

**Preparation of nickel decorated and nitrogen-doped carbon
nanotubes for Highly Efficient Hydrogen Evolution Reaction by
Hydrothermal Method**

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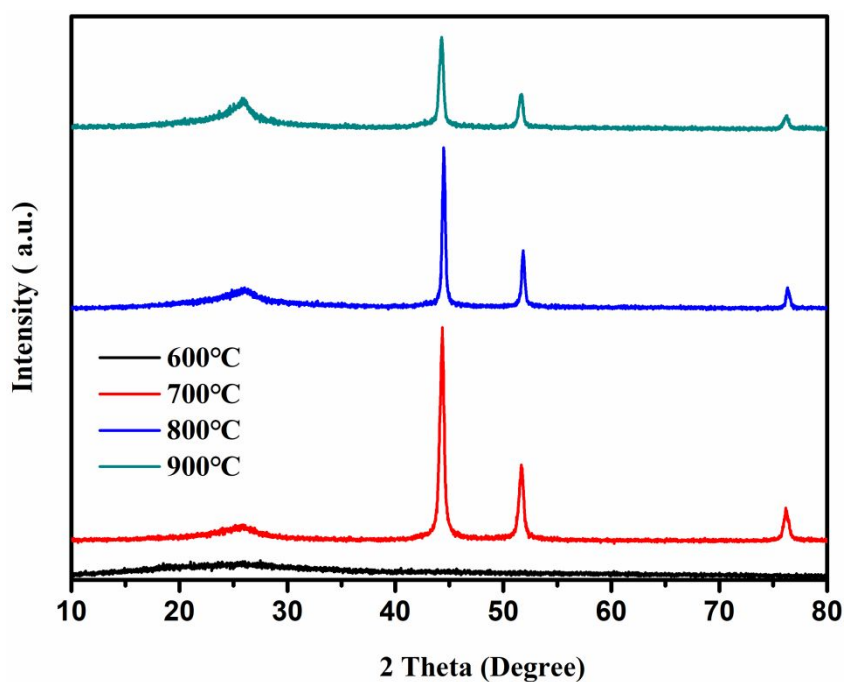


