

## Supporting information

### **Tunable luminescence and energy transfer of Eu<sup>2+</sup>/Mn<sup>2+</sup> co-doped Sr<sub>3</sub>NaY(PO<sub>4</sub>)<sub>3</sub>F phosphor for white LEDs**

Zaifa Yang, Denghui Xu\*, Jiangnan Du, Xuedong Gao and Jiayue Sun

School of Science, Beijing Technology and Business University, Beijing  
100048, China

\*Corresponding Author: E-mail: [xudenghui@sina.com](mailto:xudenghui@sina.com)

Telephone: +86-10-81353607

Fax: +86-10-81353377

**Table S1** Final refined structural parameters for SYNPF host derived from the Rietveld refinement of X-ray diffraction data at room temperature.

Atom	X	Y	Z	Wyckoff position	Frac.	$U_{iso}$	Mult.
Sr	0.25420	0.23775	0.25650	6g	1	0.025	6
Y	0.33333	0.66667	0.50482	2d	1	0.025	2
Na	0.33333	0.66667	0.01406	2d	1	0.025	2
P	0.03169	0.40485	0.23823	6g	1	0.025	6
O1	0.48100	0.14900	0.24700	6g	1	0.025	6
O2	0.05656	0.31730	0.41563	6g	1	0.025	6
O3	0.09124	0.37051	0.06687	6g	1	0.025	6
O4	0.12902	0.59070	0.26193	6g	1	0.025	6
F	0.00000	0.00000	0.19903	2c	1	0.025	2

**Table S2** Composite element of SYNPF:Eu<sup>2+</sup>, Mn<sup>2+</sup> phosphor

Standard	Elements	Weight (%)	Atomic (%)
SiO <sub>2</sub>	O K	24.53	55.64
MgF <sub>2</sub>	F K	2.95	4.93
Albite	Na K	3.39	4.68
GaP	P K	14.37	14.71
Mn	Mn K	1.80	1.04
SrF <sub>2</sub>	Sr L	37.58	13.62
Y	Y L	14.34	5.12
EuF <sub>3</sub>	Eu L	1.04	0.26
Total		100	100