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## **Electronic Supporting Information**

## Tailoring the chemistry of blend copolymer boosting the electrochemical performance of Si-based Anodes for Lithium Ion Battery

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before



after

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Figure S3. TGA analysis of pure PVP in air and pure PAN in air and nitrogen.



**Figure S4.** Cyclic voltammetry of Si electrode treated at 450 °C and measured at 0.05 mV s<sup>-1</sup> scan rate between 0.01 V and 1.10 V versus Li/Li<sup>+</sup>.



Figure S5. Galvanostatic voltage profile of the Si electrode treated at 450 °C cycled at different current rates.



Figure S6. Rate capability behaviour of Si/PAN electrode treated at 750 °C.



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**Figure S8.** EDS mapping after cycling of Si electrode treated at 750 °C: (a) STEM image of electrode material after being cycled for 600 cycles of charge/discharge, (b-d) the corresponding EDS mapping of the elements silicon, carbon, and oxygen.