Supporting Information

Stabilizing electrochemical Li−O_2 batteries with a metal-based cathode of PdNi on Ni nonwoven fabric

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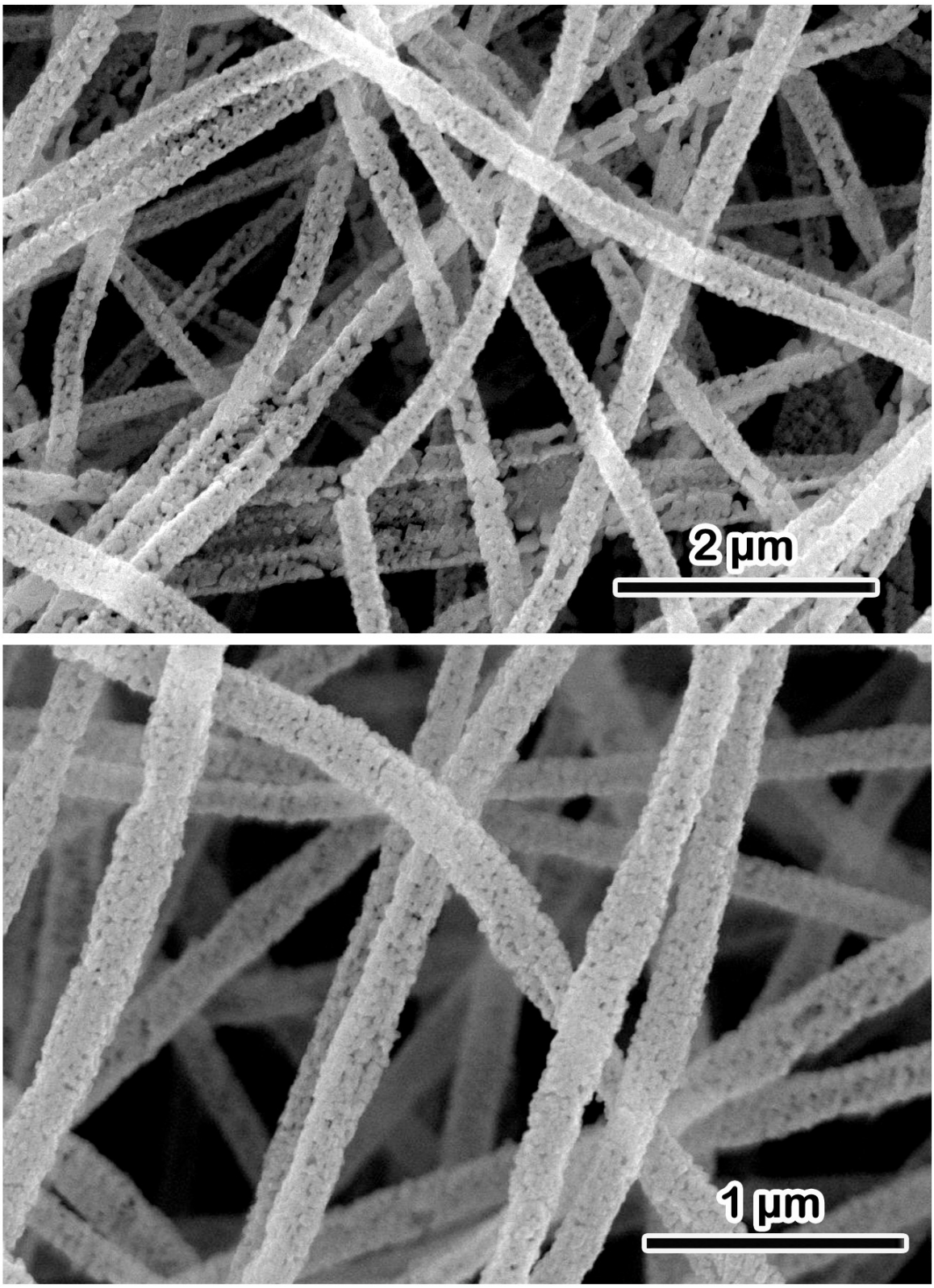

Figure S1. The field emission scanning electron microscopic (FESEM) image of Pd/NiNF.

