# Supporting Information

## Photoluminescence properties of a novel red fluoride $K_2LiGaF_6:Mn^{4+}$ nanophosphor

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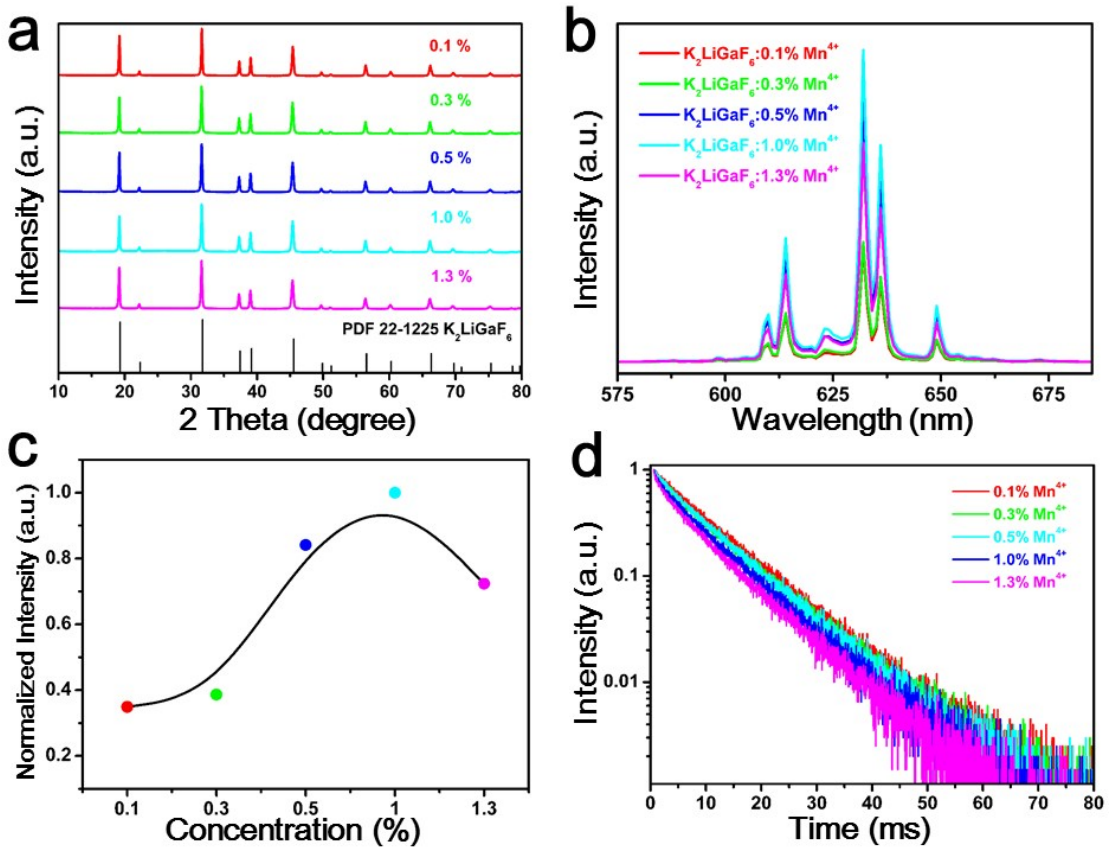


**Figure S1.** (a) XRD patterns, (b) PL spectra, (c) dependence of the integrated emission intensity and (d) decay of $K_2LiGaF_6$:x mol%$Mn^{4+}$ ( x = 0.1, 0.3, 0.5, 1.0 and 1.3).

