

Supporting Information

Chromaticity-Tunable Phosphor-in-Glass for Long-lifetime High-Powered Warm W-LEDs

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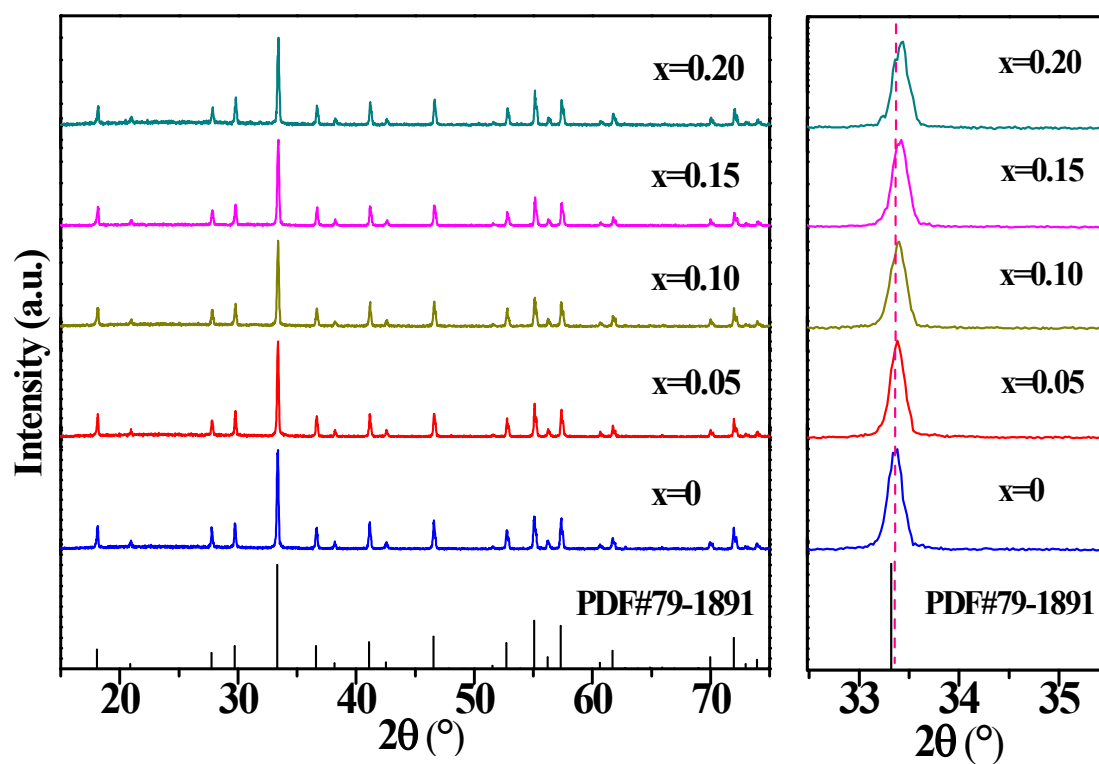


Figure S1. XRD patterns of YAG: 0.06 Ce³⁺, xMn²⁺, xSi⁴⁺ samples and the magnified region of 32.5°-35.5°

