

## Electronic Supplementary Information (ESI)

### Facile preparation of transition metal oxide-metal composites with unique nanostructures and their electrochemical performance as energy storage material

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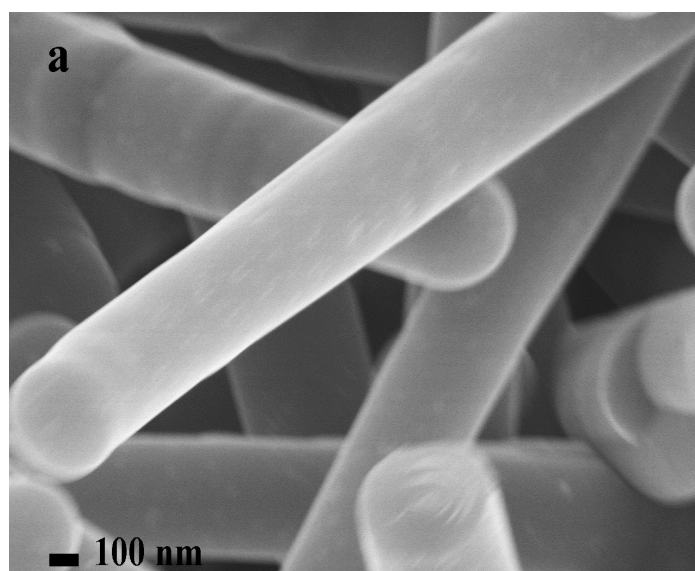
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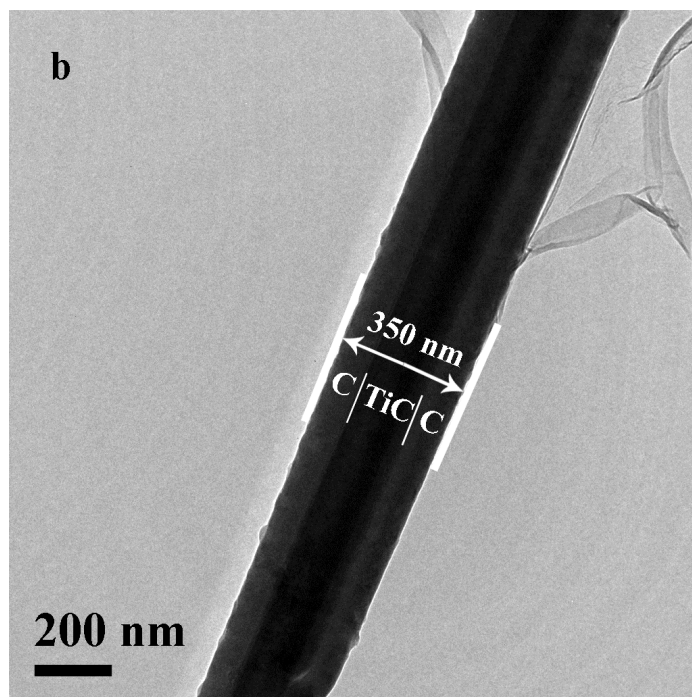


Figure S1 SEM (a) and TEM (b) images of a single C@TiC nanowire.

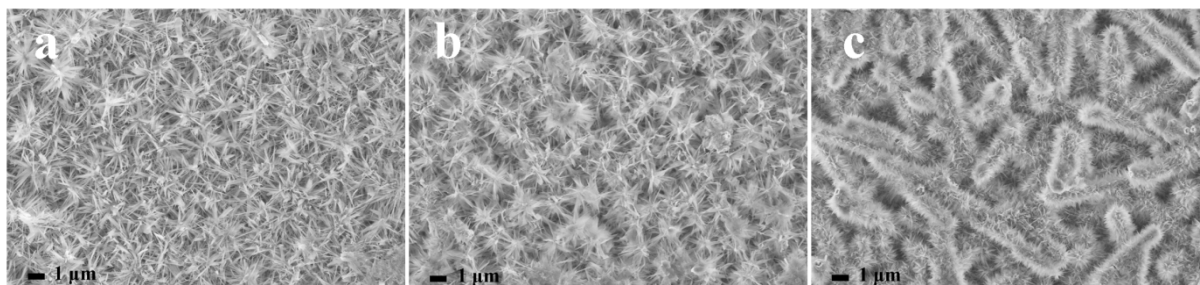
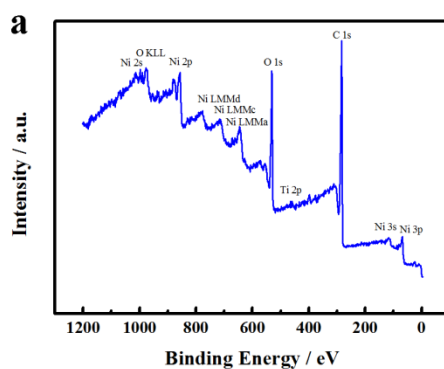


Figure S2. SEM images of the NiO-Ni@C@TiC nanoarray electrodes prepared with different electrodeposition time, (a) 10 min, (b) 15 min and (c) 20 min.



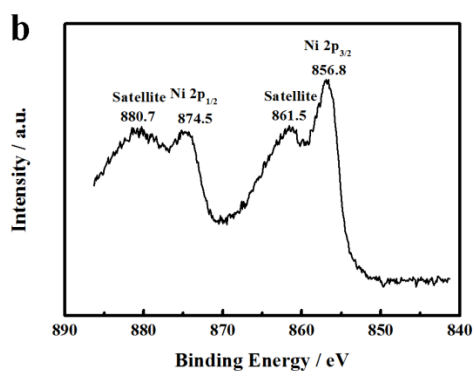


Figure S3 XPS survey spectra of NiO-Ni@C@TiC nanoarray (a); Ni 2p XPS spectra of NiO-Ni@C@TiC nanoarray (b).

