High-Selective Room-Temperature NO₂ Sensors Based on a Fluoroalkoxy-substituted Phthalocyanine

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Fig. S1 MALDI-TOF mass spectrum of $\text{H}_2[\text{Pc(OCH}_2\text{(CF}_2\text{)}_6\text{CF}_3)_4]$. 

Fig. S2 The electron absorption spectra of $\text{H}_2[\text{Pc(OCH}_2\text{(CF}_2\text{)}_6\text{CF}_3)_4]$ in different concentrations of THF solution (A), and the working curves at different wavelengths (B).
**Fig. S3** Polarized UV-vis spectra of H$_2$[Pc(OCH$_2$(CF$_2$)$_6$CF$_3$)$_4$] in the DC film (A) and the VD film (B) on quartz substrate.

**Table S1.** The orientation angle of the phthalocyanine ring determined from polarized UV–vis absorbance of the DC film and the VD film.

<table>
<thead>
<tr>
<th>Film Type</th>
<th>$A_{0//}$</th>
<th>$A_{0\perp}$</th>
<th>$D_0$ ($A_{0//}/A_{0\perp}$)</th>
<th>$A_{45//}$</th>
<th>$A_{45\perp}$</th>
<th>$D_{45}$ ($A_{45//}/A_{45\perp}$)</th>
<th>$\theta$</th>
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<tr>
<td>DC film</td>
<td>0.390</td>
<td>0.335</td>
<td>1.164</td>
<td>0.535</td>
<td>0.420</td>
<td>1.274</td>
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<tr>
<td>VD film</td>
<td>0.136</td>
<td>0.122</td>
<td>1.115</td>
<td>0.146</td>
<td>0.134</td>
<td>1.090</td>
<td>55\degree</td>
</tr>
</tbody>
</table>

**Fig. S4** The geometry-optimized molecular dimension of H$_2$[Pc(OCH$_2$(CF$_2$)$_6$CF$_3$)$_4$].
**Fig. S5** The corresponding section analysis of the nanoparticles on the VD film.

**Fig. S6** The time-dependent current plot of a saturated exposure/rest cycle as a function of the 0.5 ppm NO₂ concentration in N₂ atmosphere for the VD film.
The time-dependent current plots to NH$_3$ and H$_2$S at varied concentration for the DC film of H$_2$[Pc(OCH$_2$(CF$_2$)$_6$CF$_3$)$_4$] (A, B) and the VD film of H$_2$[Pc(OCH$_2$(CF$_2$)$_6$CF$_3$)$_4$] (C, D), respectively.