

Electronic Supplementary Information

**Peptide-Templated Synthesis of Branched MnO₂ Nanowires with
Improved Electrochemical Performances**

Mingxuan Du,^a Yong Bu,^a Yan Zhou,^b Yurong Zhao,^a Shengjie Wang,^{*a} and Hai Xu^{*a}

^a State Key Laboratory of Heavy Oil Processing and Center for Bioengineering and Biotechnology,
China University of Petroleum (East China), No. 66 Changjiang West Road, Qingdao 266580, China

^b College of Science, China University of Petroleum (East China), No. 66 Changjiang West Road,
Qingdao 266580, China.

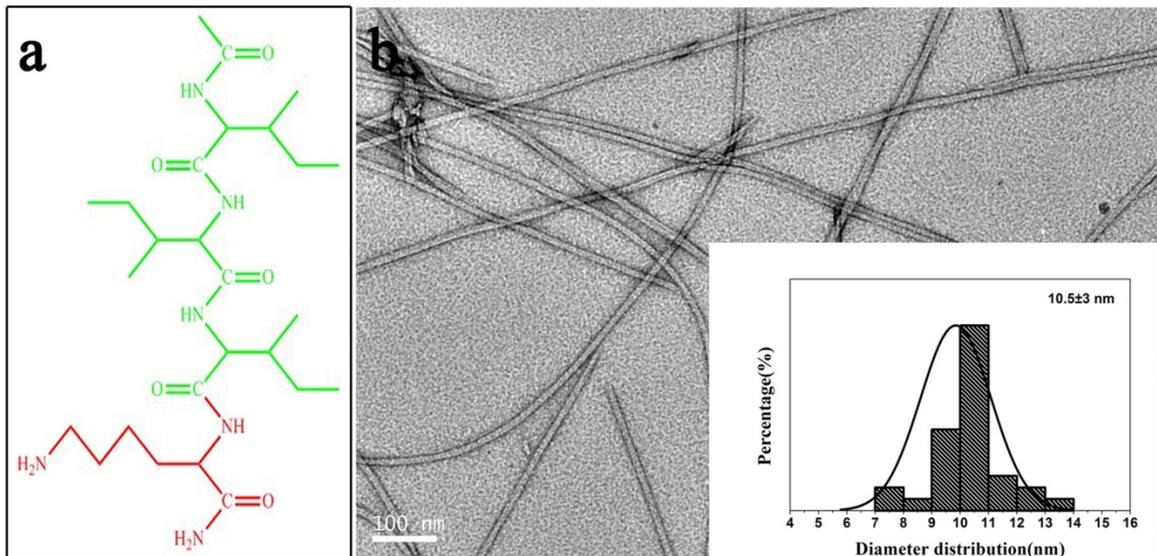


Fig. S1 (a) Molecular structure of I₃K and (b) TEM image of I₃K nanofibers. The three Ile residues are marked in green and the Lys group at the C-terminal in red for clarity. Inset of (b) shows the statistical diameter histogram of the I₃K nanofibers.

