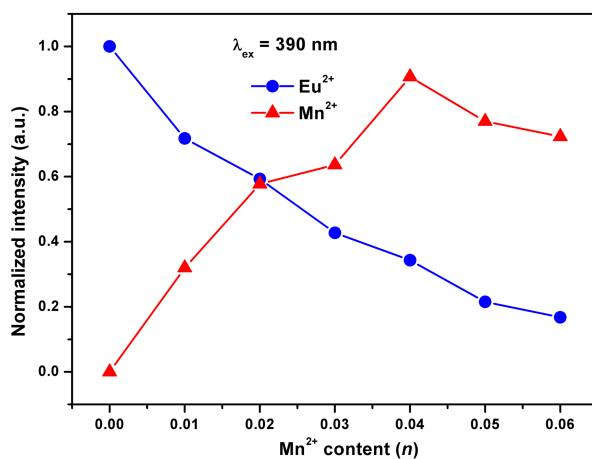


Figure S2. Relative emission intensity of the Eu²⁺ and Mn²⁺ ions in SGNPF:0.01Eu²⁺, n Mn²⁺ phosphors with different Mn²⁺ content.