Supporting information

Coordinatively Cross-Linked Polymeric Network as Functional Binder for High-Performance Silicon Submicro-Particle Anodes in Lithium-Ion Batteries

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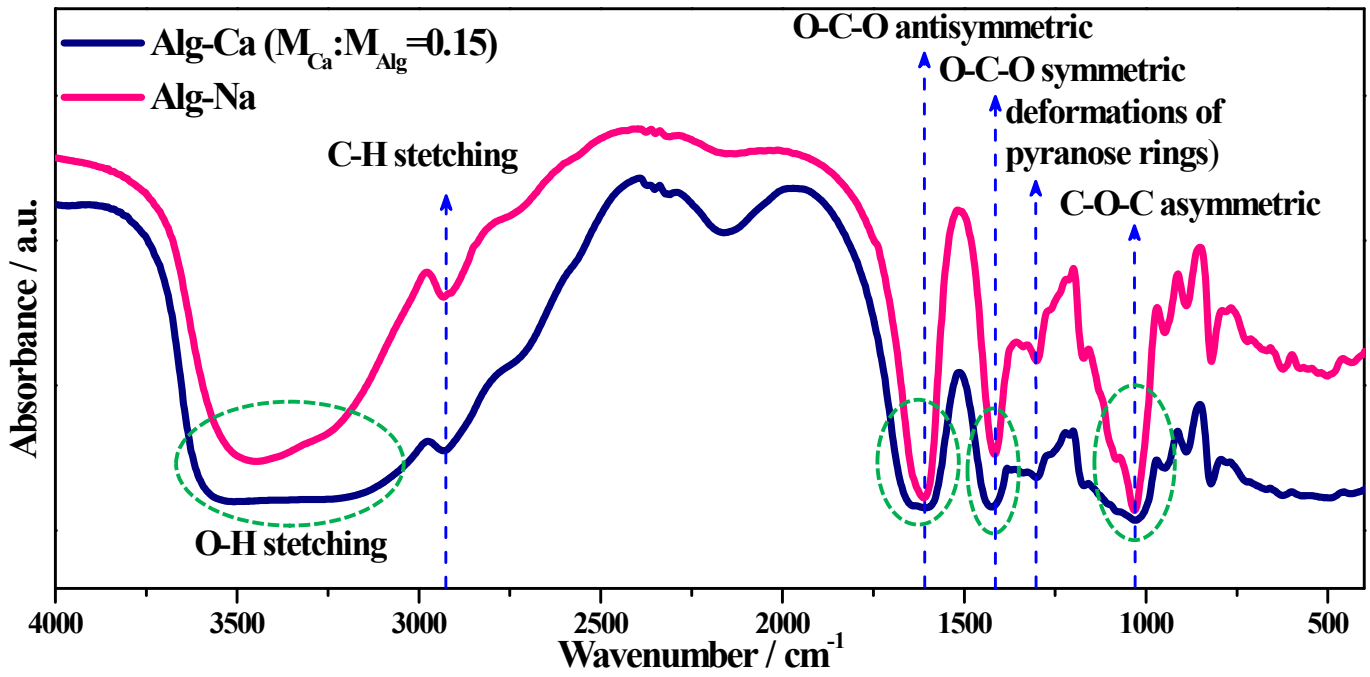

Figure S1. Fourier transform infrared spectra (FTIR) of the Na-alginate binder before and after cross-linked by additive Ca^{2+} cations.