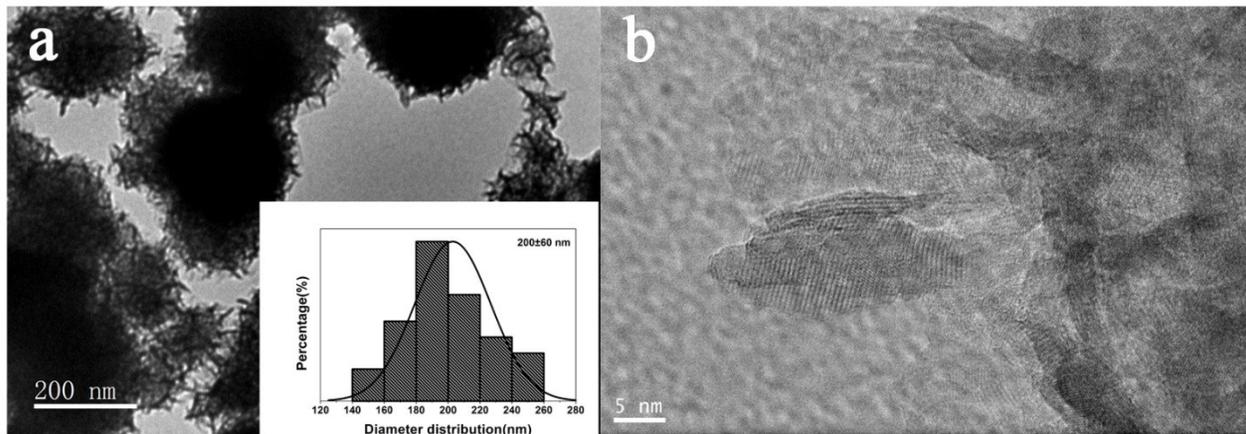


Fig. S2 (a) TEM and (b) HR-TEM images of the MnO₂ precipitates formed in the absence of peptide (MP-0). Inset of (a) indicates the size distribution of the formed urchin-like MnO₂ spheres.

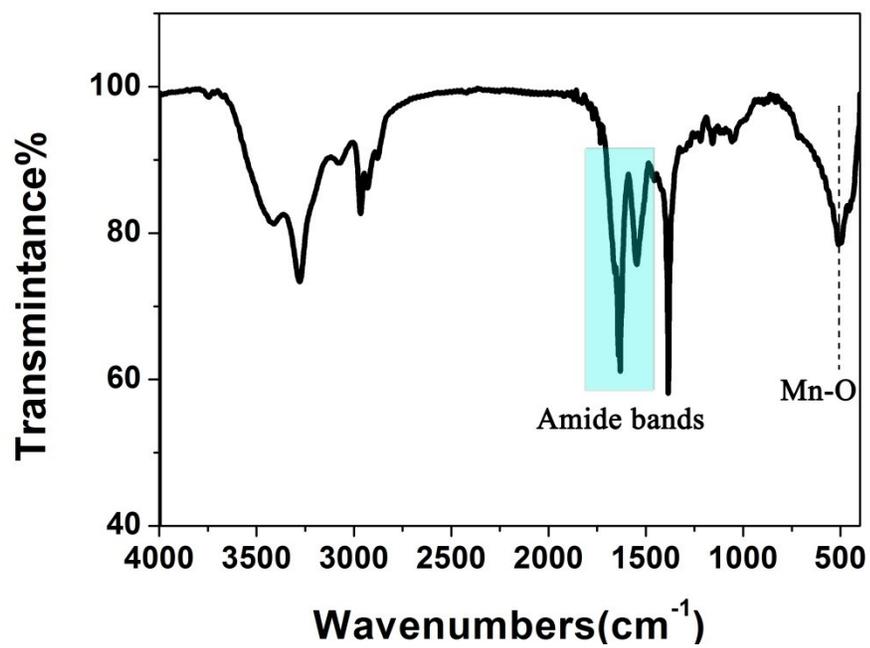


Fig. S3 FTIR spectrum of the collected MnO₂ precipitates in the presence of I₃K nanofibers (MP-5).

