Supplementary Information

Silicon/polypyrrole nanocomposite wrapped with graphene for lithium ion anodes

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Thermogravimetric analysis was performed to estimate the Si content in the PPy/SiNPs composite as shown in Figure S1. Upon heating up to 1000 °C under an air atmosphere, SiNPs has an increase of 46.7 wt.% in weight due to the partial oxidation of Si particles; Pure PPy gel has totally burned at a temperature range from 650-700 °C with a residue of 7.8 wt.%. For the TGA behavior of PPy/SiNPs, the weight percentage of PPy/SiNPs drops to the minimum with a value of 83.9 wt. % at 700°C, due to the complete burning of the coated PPy hydrogel. Then the SiNPs immediately start oxidation in air. Hence, 700 °C is assumed to be critical temperature for estimation. The Si content in the PPy/SiNPs is calculated to be 70.3 wt. % by using PPy/SiNPs retention (83.9 wt. %) subtracting the retained weight of PPy (7.8 wt. %) and the slightly increased weight of Si (5.8 wt. %) at 700 °C.



Figure S1. TGA curves of SiNPs, pure PPy and PPy/SiNPs/rGO composite.



Figure S2. (a) Galvanostatic charge/discharge profiles of C-rates test measure from 0.1 to 2.1 A g^{-1} . (b) Charge/discharge curves at 2.1 A g^{-1} .