Supplementary Materials

Figure S1. (a) N\textsubscript{2} adsorption/desorption isotherms and (b) Pore size distribution curves of MnO\textsubscript{2}.

Figure S2. Raman spectroscopy of PANI, MnO\textsubscript{2}, PANI/MnO\textsubscript{2}

The N\textsubscript{2} adsorption/desorption isotherms and pore size distribution curves of MnO\textsubscript{2} was shown in Figure S1. As is shown in Figure 1a, it can be observed that the MnO\textsubscript{2} has a typical IV isotherm and display a distinct hysteresis loop of H1 in the range of 0.4–0.8 P/P\textsubscript{o}, indicating the presence of mesopores in the MnO\textsubscript{2} nanomaterial. The pore size distribution curves are exhibited in Figure 1b. It is easily found that the mean pore diameter of MnO\textsubscript{2} is 3.648 nm. The BET surface area of MnO\textsubscript{2} nanomaterial is 232.96 m\textsuperscript{2}/g.

Raman spectroscopy was employed to analyze the PANI, MnO\textsubscript{2}, PANI/MnO\textsubscript{2} in Figure S2. The band which appears at 1170 cm\textsuperscript{-1} corresponds to the C–H bending. The peaks at 1333 and 1555 cm\textsuperscript{-1} can be assigned to the N–H bending and C–N\textsuperscript{+} stretching vibrations, respectively. The presence of MnO\textsubscript{2} on the composites is confirmed by the slight peaks at 646 cm\textsuperscript{-1} (corresponding to the pure MnO\textsubscript{2}), attributed to the Mn–O vibration. The decrease of the intensity may be due to the cladding of PANI.

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