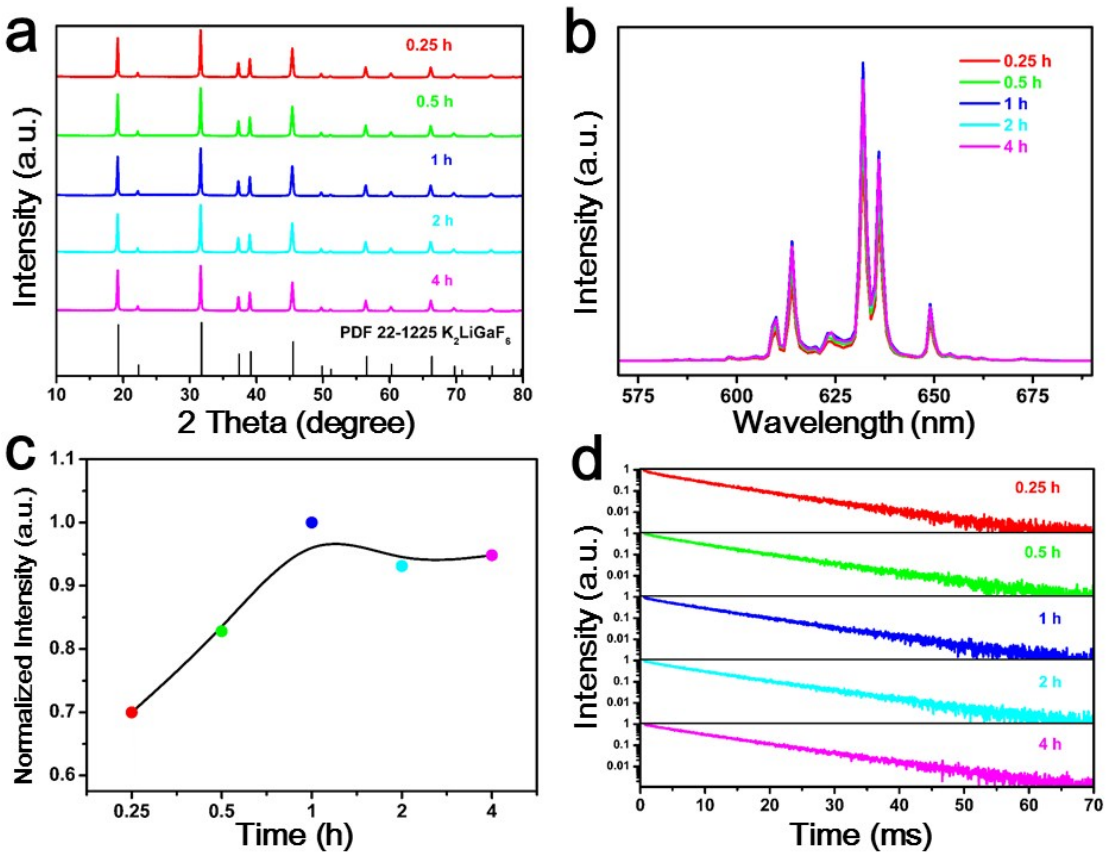


**Figure S2.** (a) XRD patterns, (b) PL spectra, (c) dependence of the integrated emission intensity and (d) decay of $K_2LiGaF_6$:1 mol%$Mn^{4+}$ synthesized for different reaction times.