Figure S1. The XRD patterns of Ni-NCNT in different temperatures

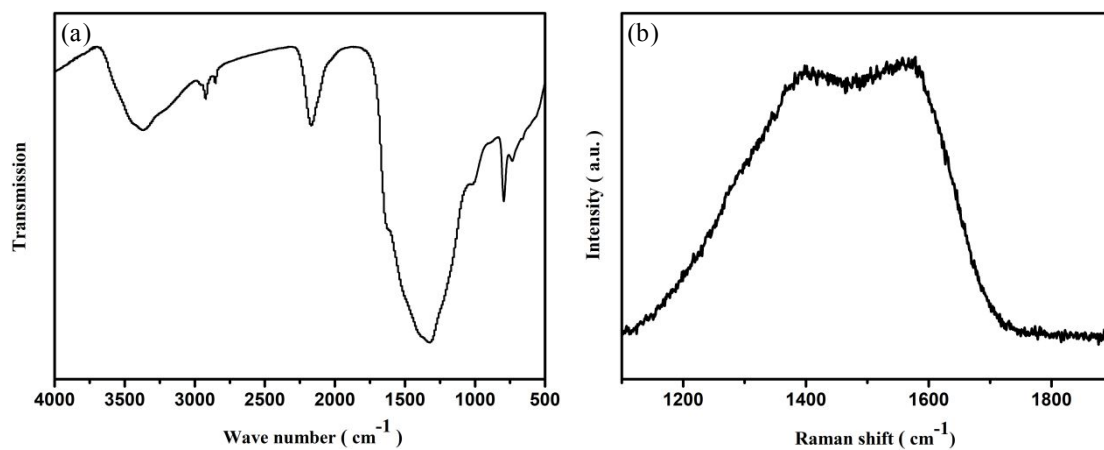


Figure S2. FTIR (a) and Raman (b) of Ni-NCNT in 600 °C

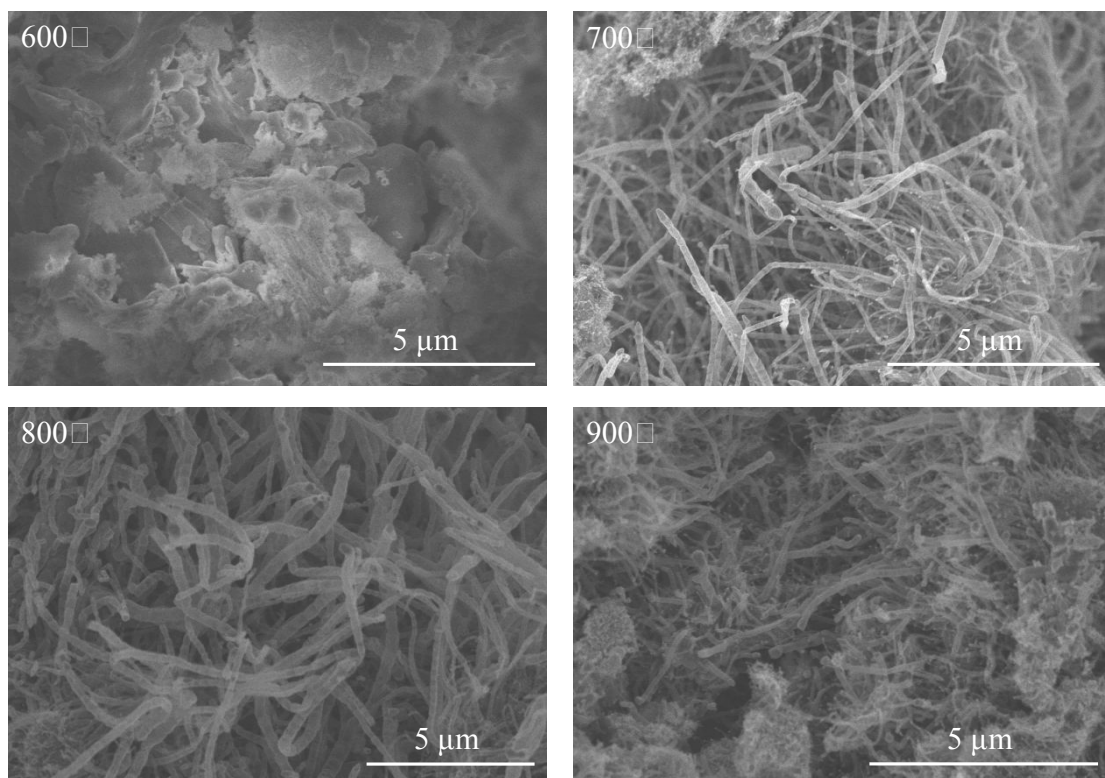


Figure S3. The SEM images of Ni-NCNT in different temperatures

Table 1. Element composition of the sample in 700 °C by EDS

Element	Weight percentage	atomic percentage
C K	71.38	86.92
N K	3.52	3.68
O K	4.73	4.32
Ni K	20.37	5.07

