## **Supplementary Information**

## Novel Flower-like Nickel Sulfide as an Efficient Electrocatalyst for Non-aqueous Lithium-Air Batteries

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Figure S1 SEM images of the as-prepared f-NiS catalysts



Figure S2 EDX of the as-prepared f-NiS catalyst



Figure S3 SEM images of the as-prepared r-NiS catalysts



**Figure S4** Terminal voltages versus cycle number for f-NiS (a, b, c) and r-NiS (d, e, f) based electrodes with a controlled capacity of 900 mA h  $g^{-1}$  at various current densities (75 (a, d),150 (b, e) and 200 (c, f) mA  $g^{-1}$ )



**Figure S5** Discharge-charge profiles and terminal voltages of LABs with pure Super P cathode versus cycle number at various current densities (75 (a, d), 150 (b, e) and 200 (c, f) mA  $g^{-1}$ )



Figure S6 XRD patterns of fresh, discharged and recharged pure Super P based cathodes



Figure S7 SEM images of fresh electrodes: f-NiS (a), r-NiS (b) and Super P (c)



Figure S8 SEM images of pure Super P based cathodes: discharged (a) and recharged (b).