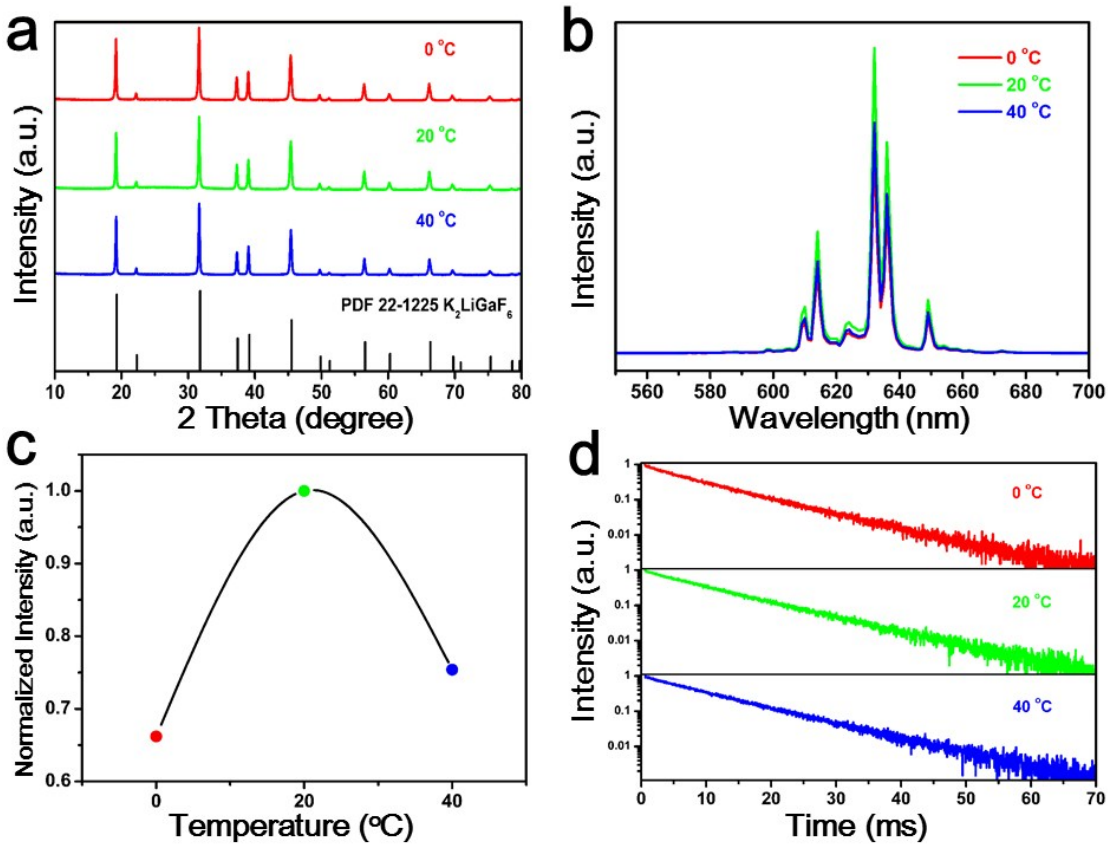


**Figure S3.** (a) XRD patterns, (b) PL spectra, (c) dependence of the integrated emission intensity and (d) decay of $K_2LiGaF_6$:1 mol%$Mn^{4+}$ synthesized for different reaction temperatures.

**Table S1.** CIE chromaticity coordinates of $K_2LiGaF_6:Mn^{4+}$ in the temperature range of 300-500 K

| Temperatures | $K_2LiGaF_6:Mn^{4+}$ | |
|---|---|---|
| | x | y |
| 300 K | 0.675 | 0.325 |
| 325 K | 0.674 | 0.326 |
| 350 K | 0.675 | 0.325 |
| 375 K | 0.674 | 0.326 |
| 400 K | 0.673 | 0.327 |
| 425 K | 0.671 | 0.329 |
| 450 K | 0.665 | 0.335 |
| 475 K | 0.657 | 0.343 |
| 500 K | 0.651 | 0.349 |

**Table S2.** Photometric and chromaticity parameters of the fabricated WLED under different drive currents

| Drive current (mA) | Color rendering index (Ra) | R9 | Correlated color temperature (K) | Luminous efficacy (lm/W) | CIE chromaticity (x, y) |
|---|---|---|---|---|---|
| 20 | 79.5 | 30.3 | 4363 | 53.30 | (0.365,0.361) |
| 50 | 79.2 | 30.2 | 4430 | 51.44 | (0.362,0.357) |
| 100 | 79.2 | 31.8 | 4546 | 48.82 | (0.357,0.350) |
| 150 | 79.4 | 34.3 | 4676 | 46.70 | (0.353,0.343) |
| 200 | 79.9 | 37.8 | 4847 | 44.98 | (0.347,0.336) |
| 250 | 79.9 | 38.9 | 5057 | 43.55 | (0.342,0.329) |
| 300 | 80.5 | 43.7 | 5247 | 41.97 | (0.337,0.322) |
| 350 | 80.8 | 47.7 | 5455 | 40.66 | (0.333,0.316) |