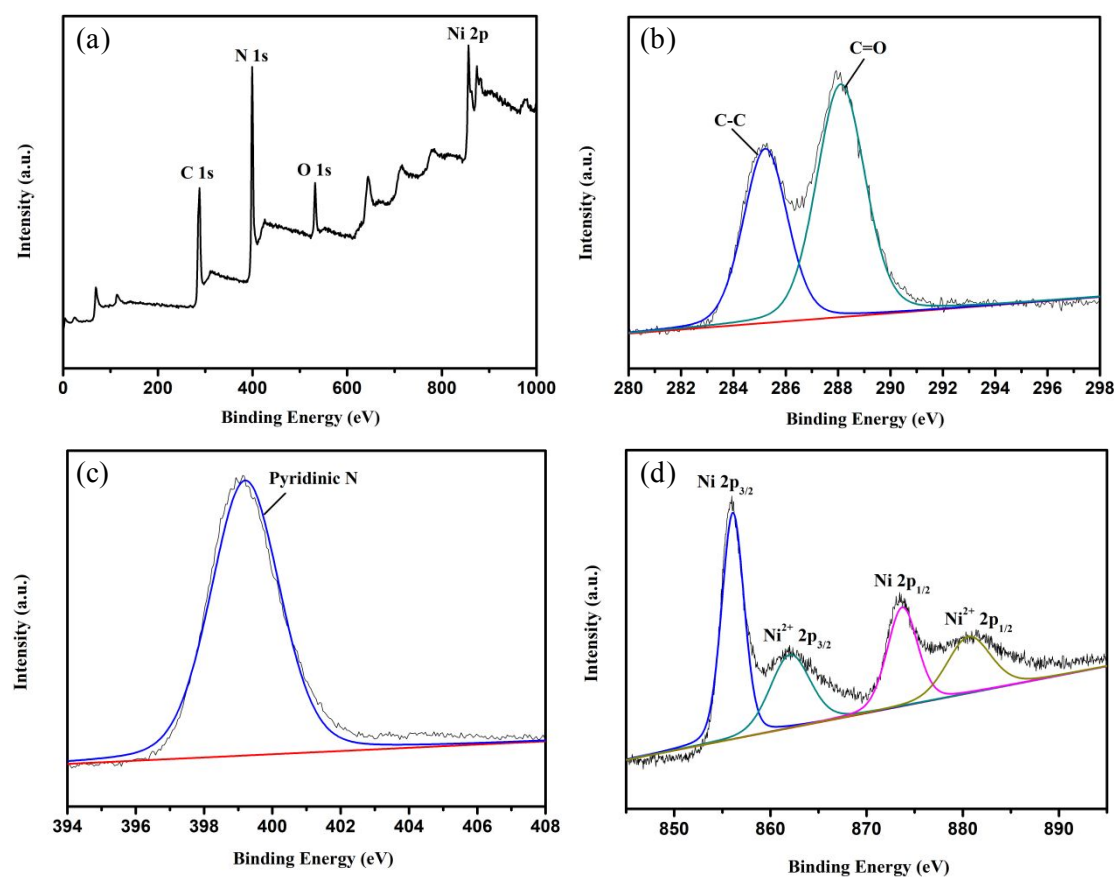


Figure S4. XPS survey (a), C 1s (b), N 1s (c) and Ni 2p (d) spectrum of Ni-NCNT (600 °C).

