Electronic Supplementary Information (ESI) for New Journal of Chemistry

**Polyhedral Fe$_3$O$_4$ nanoparticles for lithium ion storage**

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Figure S1. Nitrogen adsorption–desorption isotherms for Fe$_3$O$_4$ nanoparticles

Figure S2. (a) TEM image of the Fe$_3$O$_4$ nanoparticles after 20 cycles at 100 mA h g$^{-1}$, (b) EDS spectrum of the Fe$_3$O$_4$ nanoparticles after cycling, showing the chemical composition of the sample. Carbon and copper are from the copper grid.