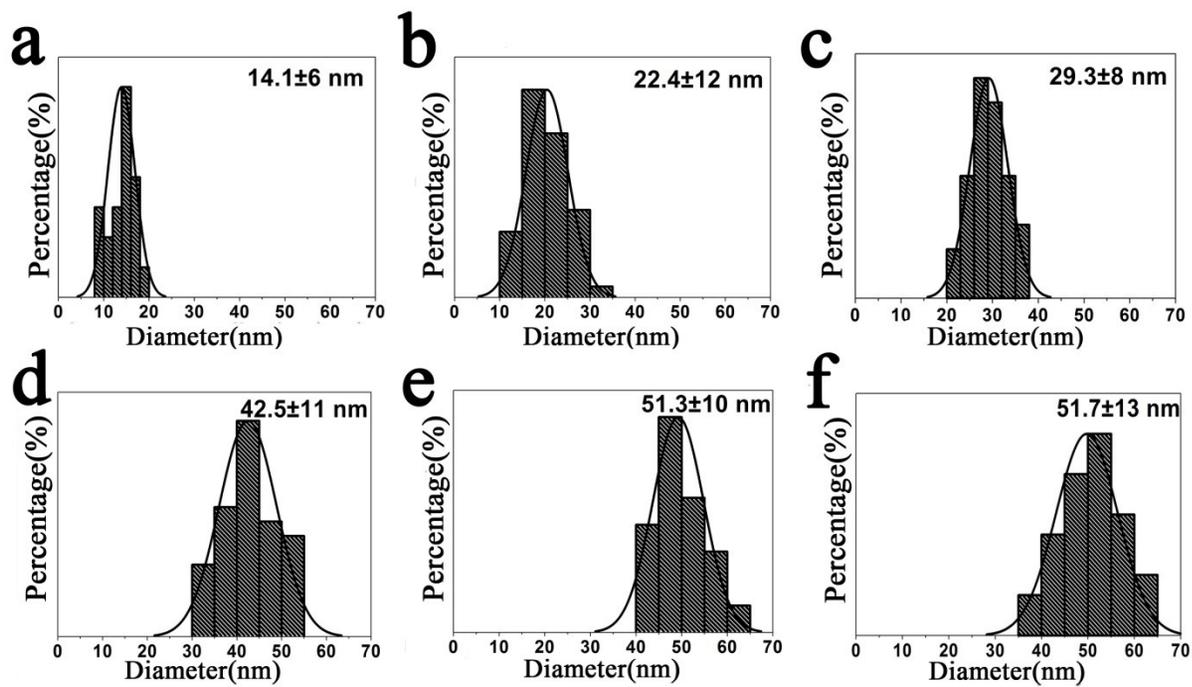


Fig. S4 The diameter distributions of the formed MnO_2 hybrid nanowires: (a) MP-2, (b) MP-3, (c) MP-4, (d) MP-5, (e) MP-6, and (f) MP-7.

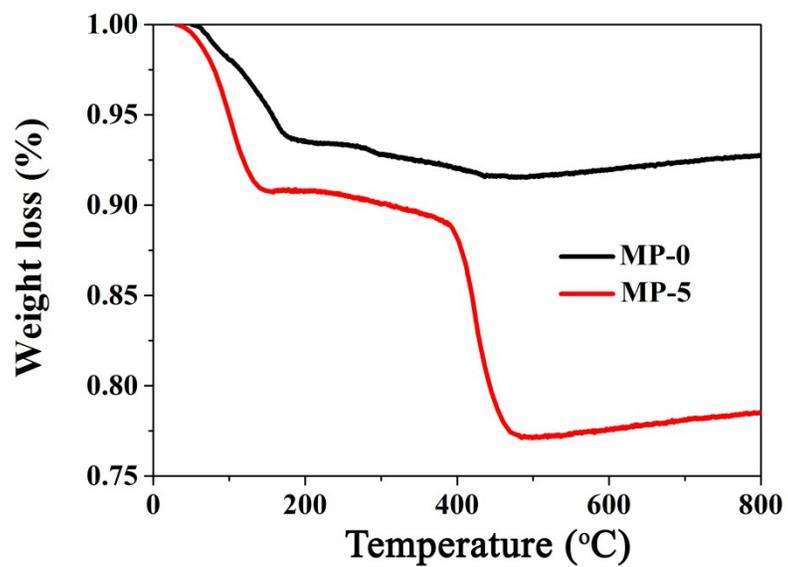


Fig. S5 TGA curves of MP-5 and the urchin-like MnO_2 sphere (MP-0) prepared in the absence of I_3K assemblies. The heating rate was set as $20\text{ }^\circ\text{C min}^{-1}$.