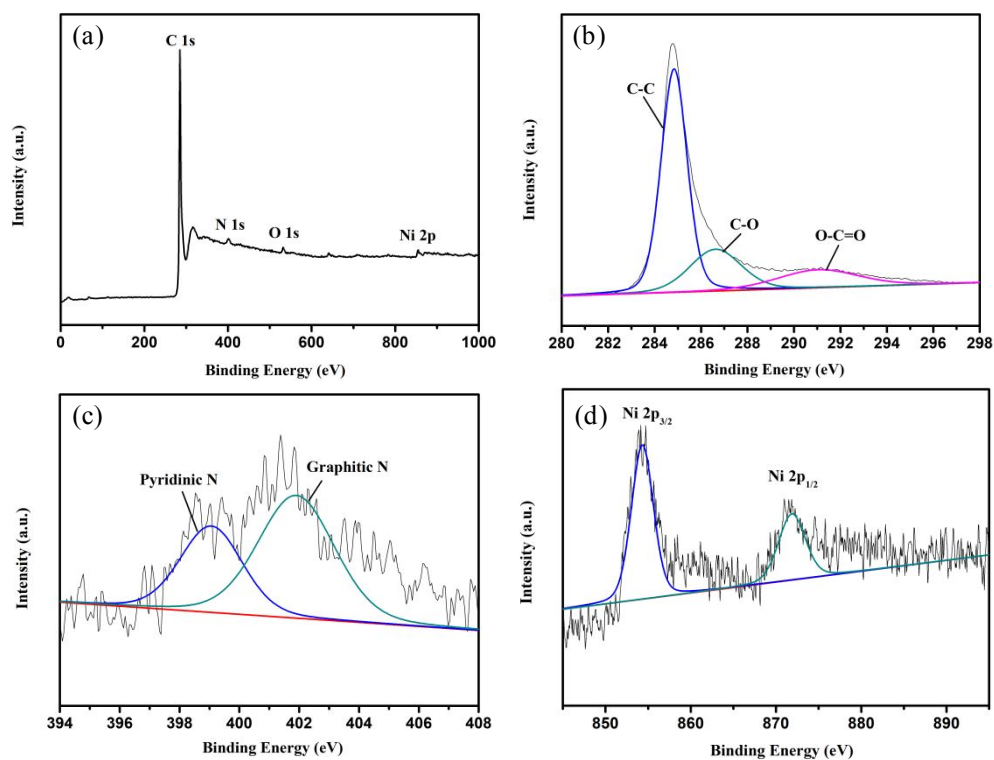


Figure S5. XPS survey (a), C 1s (b), N 1s (c) and Ni 2p (d) spectrum of Ni-NCNT (800 °C).

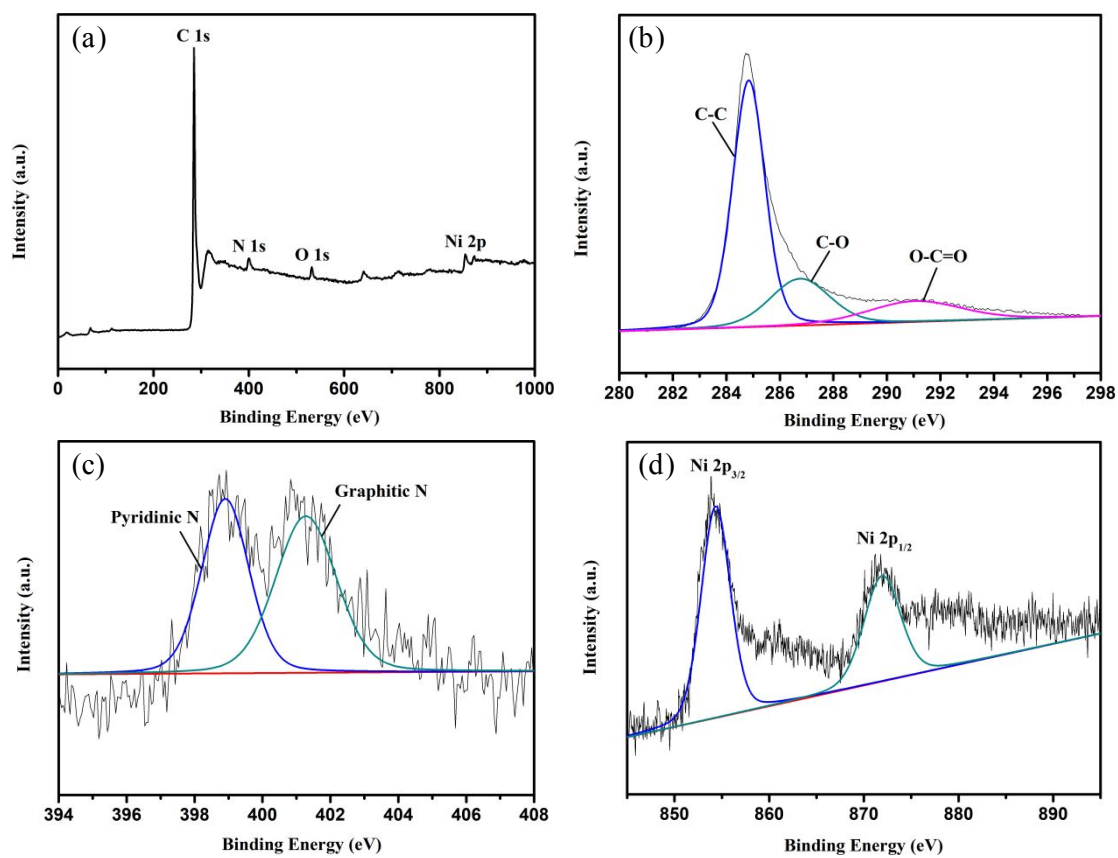


Figure S6. XPS survey (a), C 1s (b), N 1s (c) and Ni 2p (d) spectrum of Ni-NCNT (900 °C).

