Manganese oxides hierarchical structures derived from coordination polymers and their enhanced catalytic activity at low temperature for selective catalytic reduction of NOx

Supporting Information.

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Graphical abstract.
<table>
<thead>
<tr>
<th>Chemicals</th>
<th>Suppliers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pluronic F-127</td>
<td>Sigma-Aldrich</td>
</tr>
<tr>
<td>Potassium bromide</td>
<td>Sigma-Aldrich</td>
</tr>
<tr>
<td>Manganese(II) chloride tetrahydrate</td>
<td>Junsei Chemical Co., Ltd.</td>
</tr>
<tr>
<td>Disodium fumarate</td>
<td>Tokyo Chemical Industry Co., Ltd.</td>
</tr>
<tr>
<td>Acetone</td>
<td>Samchun Pure Chemical Co., Ltd.</td>
</tr>
</tbody>
</table>

**Table S1.** List of chemicals with their suppliers used for the synthesis of Mn-CP.

![Graph of vibrations](image)
**Fig. S1.** FT-IR spectra of (a) sodium fumarate (b) Mn-CP.

![FT-IR spectra](image1)

**Fig. S2.** (a) Low- and (b) high-magnification FESEM images of the Mn-CP. (c - f) Elemental mapping data displaying the distribution of C, O and Mn in Mn-CP

![FESEM images and mapping data](image2)
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\[
\frac{[400 \text{ (ppm)}]_{\text{in}} - [34.8 \text{ (ppm)}]_{\text{out}}}{[400 \text{ (ppm)}]_{\text{in}}} \times 100(\%) = 91.3(\%)
\]  
(1)

\[
\frac{[400 \text{ (ppm)}]_{\text{in}} - [36 \text{ (ppm)}]_{\text{out}}}{[400 \text{ (ppm)}]_{\text{in}}} \times 100(\%) = 91(\%)
\]  
(2)

Equation S1. The catalytic conversion of NOx using MnOx-350 at (1) 150 °C and (2) 200 °C.

Fig. S6 SEM images of MnOx-300
**Fig. S7** NOx conversion efficiency of the MnOx-300

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