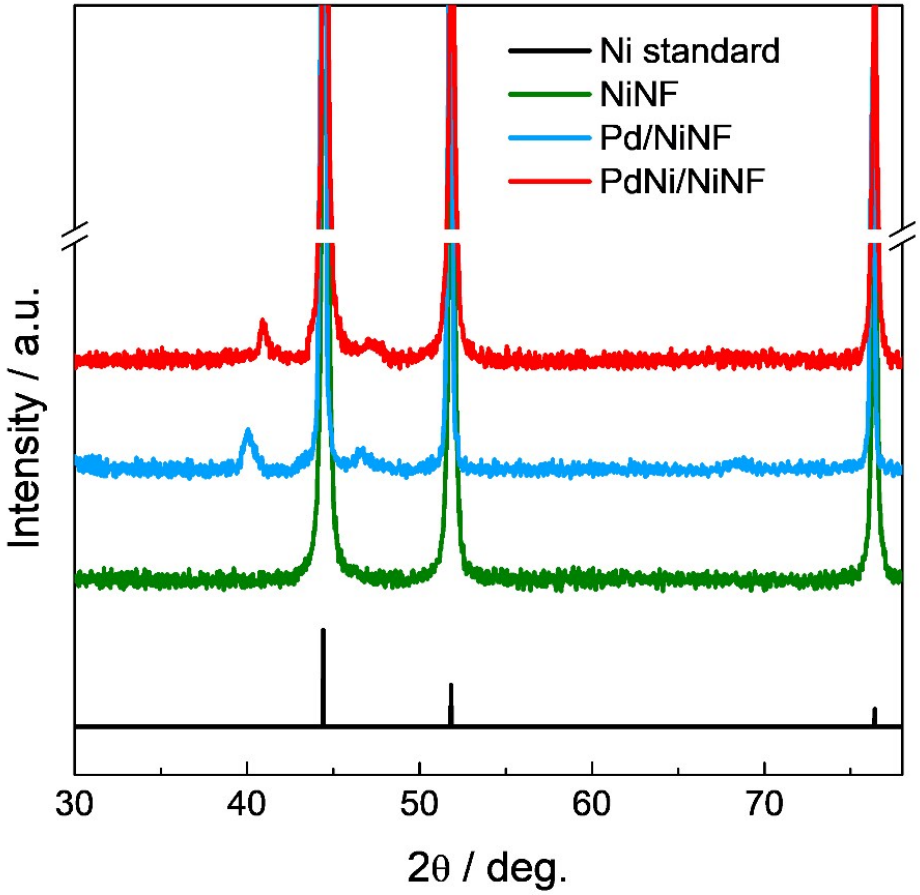

Figure S2. Powder X-ray diffraction patterns of Ni NF, Pd/NiNF and PdNi/NiNF cathodes.

