

Loss-less $\text{La}_3\text{Si}_6\text{N}_{11}:\text{Ce}^{3+}$ phosphor-in-glass color converter by using the oxygen-free glass ZIF-62

Table S1 Optical properties of the LSN PiG.

LSN PiG	QE (%)	Loss (%)	Luminous flux (lm)	Luminous efficacy (lm W ⁻¹)	Glass composition	Calcinated temperature
LSN PiG-AlN	72.6	~6%	924.9	158	Borosilicate glass	600°C
LSN PiG	72	~6%	1076	166.05	$\text{SiO}_2\text{-Al}_2\text{O}_3\text{-Na}_2\text{O-CaO-TiO}_2$	650°C
LSN- Al_2O_3 PiG	64.5	~12%	3120	130	$\text{K}_2\text{O-Na}_2\text{O-Al}_2\text{O}_3\text{-SiO}_2$	800°C
LSN PiG	85	~5%	209	145.91	$\text{SiO}_2\text{-B}_2\text{O}_3\text{-CaO-Na}_2\text{O}$	850°C

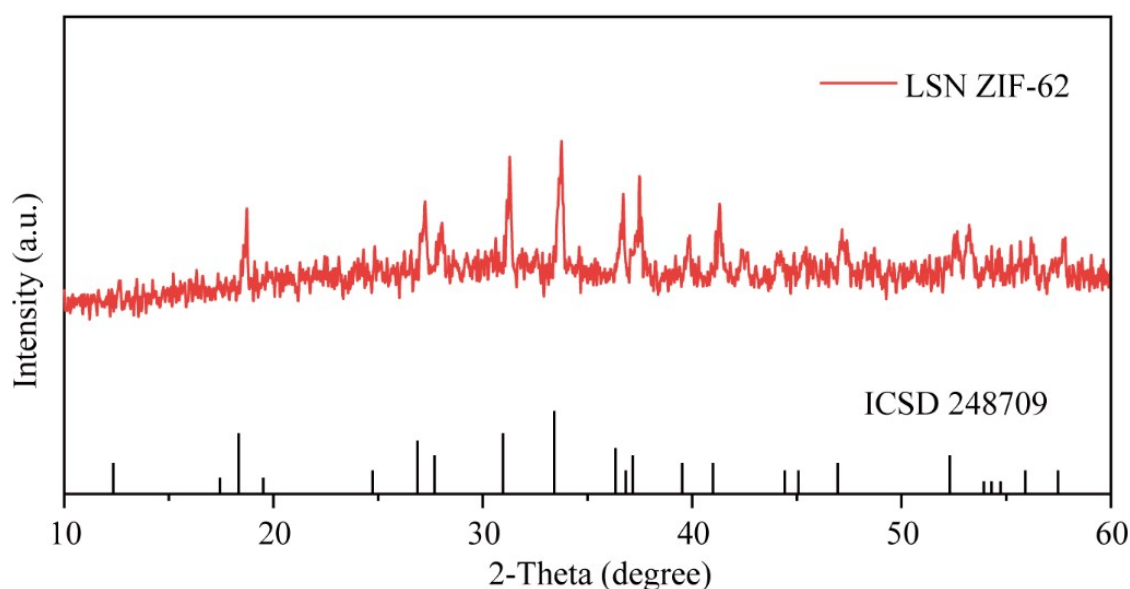


Fig. S1 XRD patterns of the LSN-in-ZIF-62 glass converter.

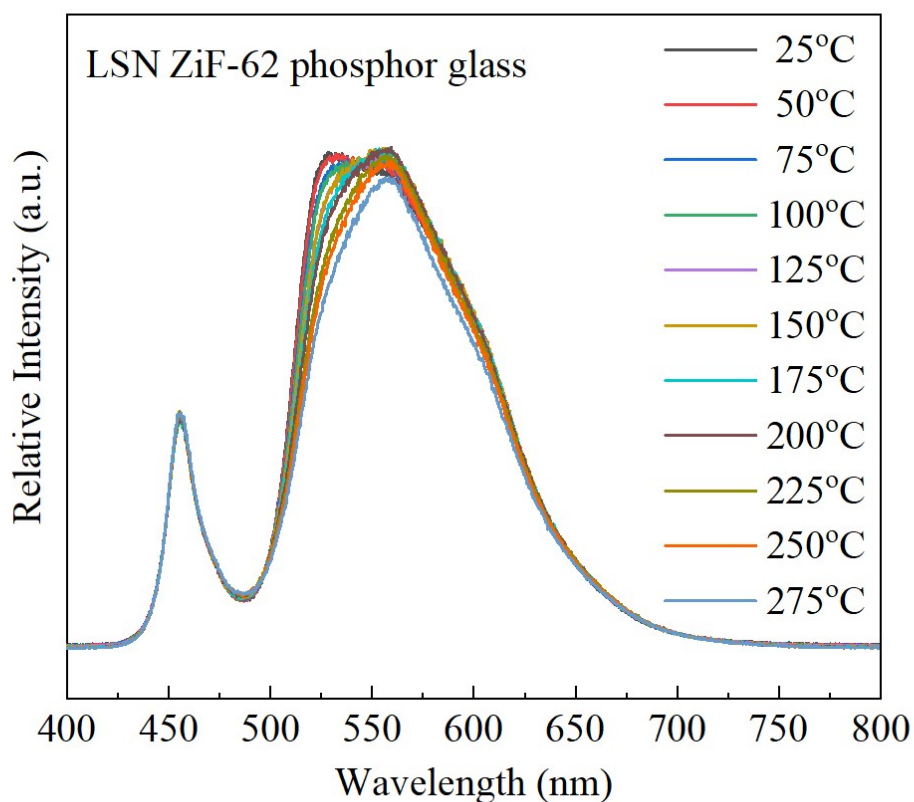


Fig. S2 The photoluminescence spectra of the LSN-in-ZIF-62 glass converter at the different temperatures.

The IQE of the LSN-in-ZIF-62 glass converter with different ratios of the glass to phosphor is calculated by the IQE value of LSN-PMMA film as the LSN original value.

Table S2 Optical properties of LSN-in-ZIF-62 glass converter with different ratios of the glass to phosphor.

Ratios of the glass to phosphor	1:2	1:1	3:2	2:1
Luminous flux (lm)	725.4	872.2	875.2	801.5
Luminous efficacy (lm/W)	333.2	291.1	292.1	318.0
CCT (K)	4405	3680	3975	4473
Chromatic coordinates (x, y)	(0.3700, 0.3961)	(0.4109, 0.4612)	(0.4040, 0.4617)	(0.3669, 0.3857)
CRI	61	60	61	62