

Supplementary Information

Titanium dioxide nanotubes modified with nickel oxide and nickel nanoparticles for improved polysulfide anchoring and redox kinetics in lithium-sulfur batteries

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Samples	BET surface area (m ² g ⁻¹)
TiO ₂	82.30
NiO/TiO ₂	84.92
Ni/TiO ₂	87.71

Table 1 BET surface area for respective samples.

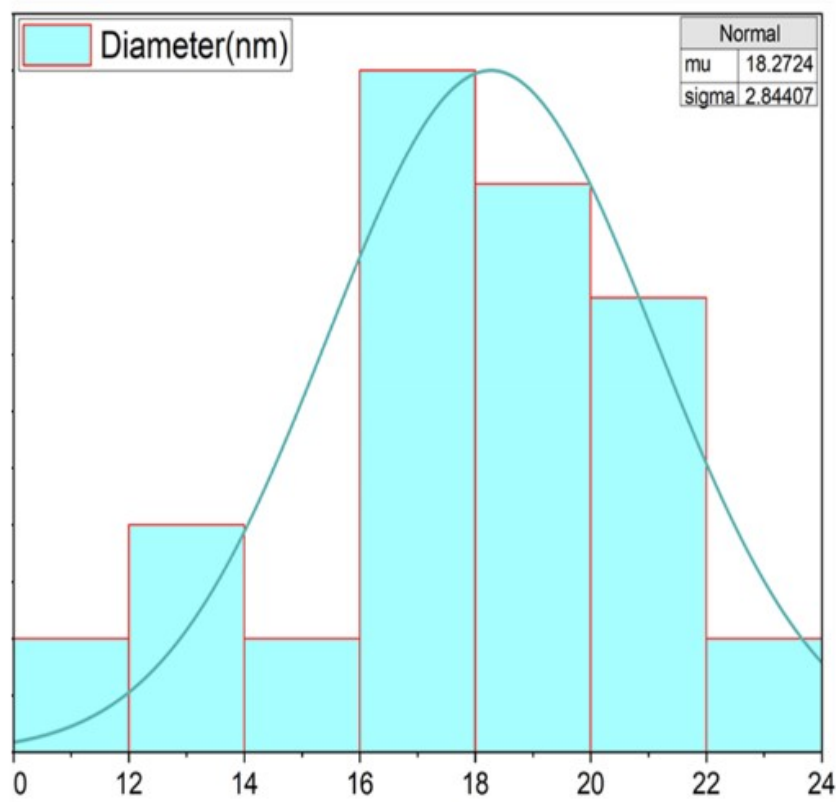


Fig. S1 Average particle size of nanotube formations.

