

Supplemental Material

S1. Synthetic Procedures

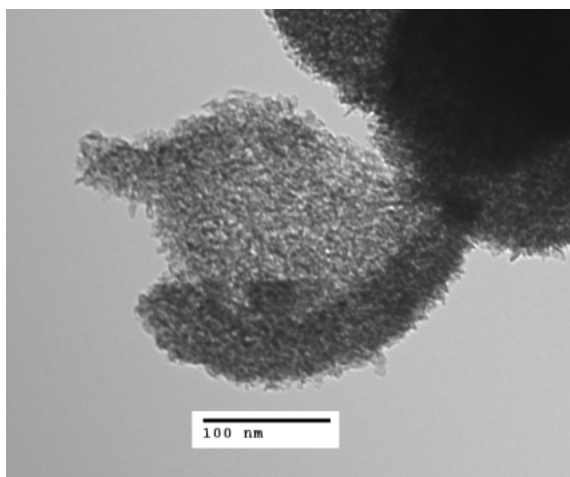
MnO₂-C (control reaction). MnSO₄·H₂O (0.254g, 1.5 mmol) was dissolved in 25 mL of water with stirring. Separately, KMnO₄ (0.158 g, 1.0 mmol) was also dissolved in 25 mL of water. The KMnO₄ solution was added to the MnSO₄ solution with vigorous stirring, resulting in the immediate formation of a brown precipitate. After stirring for 15 minutes, the solid was isolated by filtration through a medium porosity glass frit, washed thoroughly with water three times, and dried at 110 °C.

MnO₂-AA. The procedure for MnO₂-C was carried out, with the inclusion of 1.43 mL (25 mmol) of acetic acid being added to the MnSO₄ solution and an additional 50 mL of water being added to the stirred precipitate slurry prior to filtration.

MnO₂-PA. The procedure for MnO₂-C was carried out, with the inclusion of 1.87 mL (25 mmol) of propionic acid being added to the MnSO₄ solution and an additional 50 mL of water being added to the stirred precipitate slurry prior to filtration.

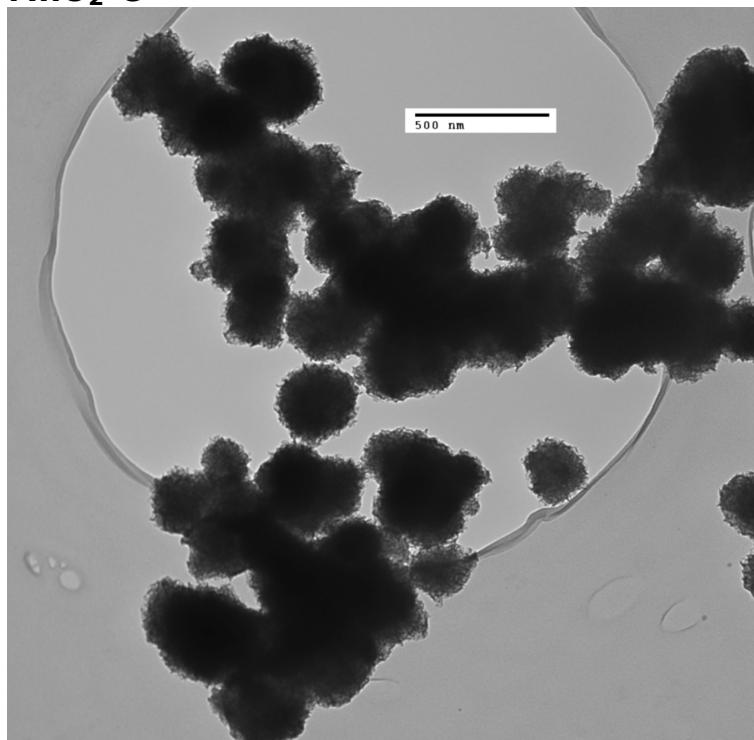
MnO₂-BA. The procedure for MnO₂-C was carried out, with the inclusion of 2.28 mL (25 mmol) of butyric acid being added to the MnSO₄ solution and an additional 50 mL of water being added to the stirred precipitate slurry prior to filtration.

