

Supporting Information

Improved cycling stability of NiS₂ cathode through designing “kiwano” hollow structure

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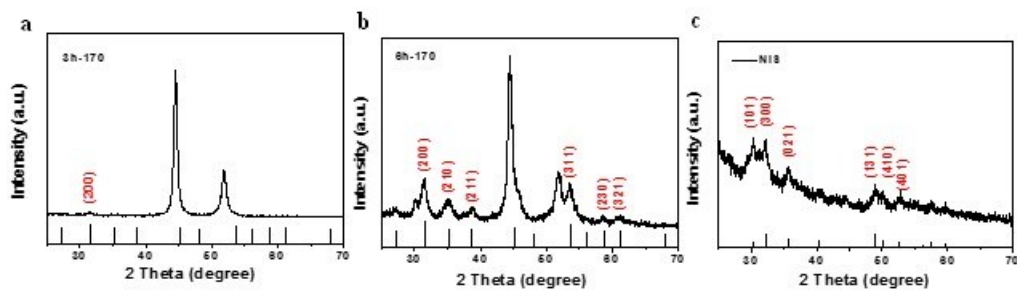


Fig. S1 XRD patterns of NiS₂ samples at 170 °C with the different reaction time: (a) 3h and (b) 6 h. (c) XRD pattern of a phase-converted NiS from the initial NiS₂ after long cycles.

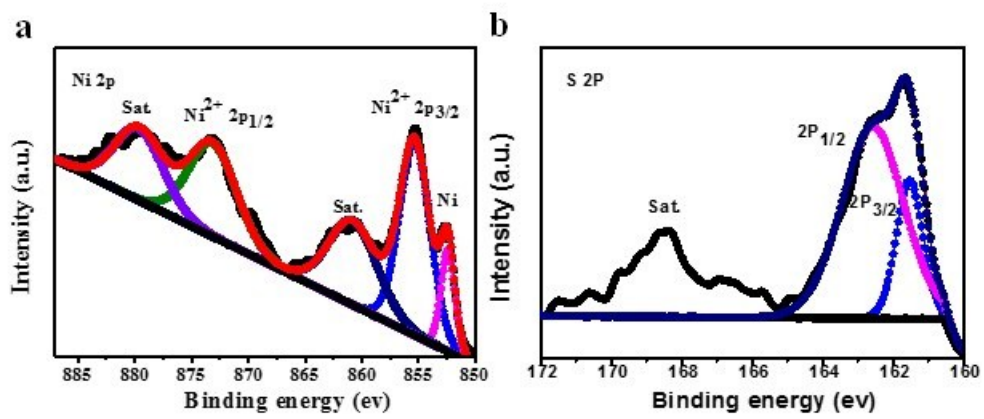


Fig. S2 (a-b) XPS profiles of Ni 2p and S 2p for NiS₂.

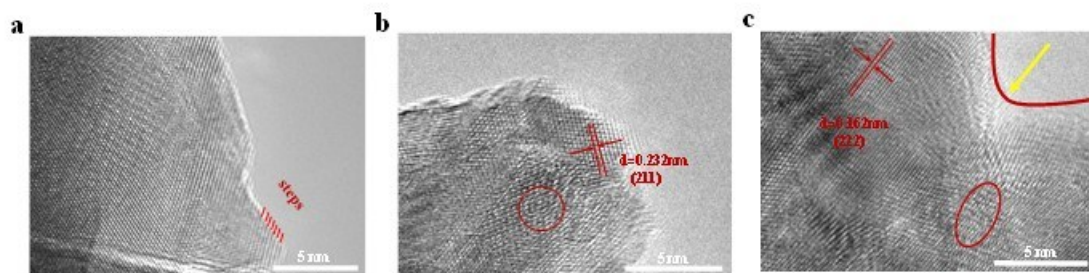


Fig. S3 (a-c) HRTEM images of the NiS₂ hollow spheres.

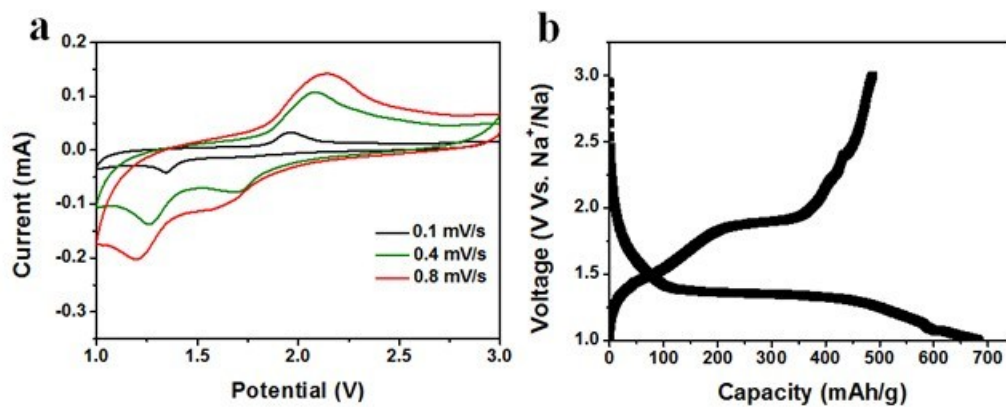


Fig. S4 (a) CV curves of a NiS₂ electrode in the voltage window of 1.0–3.0 V at a scan rate of 0.1 mV/s, 0.4 mV/s and 0.8 mV/s after long cycles. (b) The galvanostatic charge/discharge profiles of a NiS₂ electrode in the voltage window of 1.0–3.0 V at 50 mA/g.