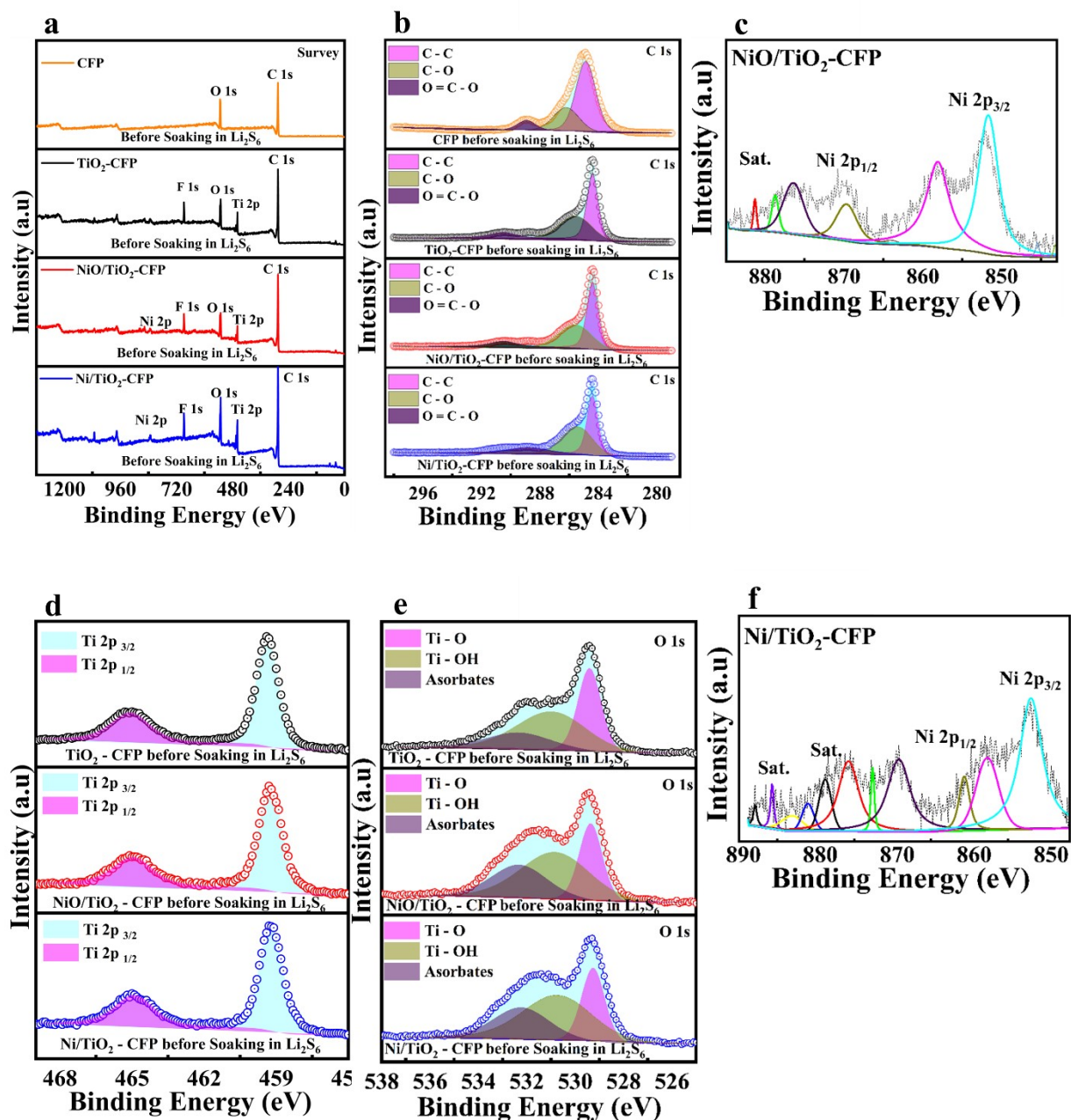


Fig. S2 XPS characterization of TiO₂-CFP, NiO/TiO₂-CFP, and Ni/TiO₂-CFP electrodes before soaking in Li₂S₆ solution: (a) survey spectra of all electrodes, (b) C 1s, (c) Ni 2p, (d) O 1s, (e) Ti 2p and (f) Ni 2p