S2. TEM image of MnO₂-BA hollow shell fragment

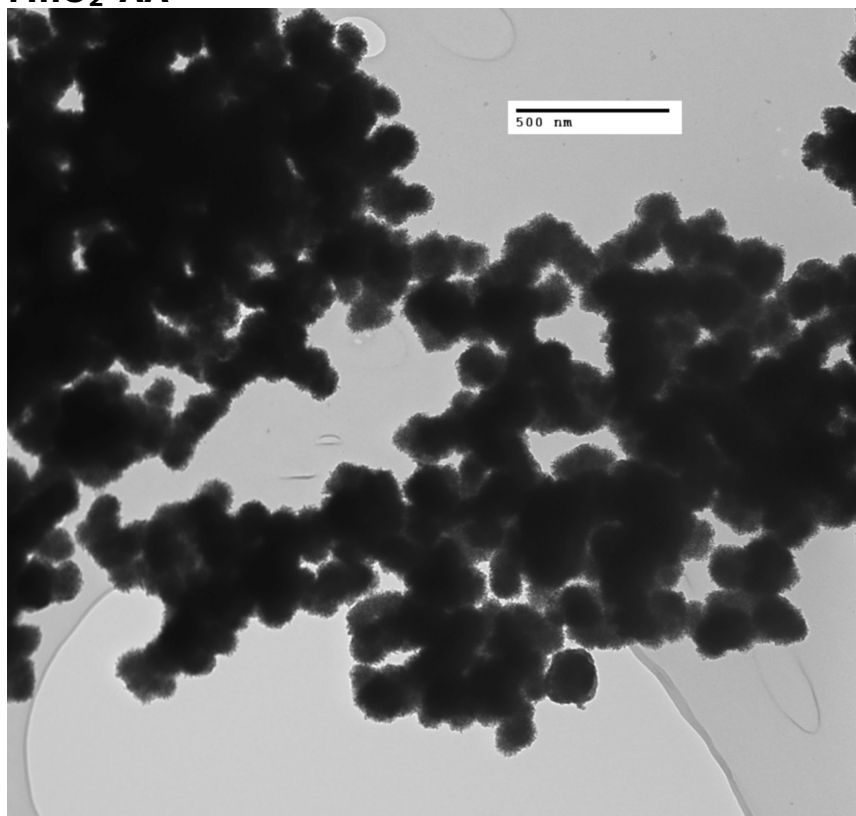


S3. Additional TEM images of MnO₂-C, MnO₂-AA, MnO₂-PA, and MnO₂-BA.

