Supporting Information

of

Electrochemical Lithiation Performance and Characterization of Silicon-Graphite Composites with Lithium, Sodium, Potassium, and Ammonium Polyacrylate Binders

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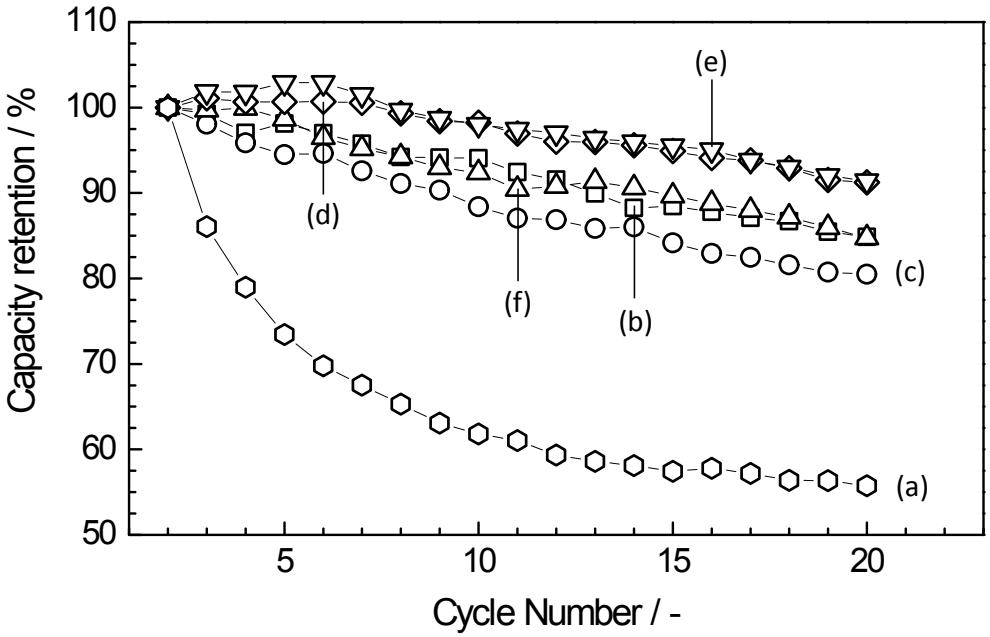

Figure S1 Relation between capacity retention ((n^{th} dis. Q / 2^{nd} dis. Q) × 100 (%, dis. Q = discharge capacity)) and cycle number of the Si / graphite electrodes with 10 wt% (a) PVdF, (b) PAH, (c) $PAH_{0.8}Na_{0.2}$, (d) $PAH_{0.4}Na_{0.6}$, (e) $PAH_{0.2}Na_{0.8}$ and (f) PANa binders.

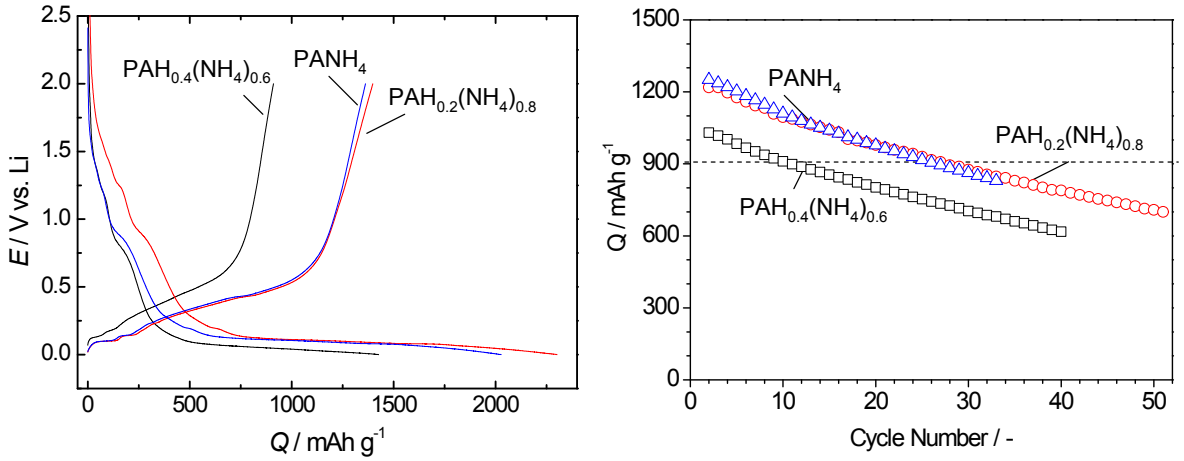

Figure S2 Initial reduction / oxidation curves (at 50 mA g^{-1} in a voltage range 2.0 – 0.0 V) of the Si / graphite electrodes prepared with 10 wt% $PAH_{0.4}(NH_4)_{0.6}$, $PAH_{0.2}(NH_4)_{0.8}$ and $PANH_4$ binders.