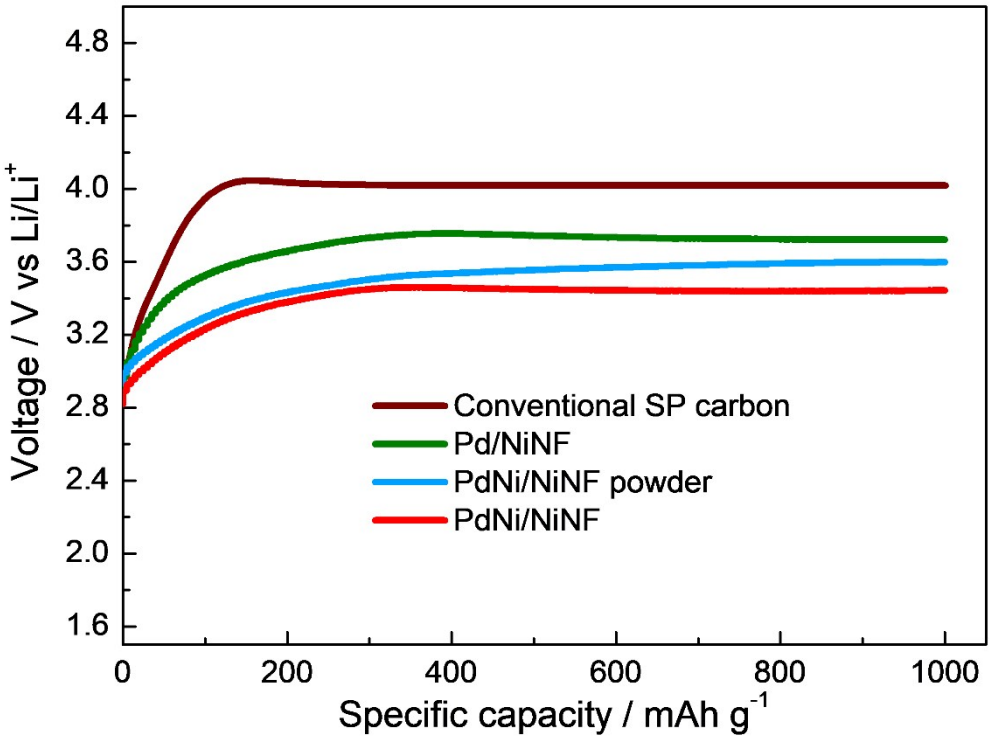

Figure S3. Electrochemical performance of artificially Li_2O_2-loaded cathodes. Voltage profile on charge for Li−O_2 cells with Li_2O_2-loaded conventional SP carbon, PdNi/NiNF, Pd/NiNF and PdNi/NiNF powder cathodes at a current density of 200 mA g^{-1}. To avoid complications from possible electrolyte decomposition duringv the long discharge reaction, the four artificially Li_2O_2-loaded cathodes are electrochemically oxidized in Li−O_2 cells. It can be seen that a similar reduction is obtained for Li_2O_2 oxidation on PdNi/NiNF versus other cathodes, as observed in the charge profile shown in Figure 4a.

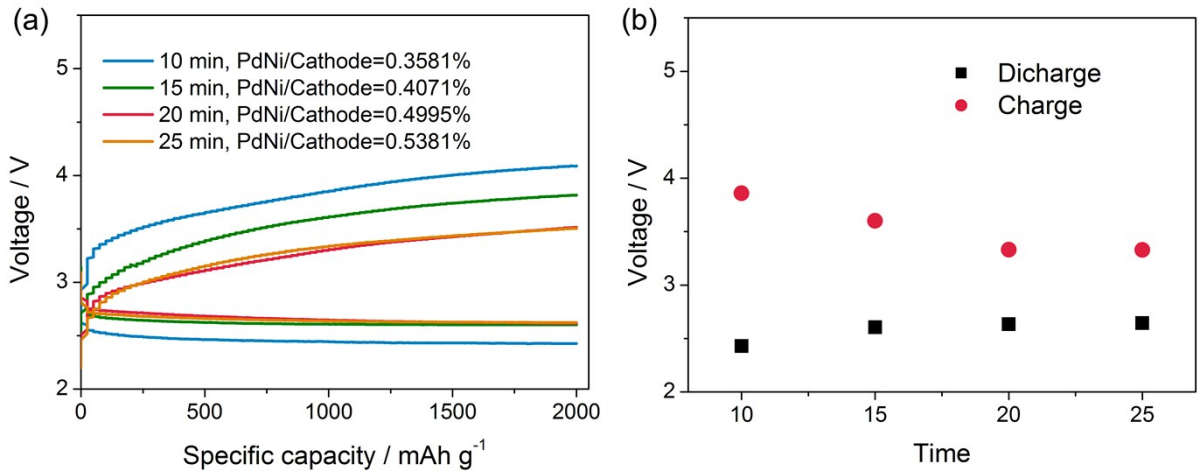

Figure S4. The influence of PdNi amount of PdNi/NiNF on the battery performance. (a) The first charge-discharge curves and (b) the corresponding overpotential of Li–O_2 cells with different PdNi/NiNFcathodes.

