Electronic Supplementary Information (ESI)

Highly Efficient Full-Color and White Circularly Polarized Luminescent Nanoassemblies and Their Performance in Light Emitting Devices

Li Yang, Juexin Huang, Minggao Qin, Xiaoyu Ma, Xiaoqiu Dou, Chuan-Liang Feng*

State key Lab of Metal Matrix Composites, School of Materials Science and Engineering, Shanghai Jiao Tong University, Dongchuan Road 800, 200240, Shanghai, China.

E-mail: clfeng@sjtu.edu.cn

1. Supplementary Figures

**Figure S1.** Photographs of the cogels of LPF-Py, LPF-2An, LPF-1An, and LPF-RB under ambient light. The solvent is acetonitrile. [LPF-Py] = 6 mg/mL, [LPF-2An] = 6 mg/mL, [LPF-1An] = 6 mg/mL, and [LPF-RB] = 12 mg/mL.
Figure S2. The normalized absorption and fluorescence spectra of the solution of Py (a), 2An (b), 1An (c), and RB (d), the solvent is acetonitrile.

Figure S3. CD and UV-Vis spectra of LPF and DPF gels. The solvent is acetonitrile. [LPF/DPF] = 5 mg/mL.
Figure S4. CD and UV/Vis spectra of fluorescent aromatic molecules with different colors of Py(a), 2An (b), 1An (c), and RB (d). The solution of these fluorescent aromatic molecules were CD-silent due to their achiral nature, the solvent is acetonitrile.

Figure S5. CPL spectra of Py (a), 2An (b), 1An (c), and RB (d). The solution of these fluorescent aromatic molecules were CPL-silent due to their achiral nature, the solvent is acetonitrile.
Figure S6. CPL and fluorescence spectra of the cogels composed of LPF/DPF-Py(a), LPF/DPF-2An(b), LPF/DPF-1An(c), and LPF/DPF-RB(d), respectively.

Figure S7. SEM images of assemblies of LPF and DPF.

Table S1. Optical properties of various color cogels.

<table>
<thead>
<tr>
<th>Solution</th>
<th>Cogels</th>
<th>(\lambda_{em}^{a)})</th>
<th>(\Phi_F^{b)})</th>
<th>(\tau_{avg}^{c)})</th>
<th>(g_{lum}^{(+)})</th>
<th>(\Phi_F^{b)})</th>
<th>(\tau_{avg}^{c)})</th>
<th>(g_{lum}^{(-)})</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>nm</td>
<td>%</td>
<td>ns</td>
<td>(LPF)</td>
<td>(LPF)</td>
<td>(x10^-3)</td>
<td>(DPF)</td>
</tr>
<tr>
<td>Py</td>
<td></td>
<td>435</td>
<td>69.4</td>
<td>35.6</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2An</td>
<td></td>
<td>500</td>
<td>21.9</td>
<td>55.6</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1An</td>
<td></td>
<td>540</td>
<td>23.2</td>
<td>46.8</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>RB</td>
<td></td>
<td>610</td>
<td>16.1</td>
<td>68.3</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
a) Absorption maximum in acetonitrile; b) PL measured in acetonitrile; c) Absolute fluorescence quantum yield obtained using the calibrated integrating sphere system; d) Fluorescence lifetime ($\tau_{avg}$) calculated using the equation $\tau_{avg} = A_1 \tau_1 + A_2 \tau_2$.

**Figure S8.** FTIR spectra of LPF, LPF-Py, LPF-2An, LPF-1An, and LPF-RB co-gels.

**Figure S9.** XRD plots of the xerogels of LPF, LPF-Py, LPF-2An, LPF-1An, and LPF-RB.
**Figure S10.** Fluorescence spectra of the white-emitting solution (a); Commission Internationale de l’Éclairage coordinate value of the white-emitting solution where the CIE coordinate value is (0.28, 0.29) (b).

**Figure S11.** SEM image of the white cogels.