

**Supporting Information**

# Mn(II)-Based Catalysts Supported on Nanocarbon-Coated Silica Nanoparticles for Alkene Epoxidation

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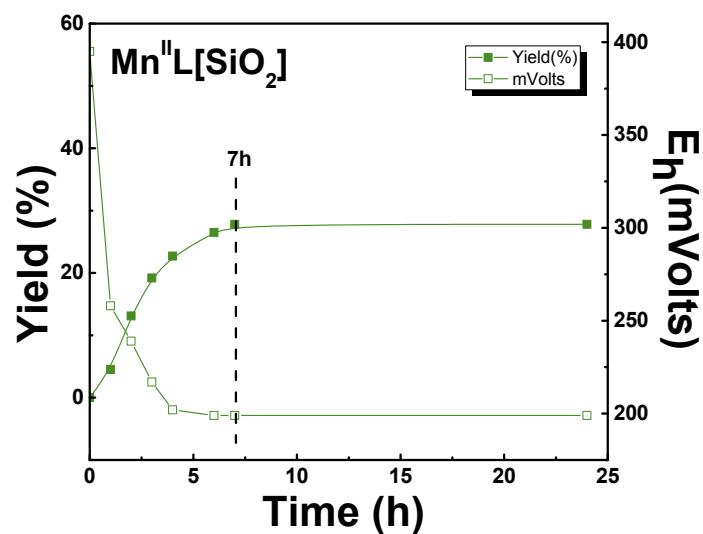
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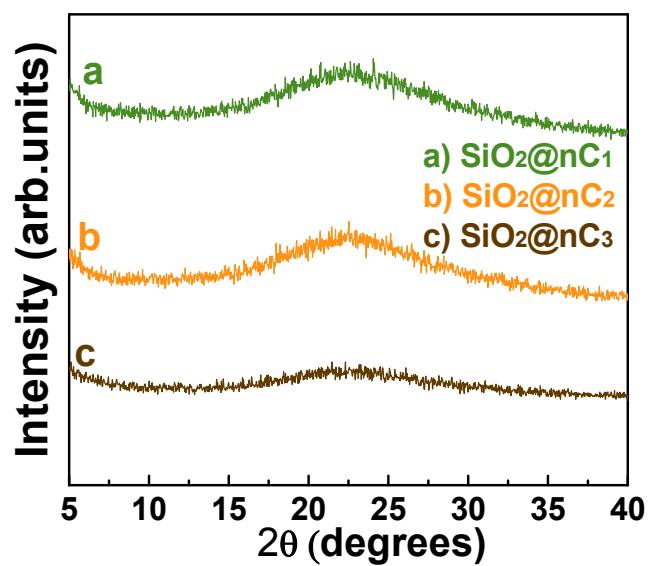
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**Figure S1.** Time dependence of cyclohexene epoxidation and solution redox potential for the reaction catalyzed by the catalyst  $\text{Mn}^{\text{II}}\text{L}[\text{SiO}_2]$ .



**Figure S2.** X-ray Diffraction patterns for (a)  $\text{SiO}_2@\text{nC}_1$ , (b)  $\text{SiO}_2@\text{nC}_2$ , and (c)  $\text{SiO}_2@\text{nC}_3$ .