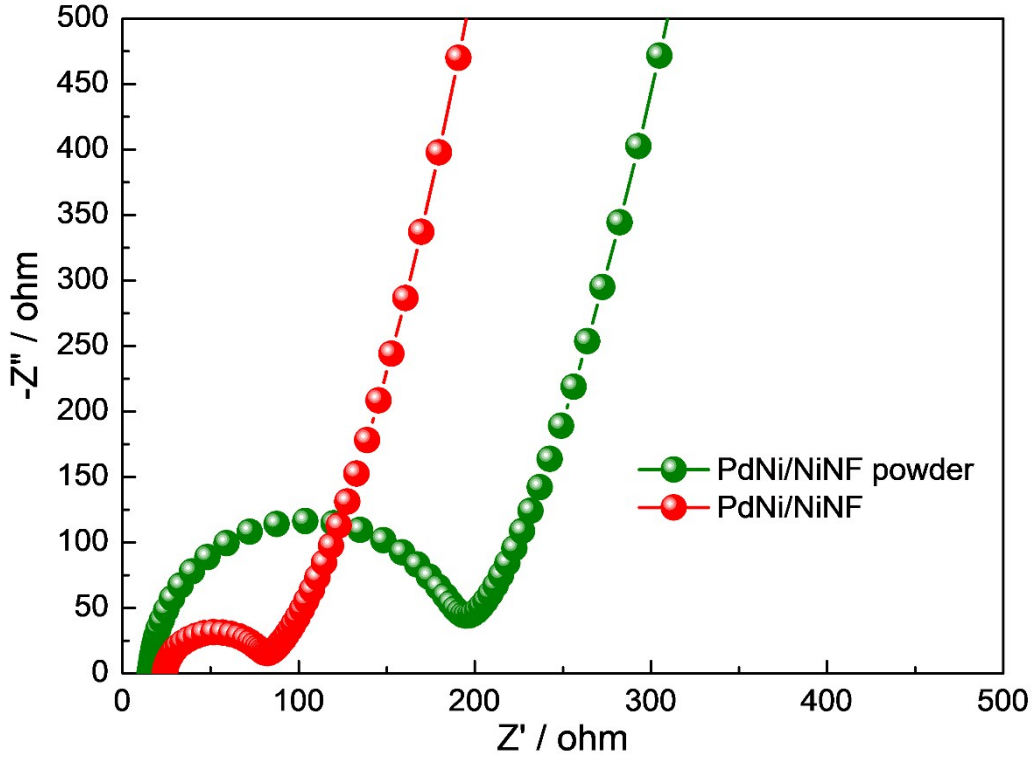

Figure S5. Electrochemical impedance spectra (EIS) of PdNi/NiNF and PdNi/NiNF powder cathodes.