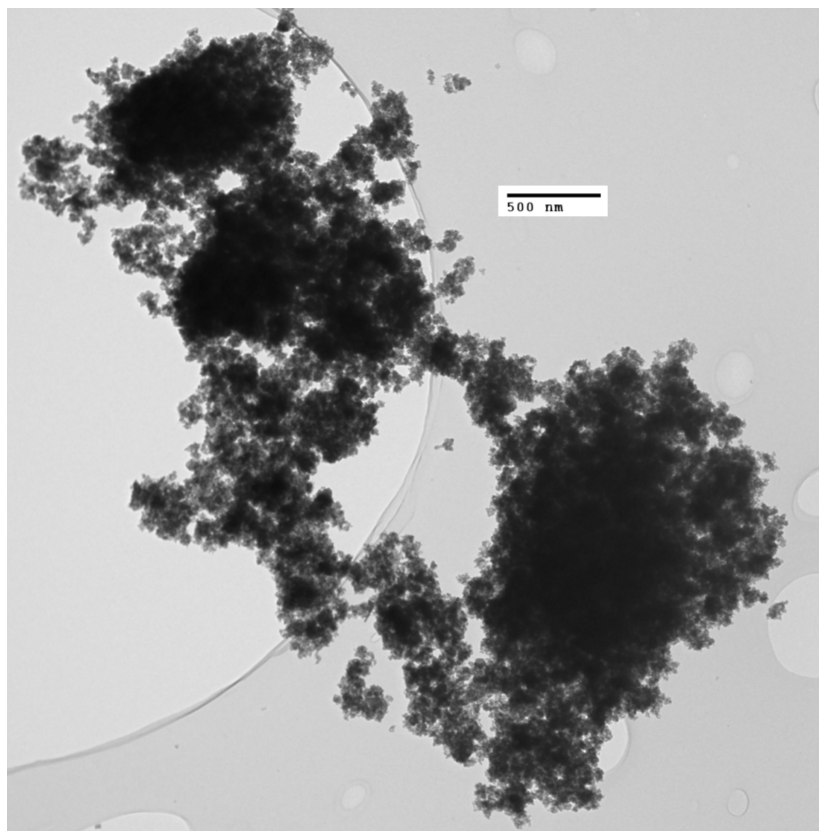
MnO₂-C



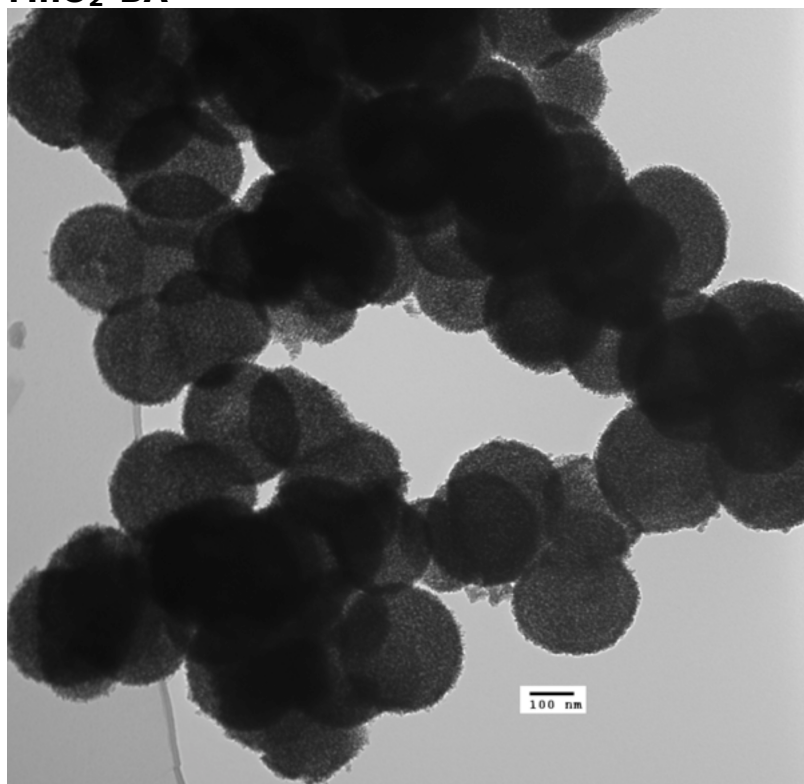
MnO₂-AA



MnO₂-PA

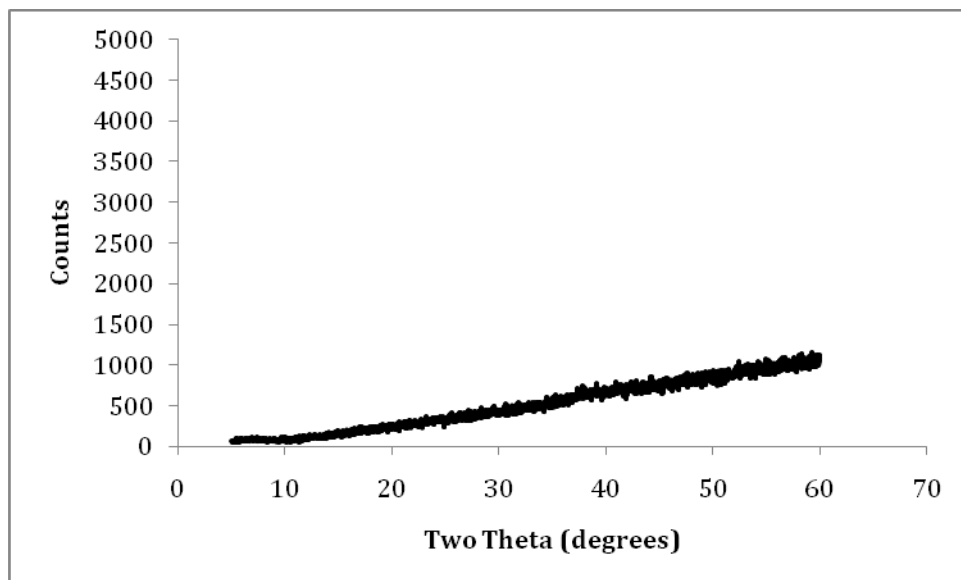


MnO₂-BA