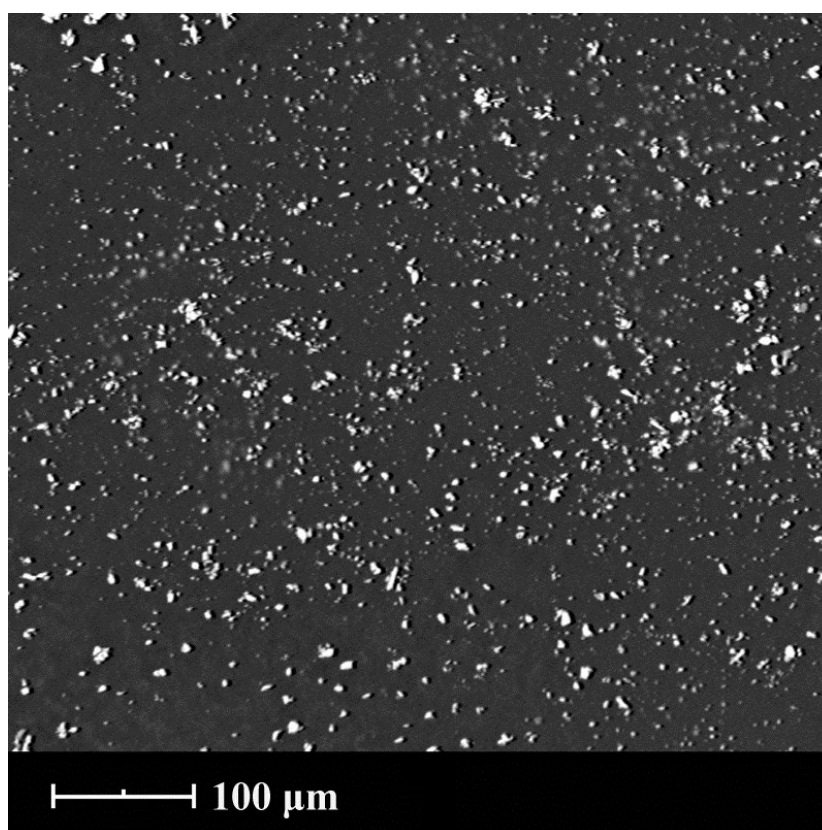


Figure S2. SEM image of YAG: 0.06 Ce³⁺, 0.05Mn²⁺, 0.05Si⁴⁺ phosphor

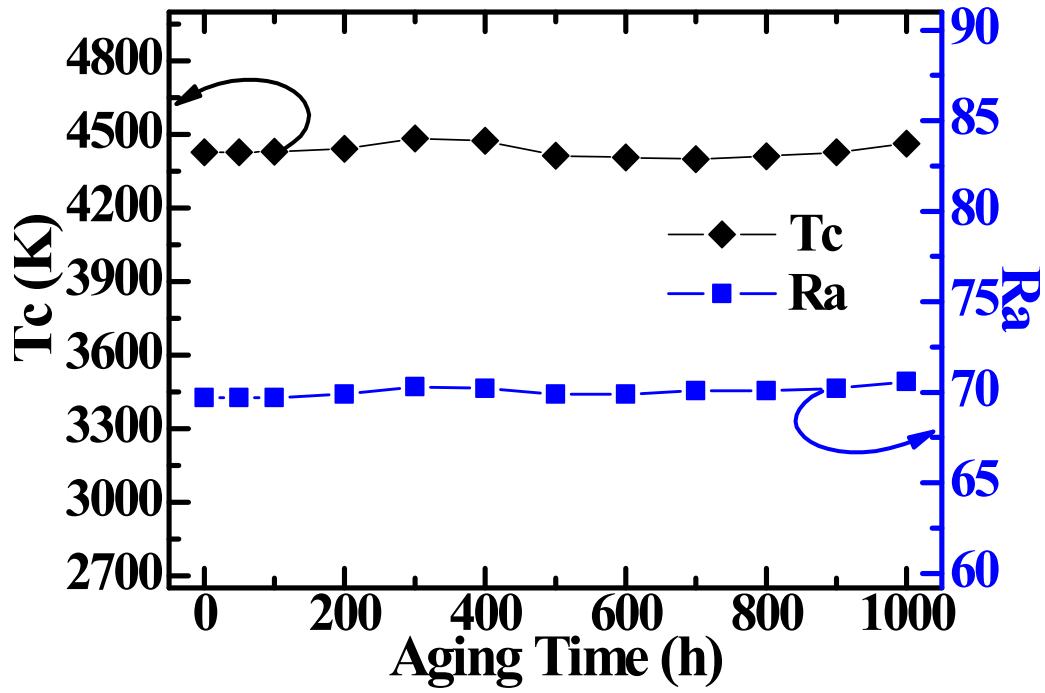


Figure S3. The variation of T_c and R_a in PiS-based warm w-LED in the aging time prolonging for 1000 h at 150 °C

Table S1. Photometric and chromaticity parameters of YAG:0.06Ce³⁺,0.05Mn²⁺,0.05Si⁴⁺ PiG based LED devices with various thickness under 350mA driving current

Thickness (mm)	LE (lm/W)	Chromaticity coordinate	T _c (K)	R _a
0.5	64.96	(0.316, 0.280)	6818	79.8
0.6	67.95	(0.349, 0.331)	4769	73.5
0.8	70.97	(0.375, 0.372)	4127	69.3
1.0	74.22	(0.392, 0.399)	3867	67.0
1.2	77.18	(0.412, 0.431)	3656	65.2

Table S2. Photometric and chromaticity parameters of YAG:0.06Ce³⁺,0.05Mn²⁺,0.05Si⁴⁺ PiG based LED devices under various testing current (PiG thickness: 0.8 mm)

Current (mA)	LE (lm/W)	Chromaticity coordinate	T _c (K)	R _a
20	109.01	(0.385, 0.389)	3960	70.4
60	100.96	(0.383, 0.384)	3996	70.2
100	93.83	(0.380, 0.380)	4033	70.1
200	81.55	(0.377, 0.374)	4089	69.9
350	70.97	(0.375, 0.371)	4122	69.5
500	63.33	(0.373, 0.369)	4156	69.3