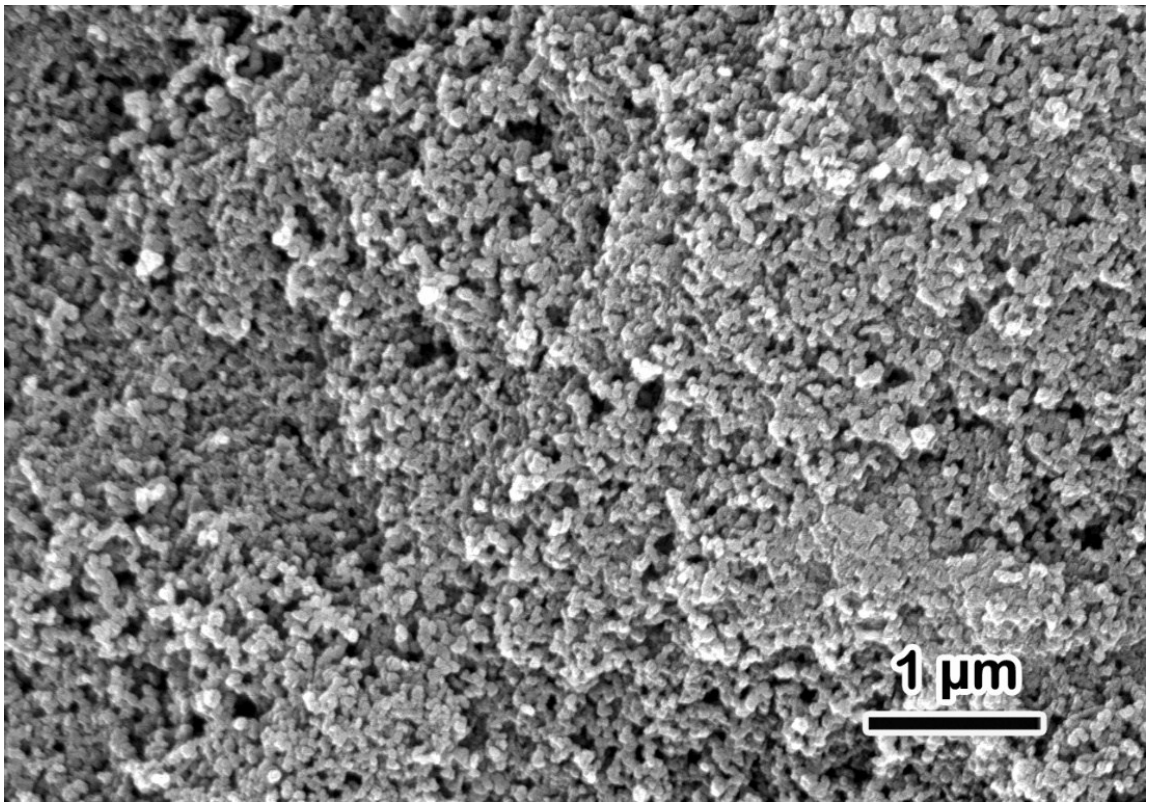

Figure S6. FESEM image of the conventional SP carbon cathode.

