Ni-Pt nanoparticles growing on metal organic frameworks (MIL-96) with enhanced catalytic activity for hydrogen generation from hydrazine at room temperature

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Figure S1 Ni$_{64}$Pt$_{36}$ nanoparticle size distribution histogram of Ni$_{64}$Pt$_{36}$/MIL-96, Mean size = 3.2 nm.
Figure. S2 (a) reusability test of Ni$_{64}$Pt$_{36}$/MIL-96 for decomposition of hydrazine in aqueous NaOH solution (0.5 M) at 25 °C (catalyst = 0.100 g; N$_2$H$_4$H$_2$O = 0.1 mL).

(b) Percentage of initial catalytic activity of Ni$_{64}$Pt$_{36}$/MIL-96 in successive runs after recycling by centrifugal separation.

<table>
<thead>
<tr>
<th>Catalyst</th>
<th>Ni$_{65}$Pt$_5$</th>
<th>Ni$<em>{61}$Pt$</em>{19}$</th>
<th>Ni$<em>{64}$Pt$</em>{36}$</th>
<th>Ni$<em>{42}$Pt$</em>{58}$</th>
<th>Ni$<em>{15}$Pt$</em>{85}$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ni-Pt initial composition for preparation of catalyst</td>
<td>Ni$<em>{90}$Pt$</em>{10}$</td>
<td>Ni$<em>{50}$Pt$</em>{30}$</td>
<td>Ni$<em>{50}$Pt$</em>{50}$</td>
<td>Ni$<em>{50}$Pt$</em>{70}$</td>
<td>Ni$<em>{10}$Pt$</em>{90}$</td>
</tr>
<tr>
<td>Ni (wt%)</td>
<td>7.5</td>
<td>5.9</td>
<td>4</td>
<td>1.8</td>
<td>0.8</td>
</tr>
<tr>
<td>Pt (wt%)</td>
<td>1.4</td>
<td>4.6</td>
<td>7.3</td>
<td>8.6</td>
<td>14.9</td>
</tr>
</tbody>
</table>
Table S2 - Pore volume and surface area of MIL-96 and Ni₆₄Pt₃₆/MIL-96

<table>
<thead>
<tr>
<th>Sample</th>
<th>wt%</th>
<th>Surface Area (m²/g)</th>
<th>Pore volume (cm³/g)</th>
</tr>
</thead>
<tbody>
<tr>
<td>MIL-96</td>
<td>—</td>
<td>263</td>
<td>0.182</td>
</tr>
<tr>
<td>Ni₆₄Pt₃₆/MIL-96</td>
<td>11.3</td>
<td>153</td>
<td>0.096</td>
</tr>
</tbody>
</table>