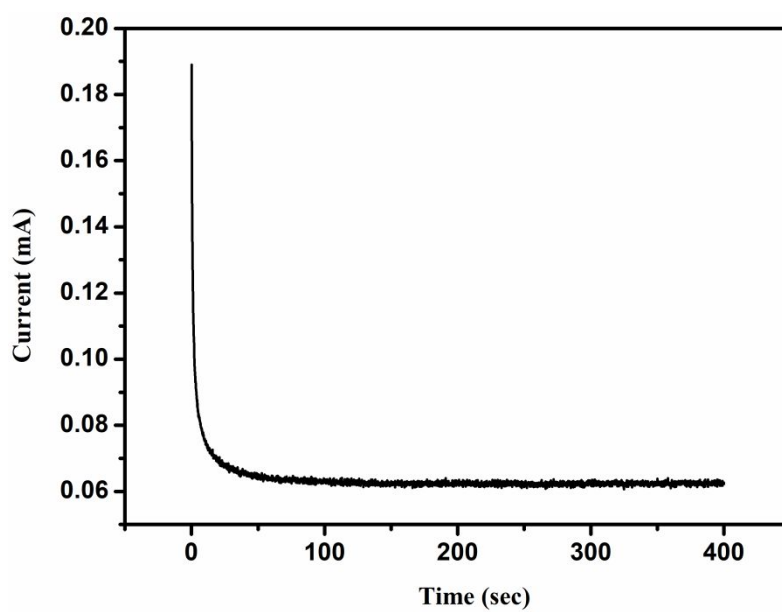


Figure S7. i-t curves of Ni-NCNT in 700 °C

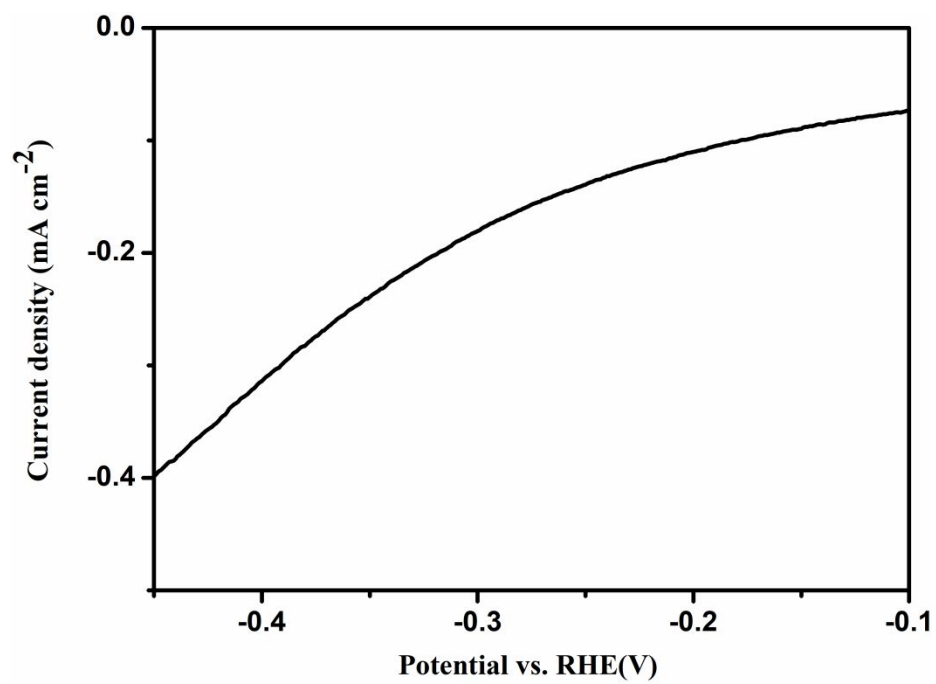


Figure S8. LSV curves of Ni-NCNT in 600 °C

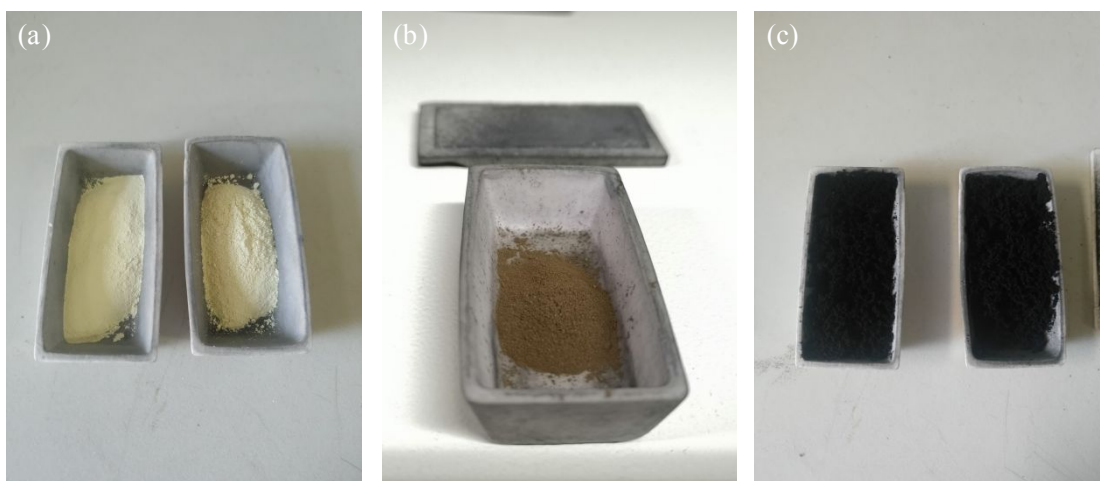