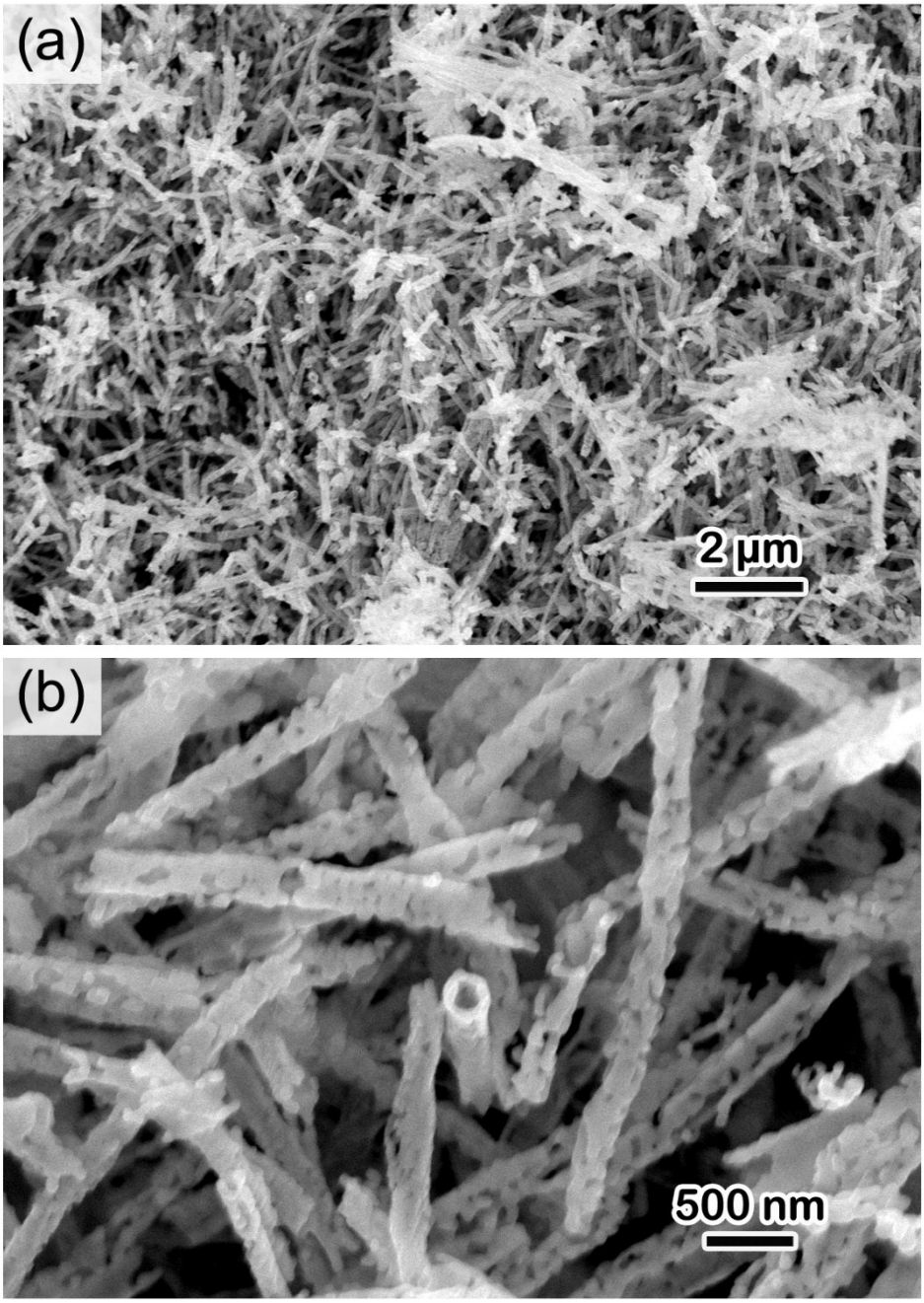

Figure S7. (a) Low and (b) high magnification SEM images of the PdNi/NiNF powder cathode.

