Mesoporous NiO nanosphere: a sensitive strain sensor for determination of hydrogen peroxide

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**Fig. S1** SAED patterns of a) NiO-MNS and b) NiO-NS.

**Fig. S2** XPS survey spectra of the NiO-MNS and NiO-NS samples.
**Fig. S3** High-resolution XPS spectra of Ni 2$p$ and O 1$s$ for NiO-MNS (a, b) and NiO-NS (c, d), respectively.

**Table S1** The Ni- and O-content of NiO-MNS and NiO-NS. The capacitance of three Ni moieties and three O moieties of the above two samples.

<table>
<thead>
<tr>
<th>Sample</th>
<th>Surface chemistry (XPS)</th>
<th>Functionality (at % of total Ni 2$p$)</th>
<th>Functionality (% of total O 1$s$)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Ni (at %)</td>
<td>O (at %)</td>
<td>Ni (II)</td>
</tr>
<tr>
<td>NiO-MNS</td>
<td>43.1</td>
<td>56.9</td>
<td>26.6</td>
</tr>
<tr>
<td>NiO-NS</td>
<td>43.6</td>
<td>56.4</td>
<td>16.1</td>
</tr>
</tbody>
</table>
Fig. S4 Raman spectra of the NiO-MNS and NiO-NS samples.

Fig. S5 a) Chronoamperometric response of NiO-NS towards the step injection of 40 μM H₂O₂ solution at different potentials. b) Linear relationship between the response current and the H₂O₂ concentration.
**Fig. S6** Chronoamperometric response of five parallel NiO-MNS sensors towards the injection of hydrogen peroxide at 0.45 V.

**Fig. S7** Linear relationship between the response current of five parallel sensors and the $\text{H}_2\text{O}_2$ concentration.