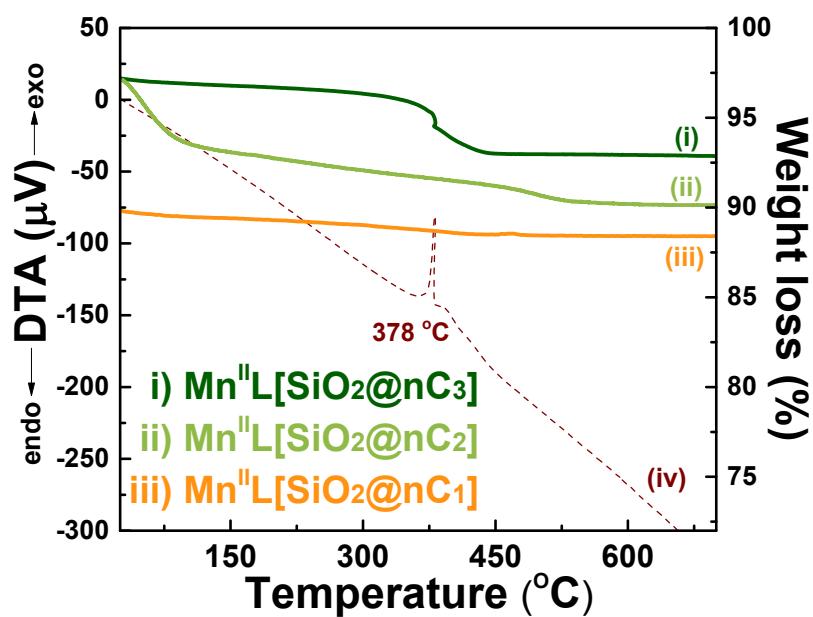
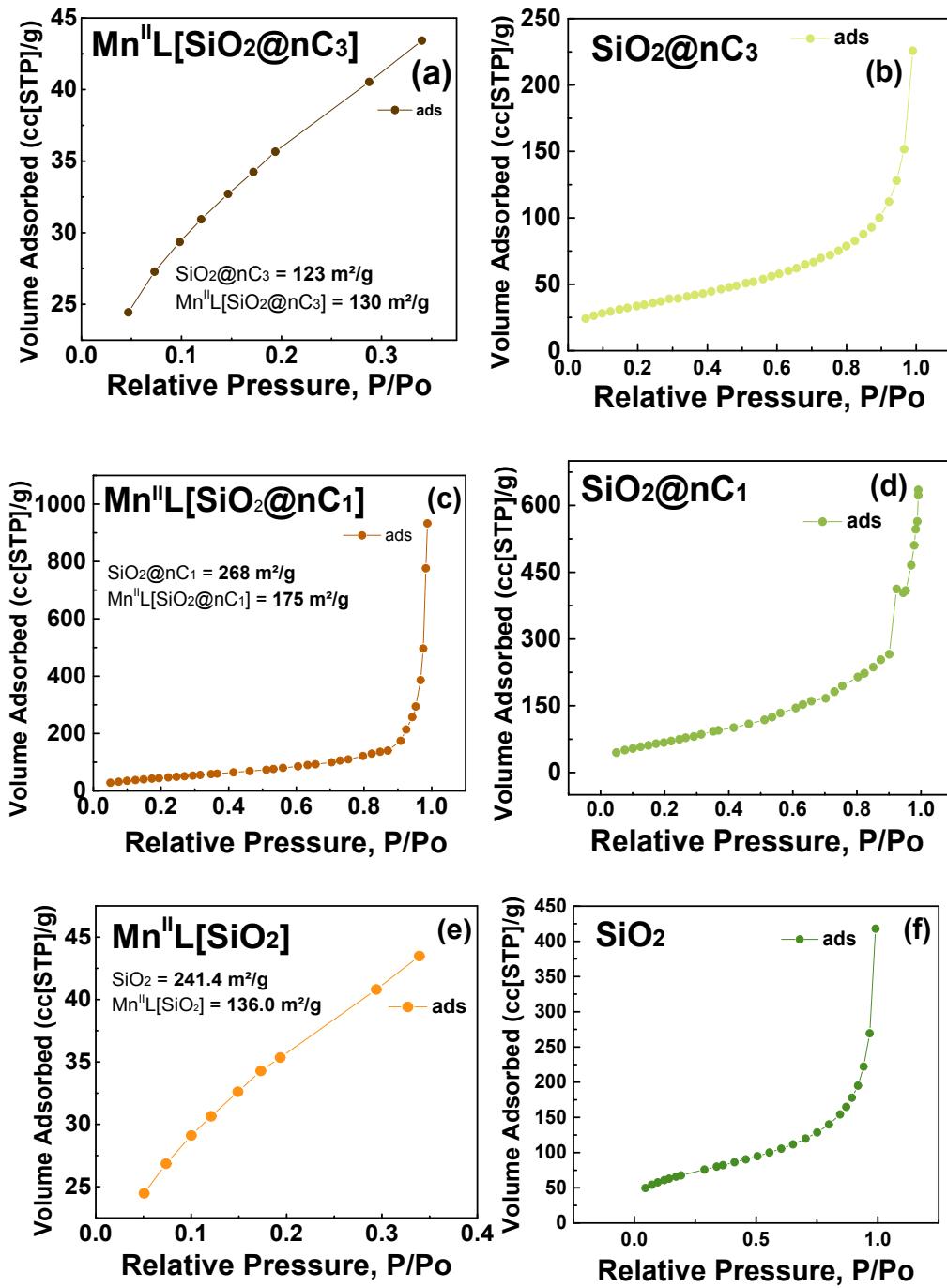
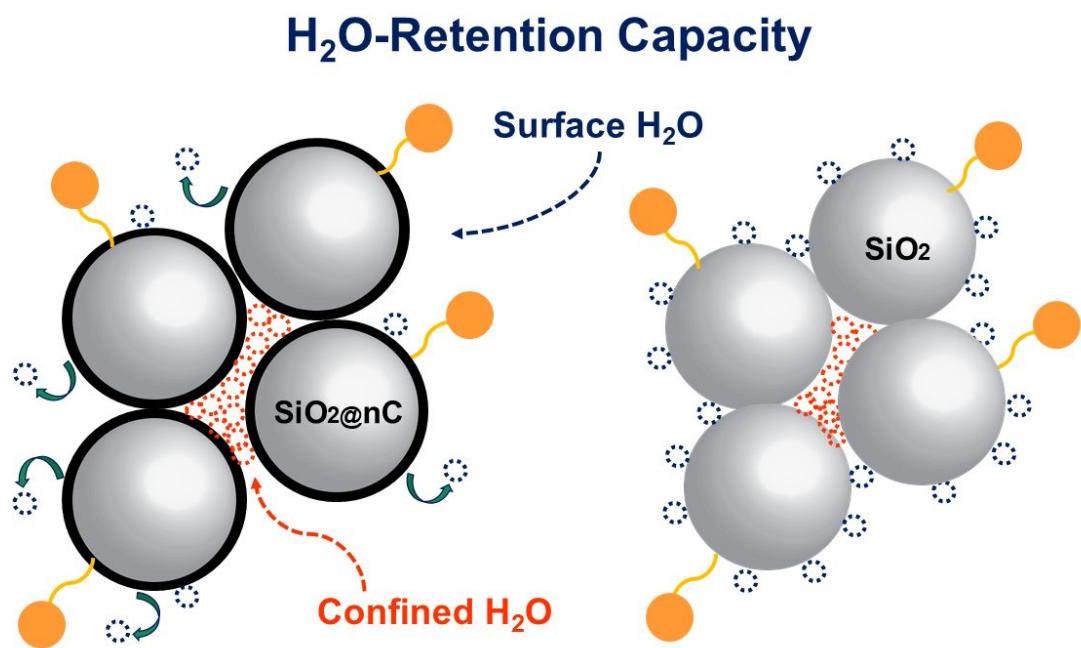