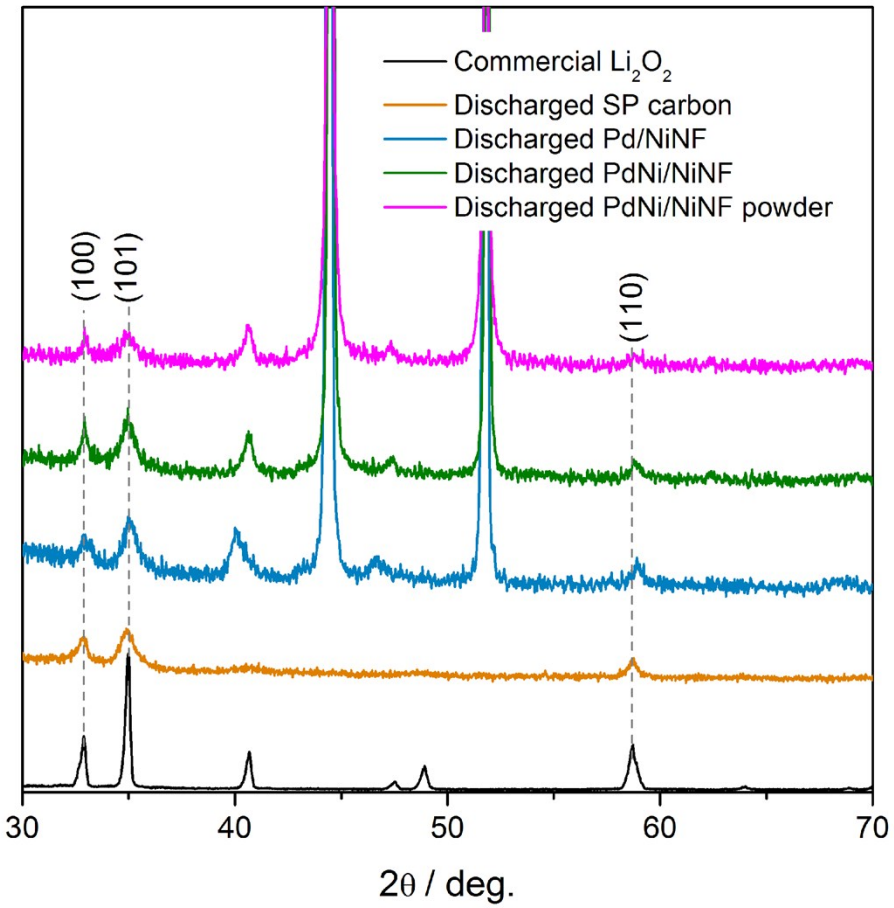

Figure S8. PXRD patterns of the discharged cathodes with the conventional SP carbon, Pd/NiNF, PdNi/NiNF, PdNi/NiNF powder after the first discharge.

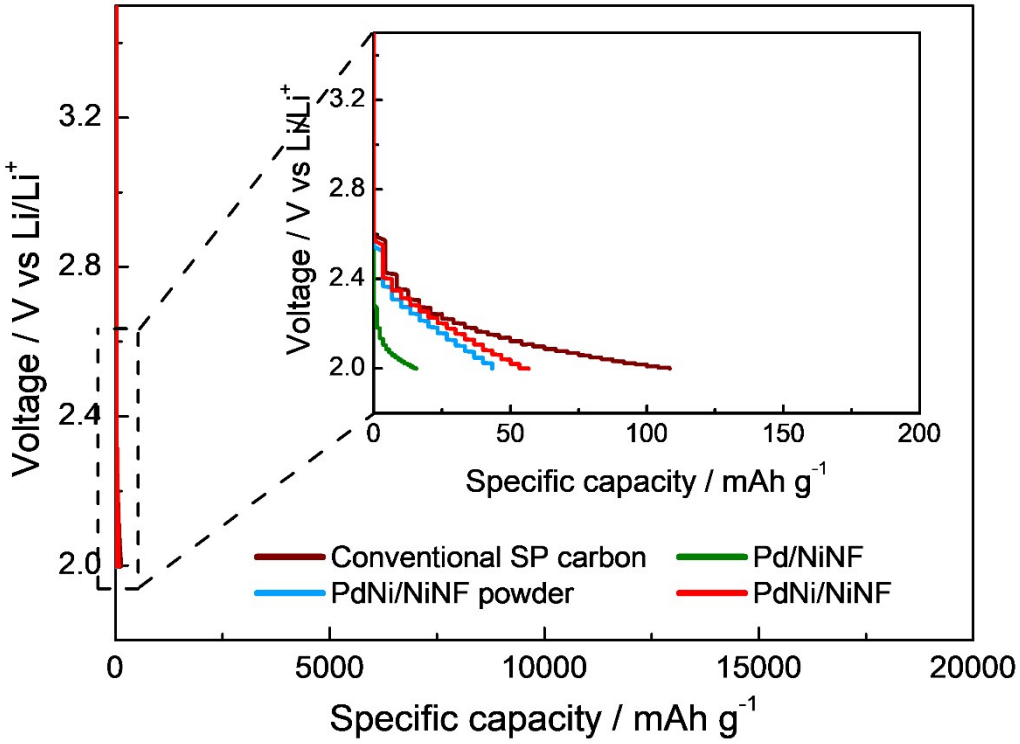

Figure S9. The discharge curves of the Ar-filled cells based on the conventional SP carbon, Pd/NiNF, PdNi/NiNF powder and PdNi/NiNF alone electrodes at a current density of 0.10 mA cm^{-2}.