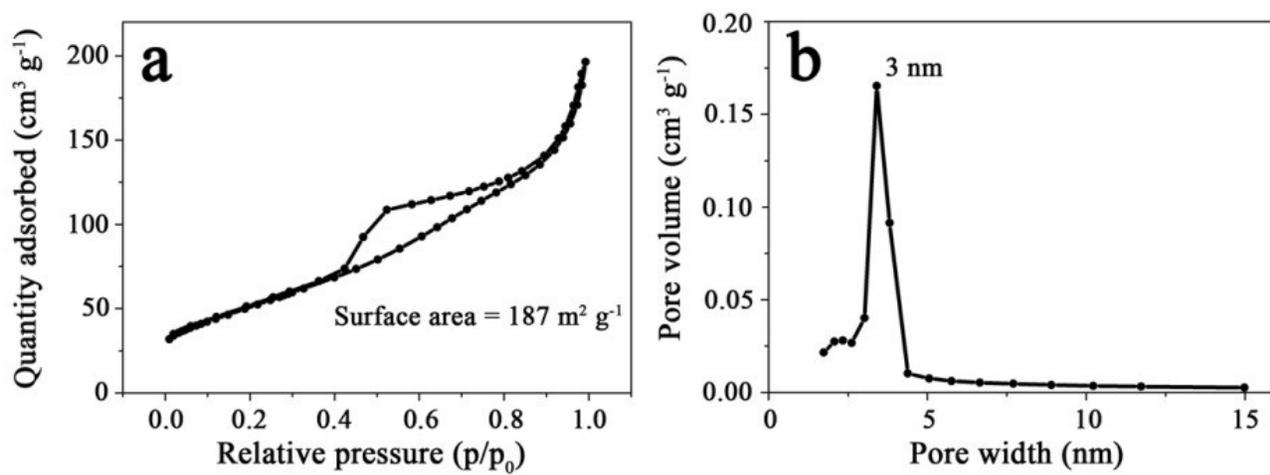


Fig. S6 (a) N₂ adsorption/desorption isotherm and (b) BJH pore size distribution of MP-0.

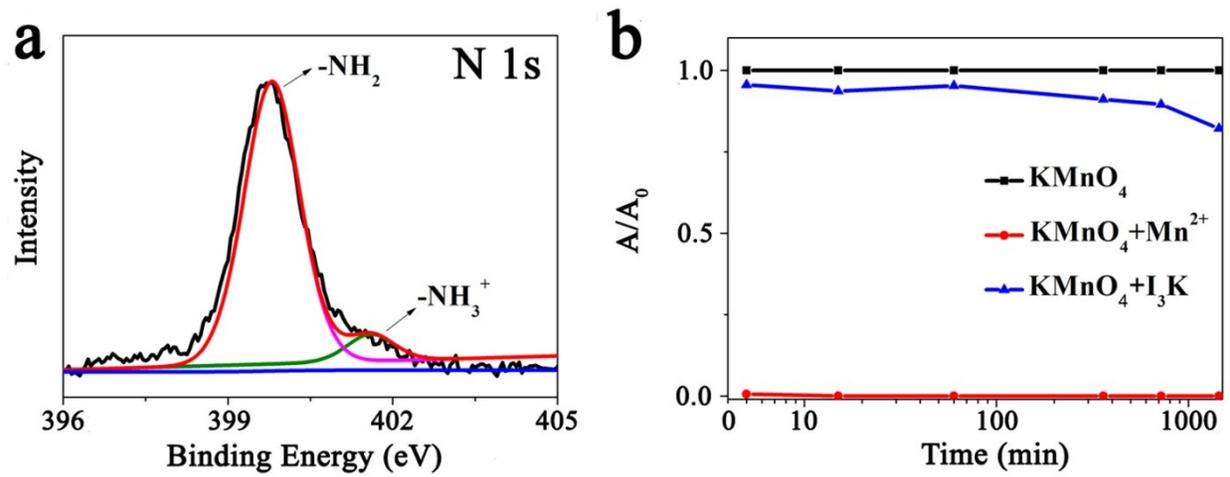


Fig. S7 (a) N1s XPS spectrum of the branched MnO₂ nanowire (MP-5) and (b) The UV-vis absorbance at 526 nm as a function of time for different reaction systems.