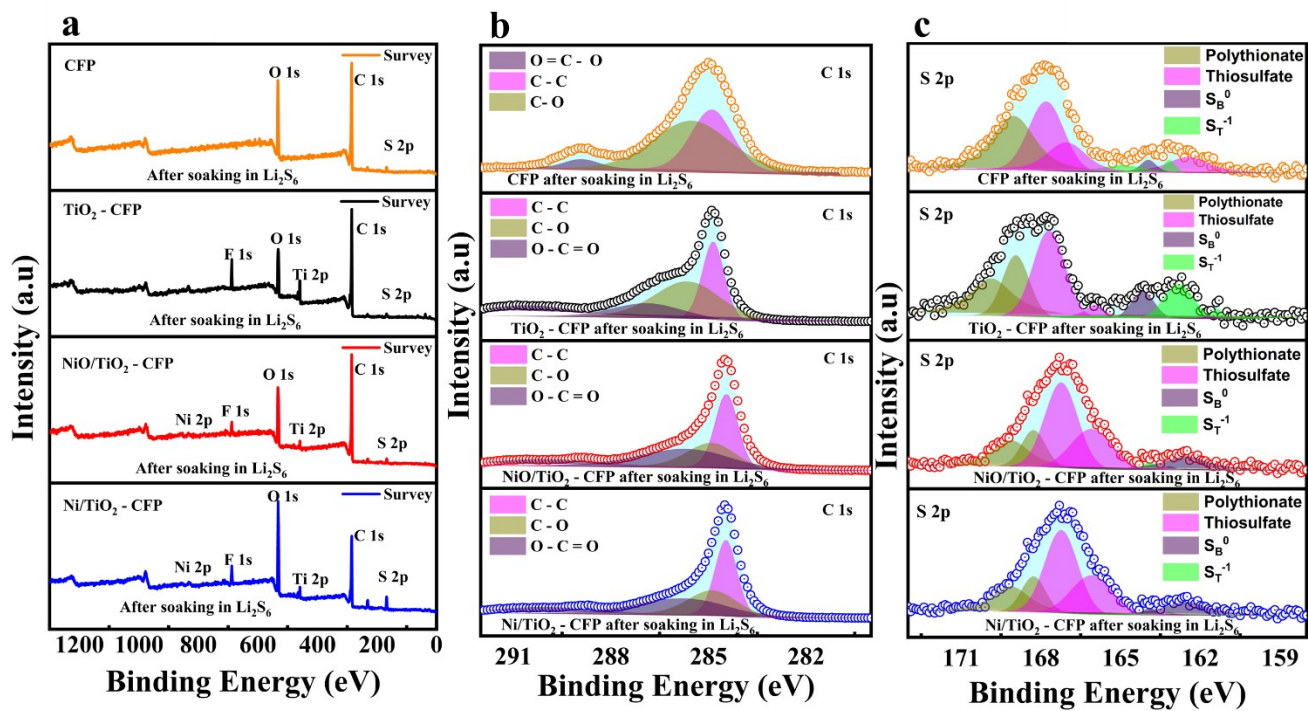


Fig. S3 XPS characterization of TiO_2 -CFP, NiO/TiO_2 -CFP, and Ni/TiO_2 -CFP electrodes after soaking in Li_2S_6 solution (a) survey spectra of all electrodes, (b) C 1s and (c) S 2p.

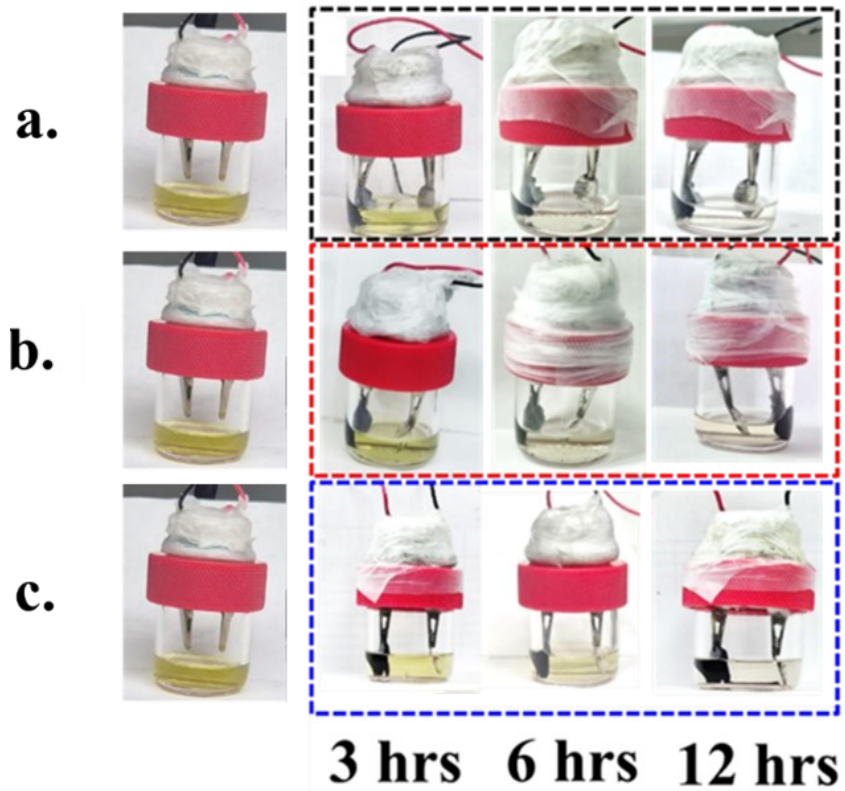


Fig. S4 Beaker cell test of TiO_2 based electrodes: (a) TiO_2 -CFP electrodes at 3, 6 and 12 h respectively, (b) NiO/TiO_2 -CFP electrodes at 3, 6 and 12 hrs respectively and (c) Ni/TiO_2 -CFP electrodes at 3, 6 and 12 hrs respectively.