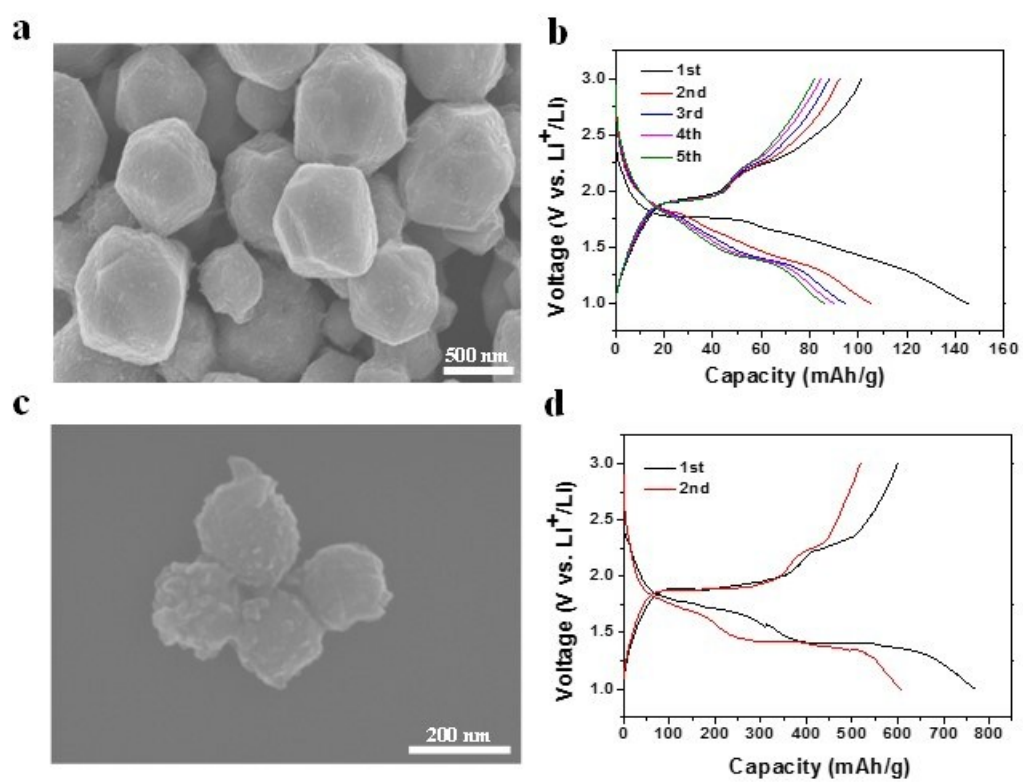


Fig. S5 The SEM images and the galvanostatic charge/discharge profiles of NiS₂ samples prepared at 170 °C with the different reaction time: (a-b) 3 h and (c-d) 6 h.

