Supporting Information

Synthesis of Porous MnO_2 Hierarchical Structures Through Controlled Precursor Adsorption

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Experimental Section

Materials Synthesis. The pH of the $MnSO_4 \cdot H_2O$ (100 mL, 7 mM) and $KMnO_4$ (100 mL, 5 mM) solution was adjusted to 1-3 by addition of a 5 M H_2SO_4 solution. One of the two solutions was added dropwise into the other solution whilst stirring at a fix dripping speed. The products were collected by centrifugation, then washed with distilled water for several times, and finally dried overnight at 60 °C.

Materials Characterizations. Phase identification was carried out by X-ray diffraction in a Bruker D8-ADVANCE using Cu Kα radiation. The morphologies were studied by scanning electron microscope (Hitachi, S-4800) and transmission electron microscope (Hitachi, H-7500) at 100 kV. The HRTEM and SAED analysis was performed by a JEM-2010 high-resolution transmission electron microscope at 200 kV. The specific surface area was evaluated by nitrogen adsorption–desorption isotherm measurements at 77 K (Micromeritics ASAP2020).

Adsorption experiment. The adsorption of MnO_4^- on MnO_2 was studied using batch tests. The solution pH was adjusted from 1 to 6 by adding dilute NaOH, H_2SO_4 or H_3PO_4 solution. The adsorbent dosage was 0.5 g/L and the initial MnO_4^- concentration was 50 mg/L.

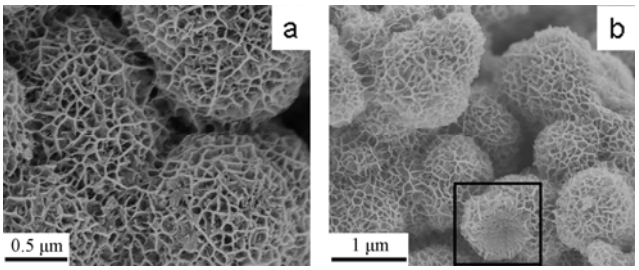

Figure S1. low-magnification SEM images of samples prepared in addition mode I (a) and in addition mode II (b) at pH 1.

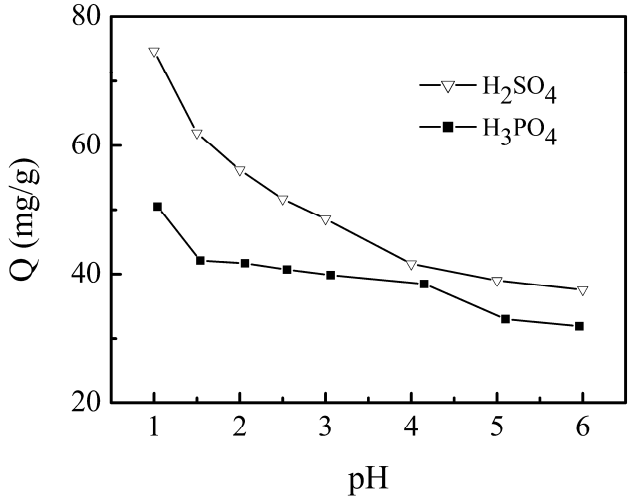

Figure S2. Effect of pH on the adsorption of MnO_4^- anions on MnO_2.