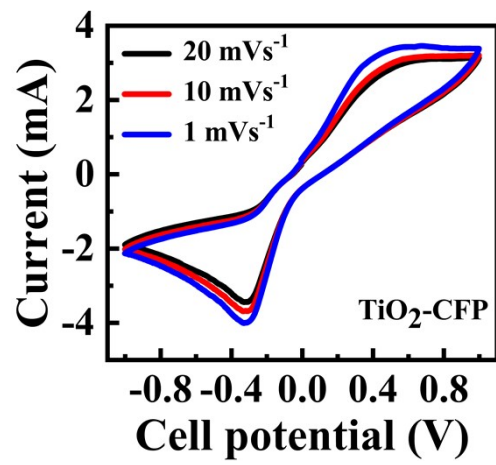


Fig. S5 CV curves of Li_2S_6 symmetric cells with TiO_2 -CFP electrode at varying scan rates: 1 mV s^{-1} , 10 mV s^{-1} , 20 mV s^{-1} .

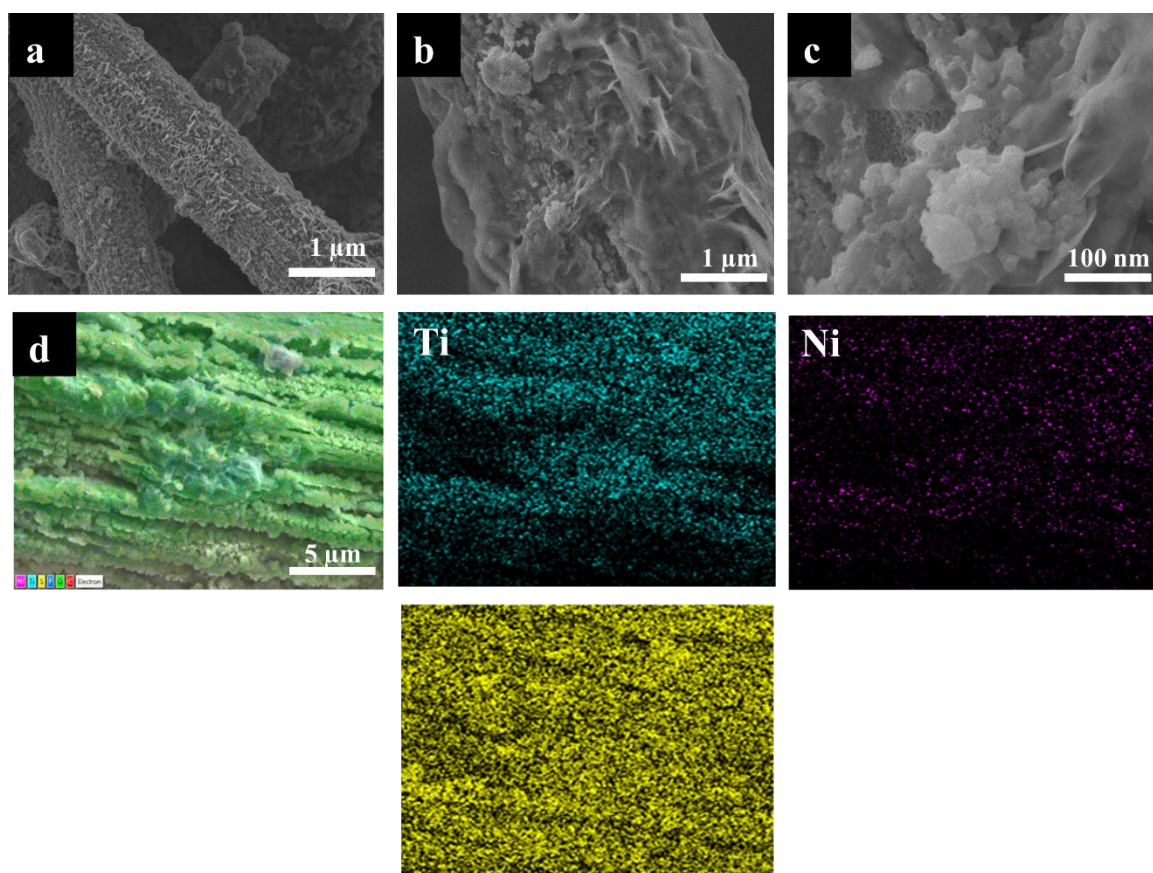


Fig. S6 SEM image of Ni/TiO₂-CFP electrode after cycling at (a) 1 μm, (b) 1 μm, (c) 100 nm; EDS mappings of Ni/TiO₂ electrode (d) 5 μm.