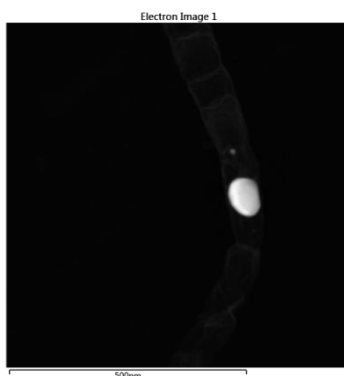


Figure S9. precursor (a), 600 °C (b) and 700 °C (c) of Ni-NCNT



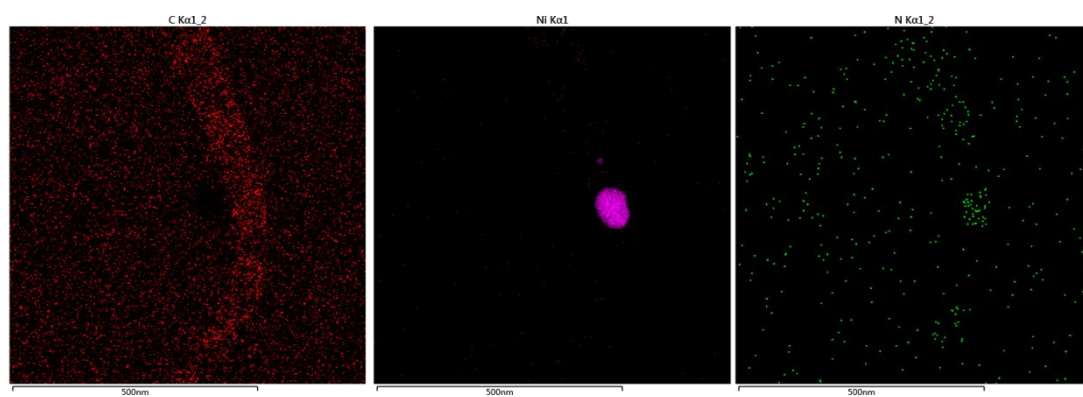


Figure S10. TEM image and EDS mapping of Ni-NCNT