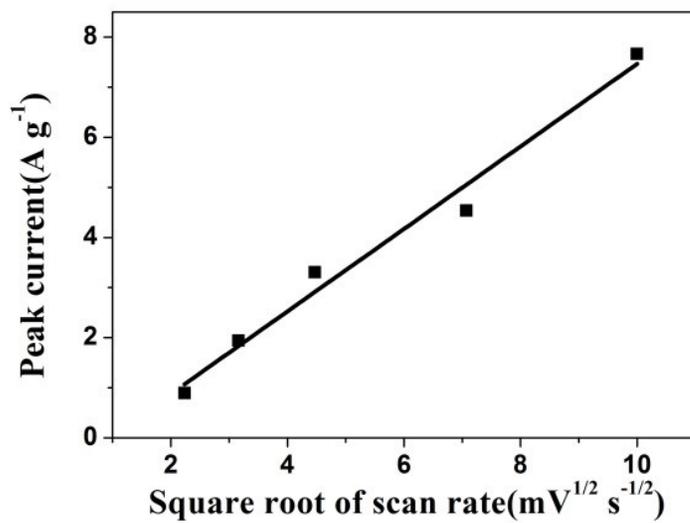


Fig. S8 The anodic peak current versus the square root of scan rate for the branched MnO₂ nanowire (MP-5), showing a linear relationship between them.

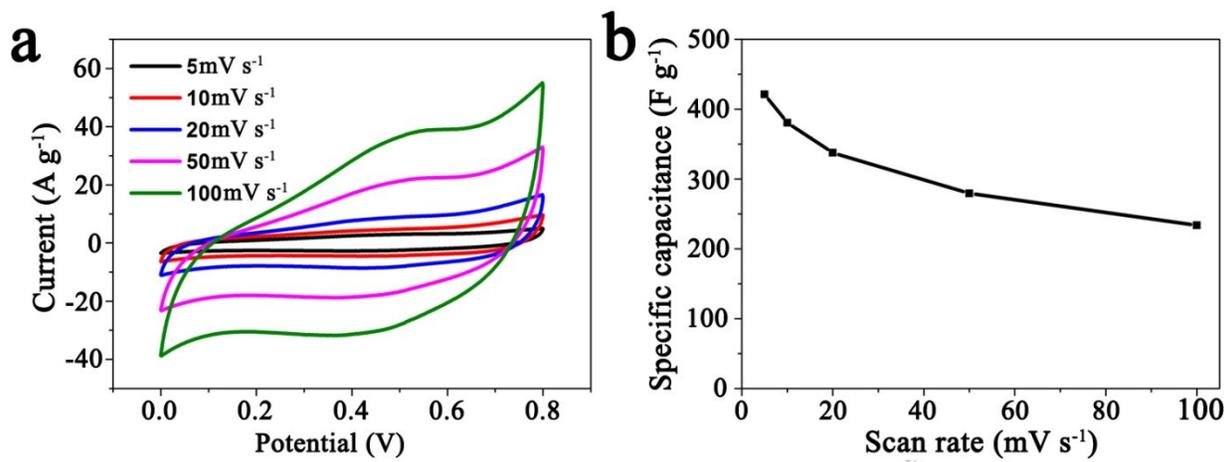


Fig. S9 (a) CV curves of the branched MnO₂ nanowire (MP-5) as the electrode material in aqueous 1 M Na₂SO₄ at different scan rates and (b) Variation of its specific capacitance with the scan rate.