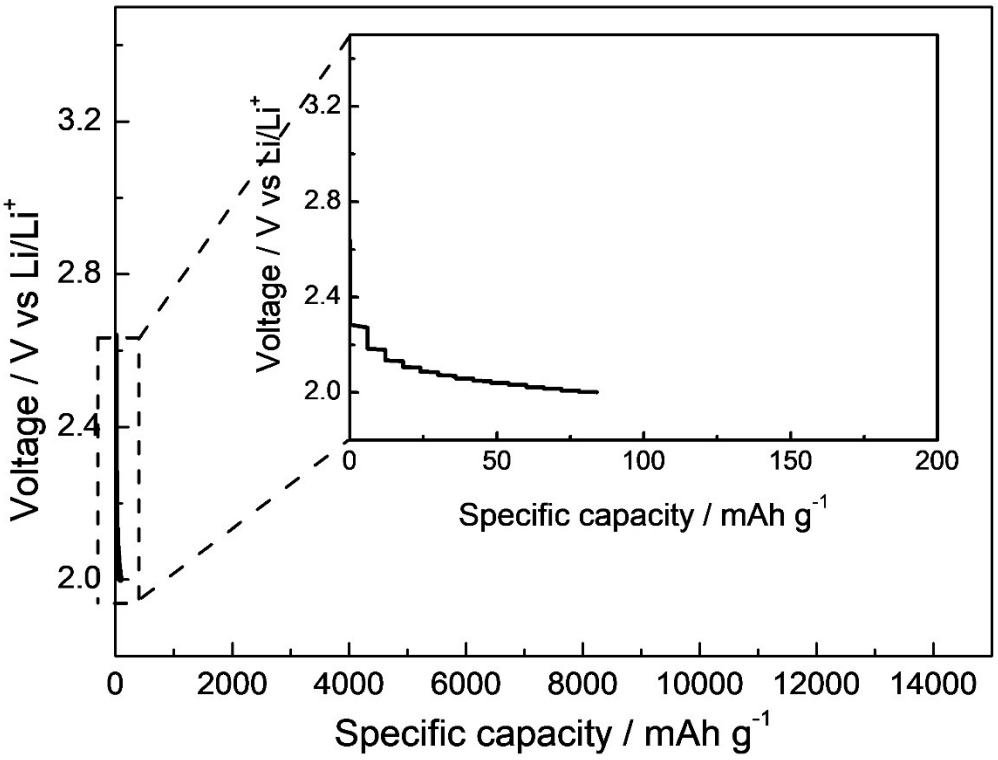

Figure S10. The rate capability of the Li−O_2 cells with the NiNF cathode.

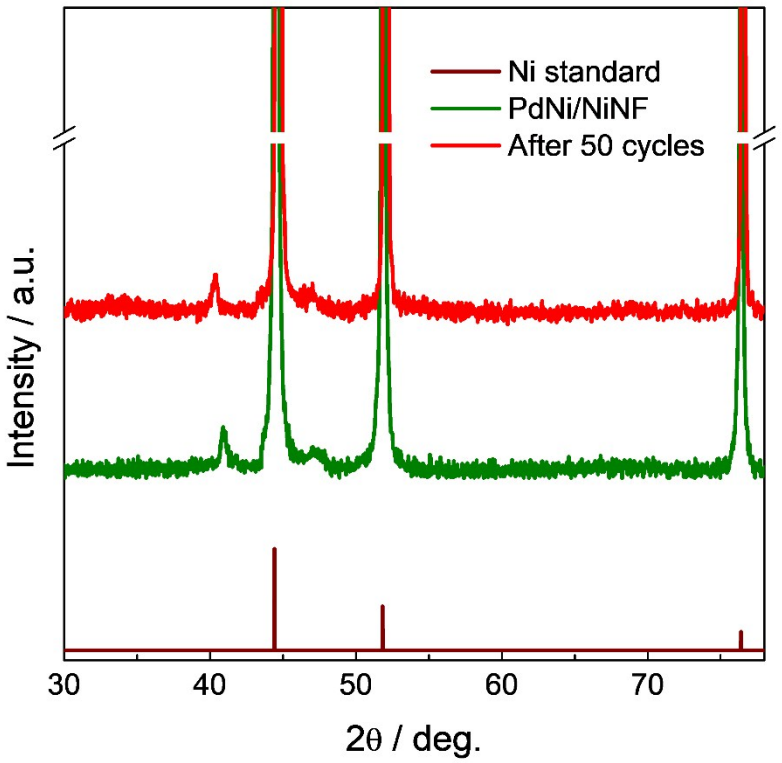

Figure S11. PXRD patterns of the discharged PdNi/NiNF cathode before and after 50 cycles.