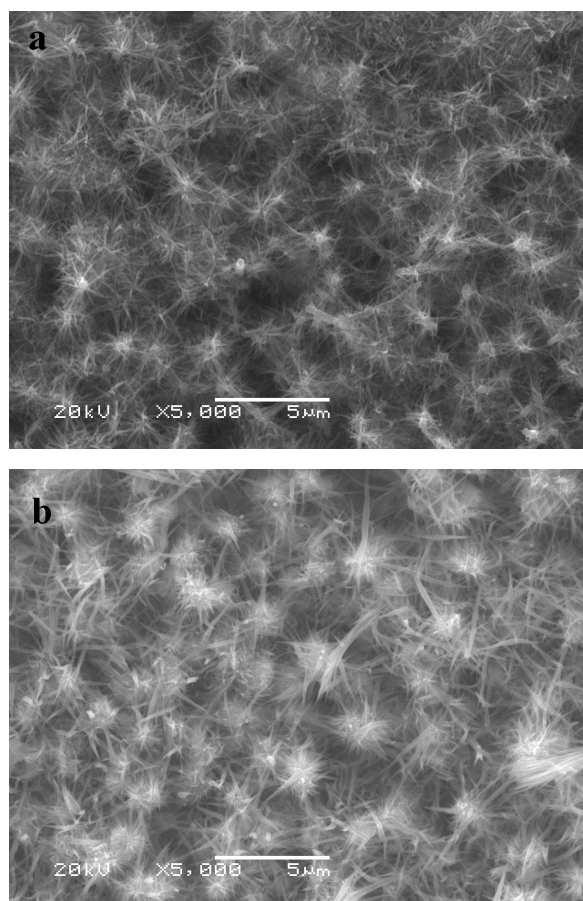


Figure S4. SEM images of Co<sub>3</sub>O<sub>4</sub>-Co@C@TiC (a) and MnO<sub>2</sub>-Mn@C@TiC (b) nanoarray electrodes.

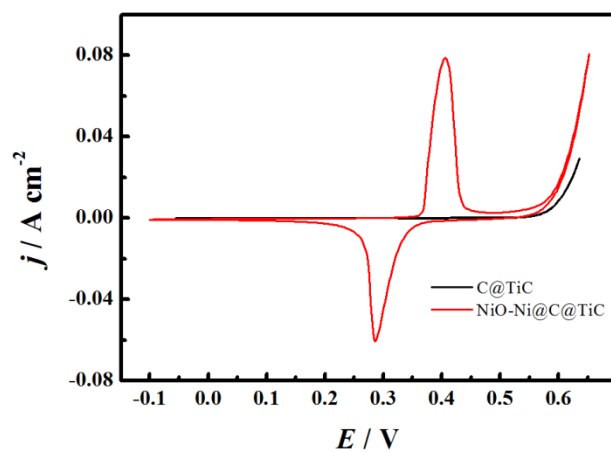


Figure S5 CV curves of NiO-Ni@C@TiC nanoarray electrode and C@TiC substrate at a scan rate  $10 \text{ mV s}^{-1}$ .

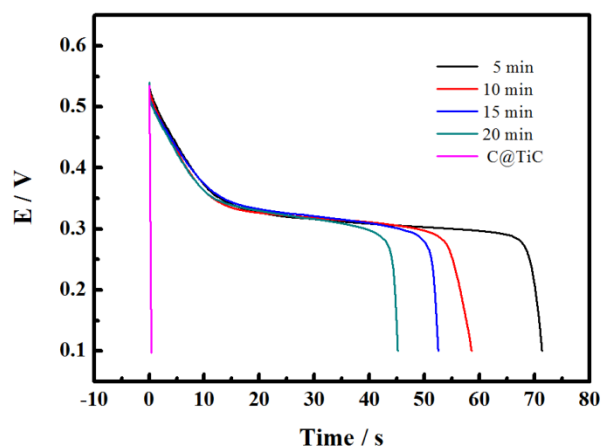


Figure S6 Galvanostatic discharge curves of the NiO-Ni@C@TiC nanoarray electrodes prepared with different electrodeposition time.

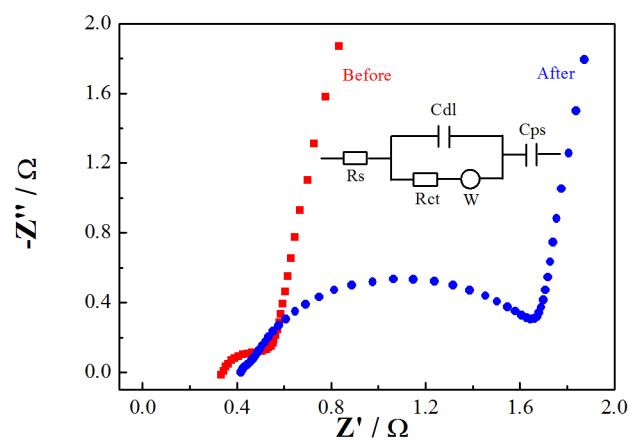


Figure S7 Electrochemical impedance spectra of the NiO-Ni@C@TiC nanoarray electrode before and after charge–discharge cycling