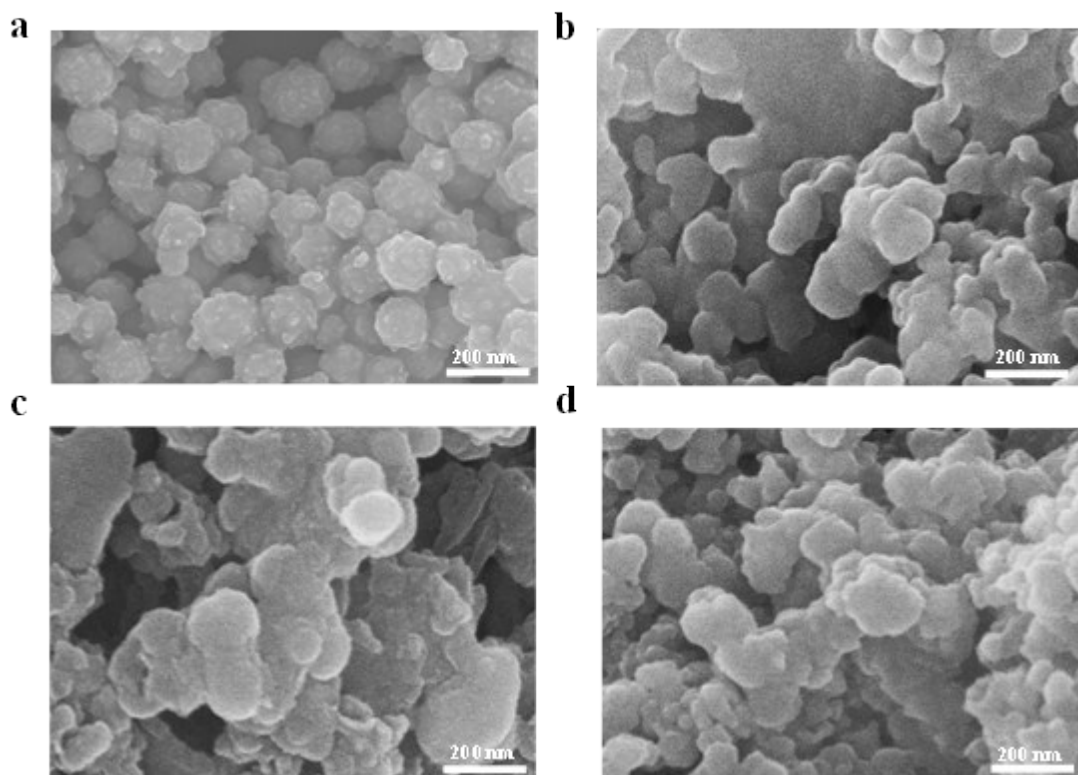


Fig. S6 (a) SEM image of the NiS₂ hollow spheres before cycles. (b-d) SEM images of a NiS₂ electrode material after 10, 50, 100 cycles.

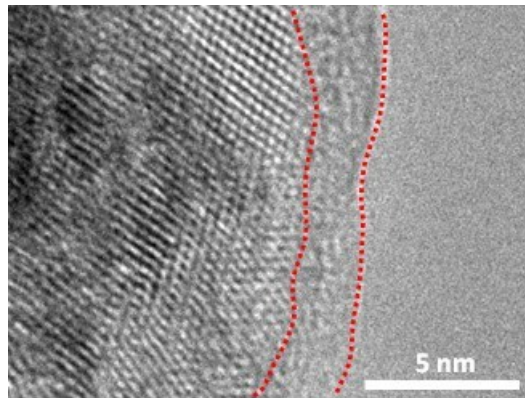


Fig. S7 HRTEM image of the NiS₂ surface after first lithiation.

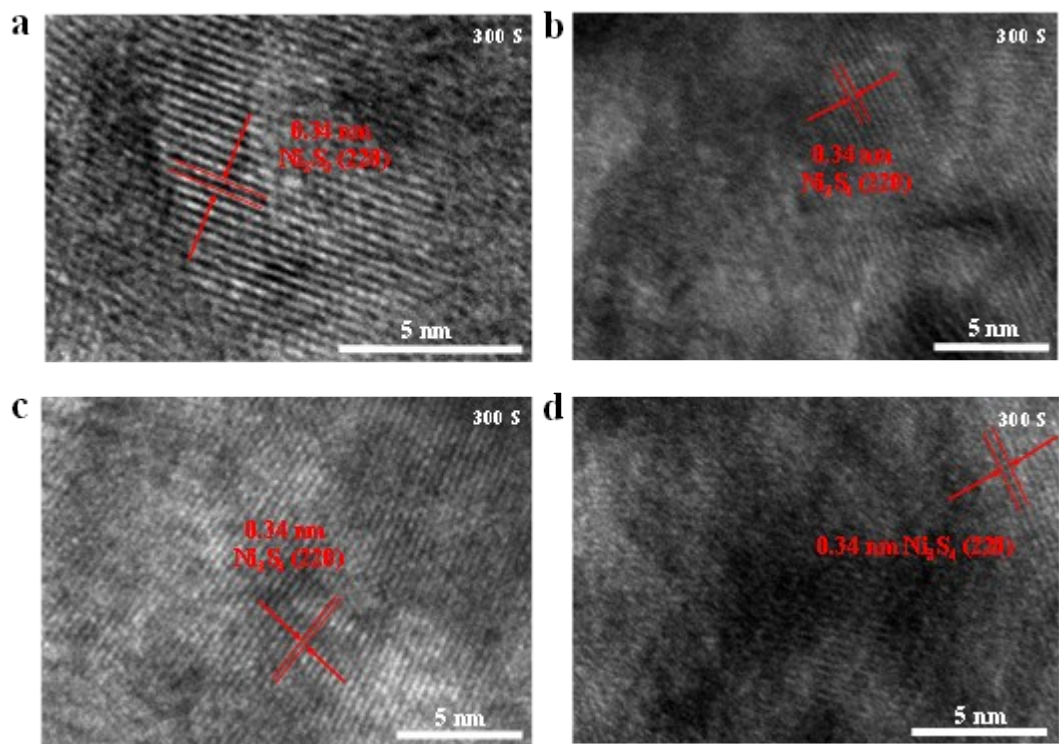


Fig. S8 HRTEM images of the different lithiated NiS_2 particles after the first lithiation for 300 s as observed via *in situ* TEM.

Notes and references

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