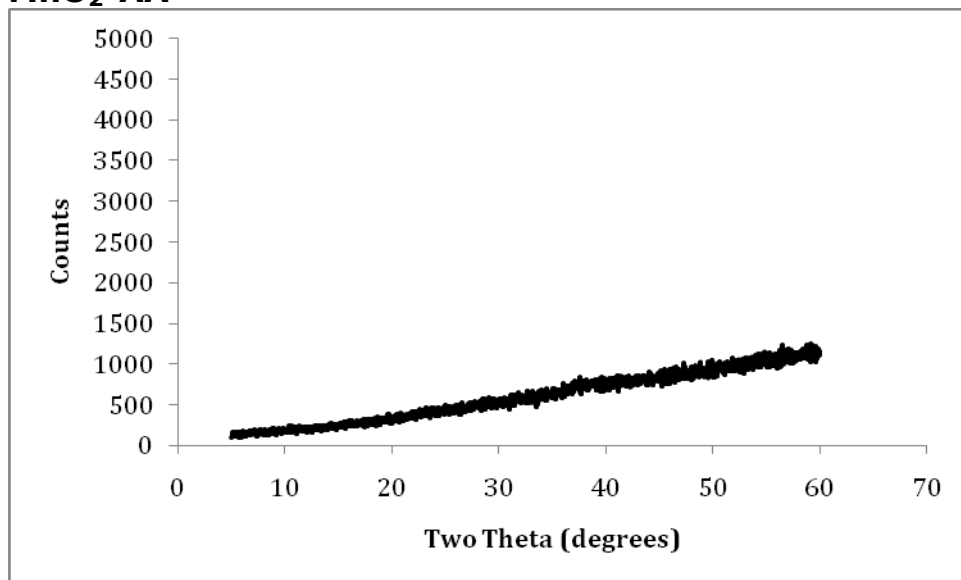


S4. XRD patterns of MnO₂-C, MnO₂-AA, MnO₂-PA, and MnO₂-BA.

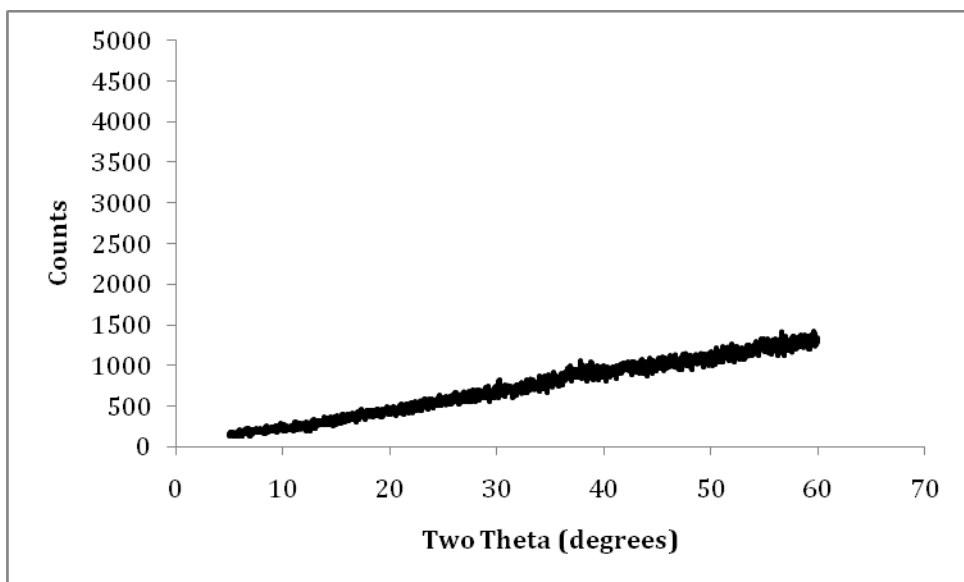
MnO₂-C



MnO₂-AA



MnO₂-PA



MnO₂-BA