Figure S3. The weight loss curves of (i)  $\text{Mn}^{\text{II}}\text{L}[\text{SiO}_2@\text{nC}_3]$ , (ii)  $\text{Mn}^{\text{II}}\text{L}[\text{SiO}_2@\text{nC}_2]$ , (iii)  $\text{Mn}^{\text{II}}\text{L}[\text{SiO}_2@\text{nC}_1]$  and, (iv) the DTA curve of  $\text{Mn}^{\text{II}}\text{L}[\text{SiO}_2@\text{nC}_3]$ .



**Figure S4.** The N<sub>2</sub> adsorption isotherms of (a) Mn<sup>II</sup>L[SiO<sub>2</sub>@nC<sub>3</sub>], (b) SiO<sub>2</sub>@nC<sub>3</sub>, (c) Mn<sup>II</sup>L[SiO<sub>2</sub>@nC<sub>1</sub>], (d) SiO<sub>2</sub>@nC<sub>1</sub> (e) Mn<sup>II</sup>L[SiO<sub>2</sub>], and (f) SiO<sub>2</sub>.



**Figure S5.** Schematic representation of the surface-water molecules on carbon-coated and non-carbon-coated  $\text{SiO}_2$  particles.

**Table S1:** Data on SSA and hydrophobicity of materials.

| Material  | SSA ( $\text{m}^2 \text{g}^{-1}$ )<br>± 5 | Weight loss (%)<br>(25-200 °C) | $n_{\text{H}_2\text{O}} (\text{nm}^{-2})$ |
|---|---|--------------------------------|---|
| $\text{SiO}_2$  | <b>241</b>                                | $3.3 \pm 0.1$                  | <b>4.6 ± 0.1</b>                          |
| $\text{SiO}_2@\text{nC}_1$                                | <b>268</b>                                | $2.7 \pm 0.1$                  | <b>3.4 ± 0.1</b>                          |
| $\text{SiO}_2@\text{nC}_3$                                | <b>138</b>                                | $0.4 \pm 0.1$                  | <b>1.1 ± 0.1</b>                          |
| $\text{Mn}^{\text{II}}\text{L}[\text{SiO}_2]$             | <b>136</b>                                | $1.7 \pm 0.1$                  | <b>4.1 ± 0.1</b>                          |
| $\text{Mn}^{\text{II}}\text{L}[\text{SiO}_2@\text{nC}_1]$ | <b>175</b>                                | $1.8 \pm 0.1$                  | <b>3.4 ± 0.1</b>                          |
| $\text{Mn}^{\text{II}}\text{L}[\text{SiO}_2@\text{nC}_3]$ | <b>130</b>                                | $0.4 \pm 0.1$                  | <b>1.0 ± 0.1</b>                          |