Electronic Supplementary Information (ESI)

Lanthanide metal-organic frameworks constructed by asymmetric 2-nitro-biphenyl-4,4′-dicarboxylate ligand: syntheses, structures, luminescence and magnetic investigations

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Table S1 Selected bond lengths (Å) and angles (°) for complexes 1-8

1

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<th>Bond Lengths (Å)</th>
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Table S2 Continuous Shape Measures (CShMs) of the coordination sphere of Ln(III) in complexes 1-8

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<th>Ln-O-C(-O-) angles (°)</th>
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<td>C1-O2-La1E</td>
<td>170.0(30)</td>
</tr>
<tr>
<td>C1-O3-La1l</td>
<td>146.0(8)</td>
</tr>
<tr>
<td>C1-O4-La1B</td>
<td>129.3(12)</td>
</tr>
<tr>
<td>C1-O7-La1l</td>
<td>150.8(17)</td>
</tr>
<tr>
<td>C1-O8-La1A</td>
<td>136.9(15)</td>
</tr>
<tr>
<td>C1-O1-Nd1D</td>
<td>103.1(19)</td>
</tr>
<tr>
<td>C1-O2-Nd1E</td>
<td>172.0(20)</td>
</tr>
<tr>
<td>C1-O3-Nd1</td>
<td>143.3(9)</td>
</tr>
<tr>
<td>C1-O4-Nd1B</td>
<td>126.9(12)</td>
</tr>
<tr>
<td>C1-O7-Nd1l</td>
<td>152.3(15)</td>
</tr>
<tr>
<td>C1-O8-Nd1A</td>
<td>139.5(14)</td>
</tr>
</tbody>
</table>

Table S3 The Ln-O-C(-O-) angles (°) of complexes 1-8
### Table S4

The integral intensities of $^5D_0 \rightarrow ^7F_J (J = 0, 1, 2, 3, 4)$ transitions for complex 1*

<table>
<thead>
<tr>
<th>Integral ranges</th>
<th>$^5D_0 \rightarrow ^7F_J$ transitions</th>
<th>Integral intensities</th>
<th>Integral ratio</th>
<th>$I_{tot}/I_{MD}$</th>
</tr>
</thead>
<tbody>
<tr>
<td>577-581 nm</td>
<td>$J = 0$</td>
<td>$1.64 \times 10^4$</td>
<td>0.003</td>
<td>1/0.139 = 7.19</td>
</tr>
<tr>
<td>583-603 nm</td>
<td>$J = 1$</td>
<td>$77.60 \times 10^4$</td>
<td>0.139</td>
<td></td>
</tr>
<tr>
<td>605-638 nm</td>
<td>$J = 2$</td>
<td>$298.13 \times 10^4$</td>
<td>0.534</td>
<td></td>
</tr>
<tr>
<td>647-657 nm</td>
<td>$J = 3$</td>
<td>$6.53 \times 10^4$</td>
<td>0.012</td>
<td></td>
</tr>
<tr>
<td>666-715 nm</td>
<td>$J = 4$</td>
<td>$174.61 \times 10^4$</td>
<td>0.312</td>
<td></td>
</tr>
</tbody>
</table>

*This table was compiled according to the corrected emission spectrum of 1 shown in Fig. S6.

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**Fig. S1** The least asymmetric unit of complexes 1-8, in which the two sets of positions were presented clearly. The M and M' represent the same lanthanide ions [Ln$^{3+}$ = Eu$^{3+}$(1), Gd$^{3+}$(2), Nd$^{3+}$(3), La$^{3+}$(4), Ce$^{3+}$(5), Pr$^{3+}$(6), Sm$^{3+}$(7), and Tb$^{3+}$(8)] located at different positions.
Fig. S2 The PXRD patterns (a) and IR spectra (b) of complexes 1-8.

Fig. S3 TGA curves of complexes 1-8.
**Fig. S4** The room-temperature UV-Vis spectra of H$_2$bpdc-NO$_2$ and complex 1 measured in the solid state.

**Fig. S5** The solid-state emission spectra of complex 1 excited at 395 nm and 466 nm at room temperature, respectively (Ex slit = Em slit = 0.6 nm).

**Fig. S6** The solid-state corrected emission spectra of complex 1 excited at 466 nm at room temperature (Ex slit = Em slit = 0.6 nm).
**Fig. S7** The decay curve of 3 monitored at 1055 nm and detected at room temperature ($\lambda_{\text{ex}} = 582$ nm). The fitting curve with a monoexponential function is presented as the solid line.