Thermally Stable Narrow-Band Green-Emitting Phosphor MgAl₂O₄:Mn²⁺
toward Wide Color Gamut Backlight Display Application

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The Supporting information contains 7 pages, including 5 Figures (Figure S1-S3) and
1 Table (Table S1).
Fig. S1. The emission spectra of MgAl$_2$O$_4$:Mn$^{2+}$ and commercial β-SiAlON:Eu$^{2+}$ upon 450 nm excitation under the same measure conditions.
Fig. S2. Blue-light irradiation time dependence of emission intensity in MgAl₂O₄:Mn²⁺.
**Fig. S3.** The emission spectra of LED II under a driven current of 20 mA and the corresponding RGB spectra after using conventional commercial color filters filtering.
Fig. S4. Current-dependent (a) EL spectra, (b) luminous efficacy and CCT of LED I.
Fig. S5. Luminescence decay curve of KSF:Mn$^{4+}$ (monitored at 630 nm).
Table S1. Mn K-edge EXAFS cure fitting parameters in Mg$_{0.95}$Al$_2$O$_4$:0.05Mn$^{2+}$.

<table>
<thead>
<tr>
<th>Chemical Bond</th>
<th>CN (Coordination Number)</th>
<th>R(Å) (Distance)</th>
<th>$\sigma^2$(Å$^2$) (Debye Waller Factor)</th>
<th>$\Delta E_0$ (eV) (Edge-energy shift)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mn-O</td>
<td>4</td>
<td>2.0131</td>
<td>0.0054</td>
<td>-7.2</td>
</tr>
</tbody>
</table>

Error bounds of the structural parameters were estimated as R±10%; $\sigma^2$±20%; $\Delta E_0$±20%. Mn K-edge fitting range: K-space range:3-11; R-space range:1-2.3 Å. The $S_0^2$ is fixed at 0.97.