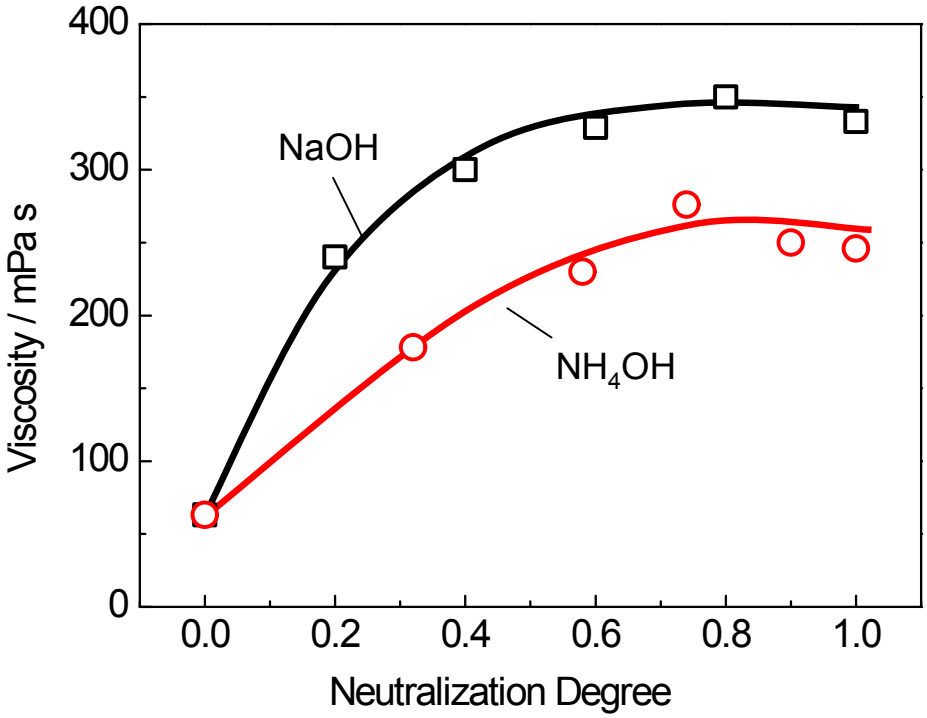

Figure S3 Variation of viscosity of PAH solution neutralized by 1 mol dm^{-3} ammonia aqueous solution (NH_4OH aqueous solution) in the similar way to NaOH. Viscosity change of NaOH-PAH neutralization is shown for comparison.

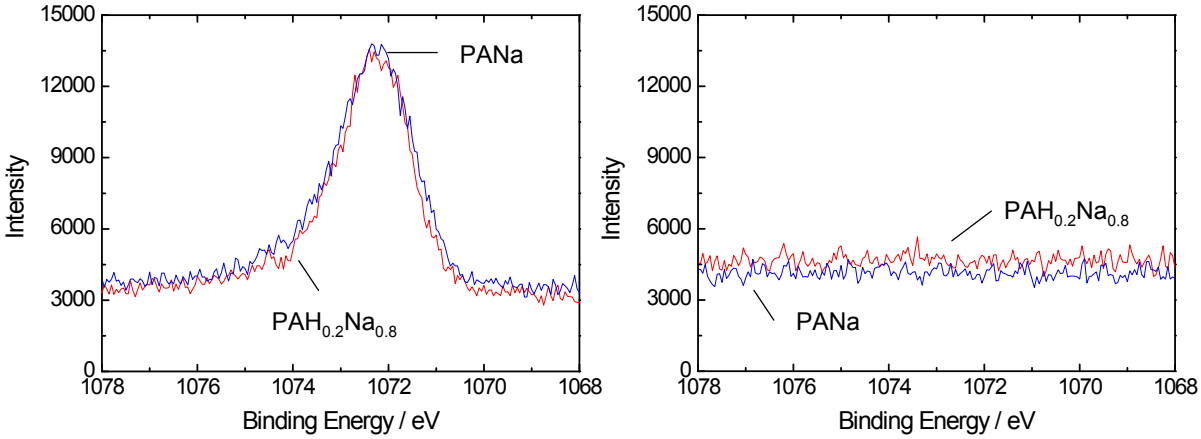

Figure S4 Na 1s HAX-PES spectra of the composite electrode (left) before cycle test and (right) after 10 cycles for $PAH_{0.2}Na_{0.8}$ and PANa electrode.