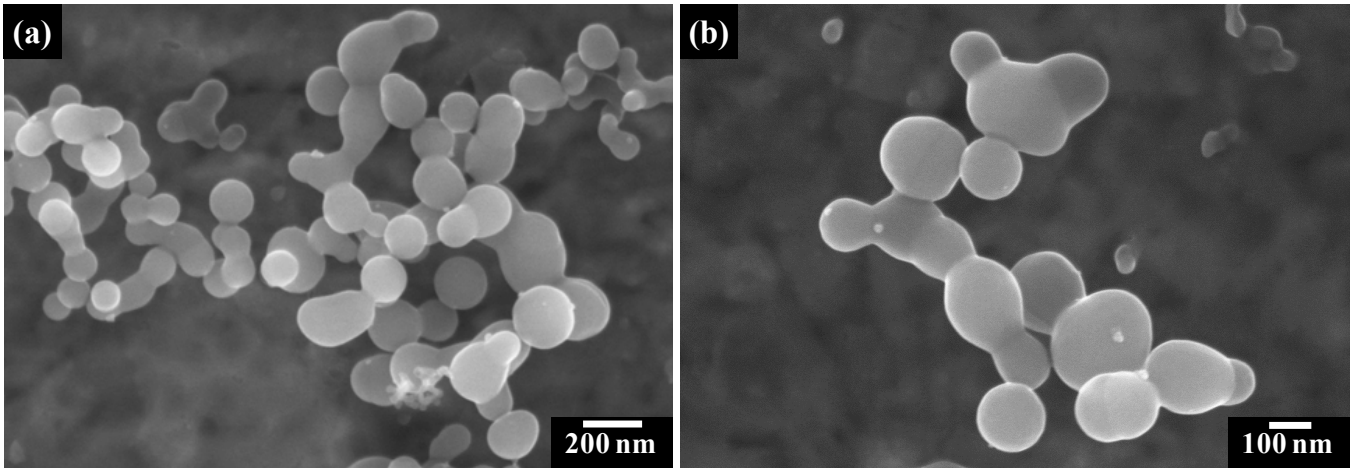

Figure S2. SEM images of commercial silicon submicro-particles (SiSMPs) used in our studies with different magnifications.

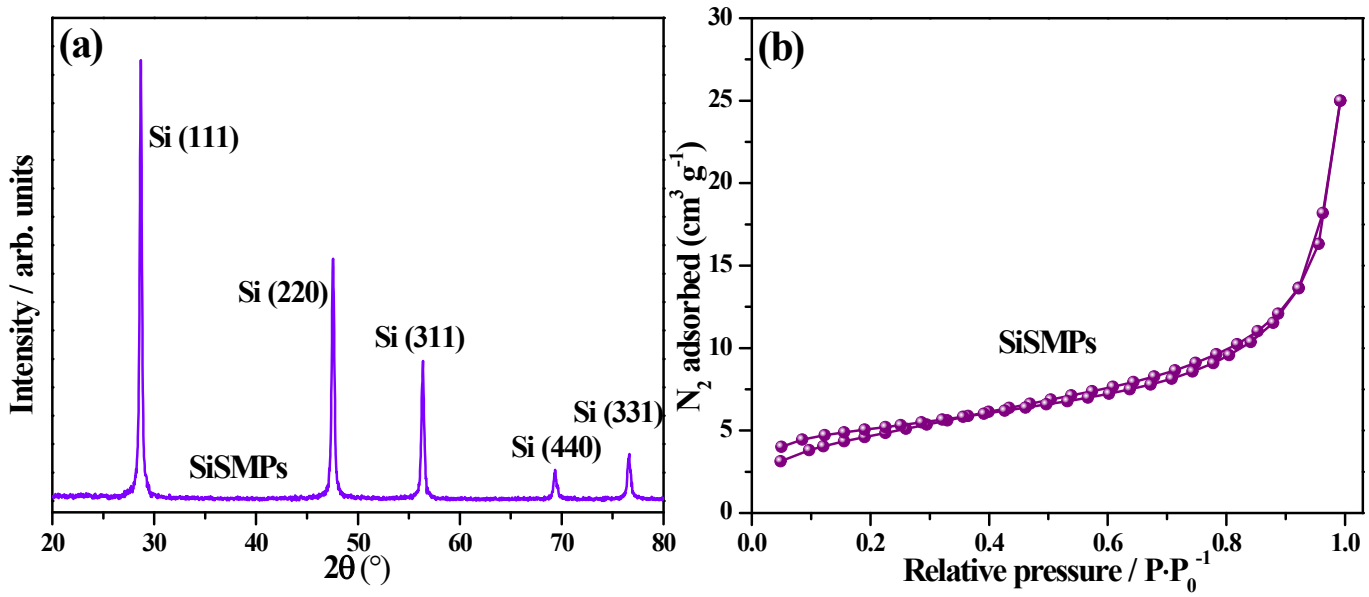

Figure S3. (a) X-ray diffraction pattern and (b) N_2 sorption isotherms of the commercial silicon submicro-particles (SiSMPs) used in this work.

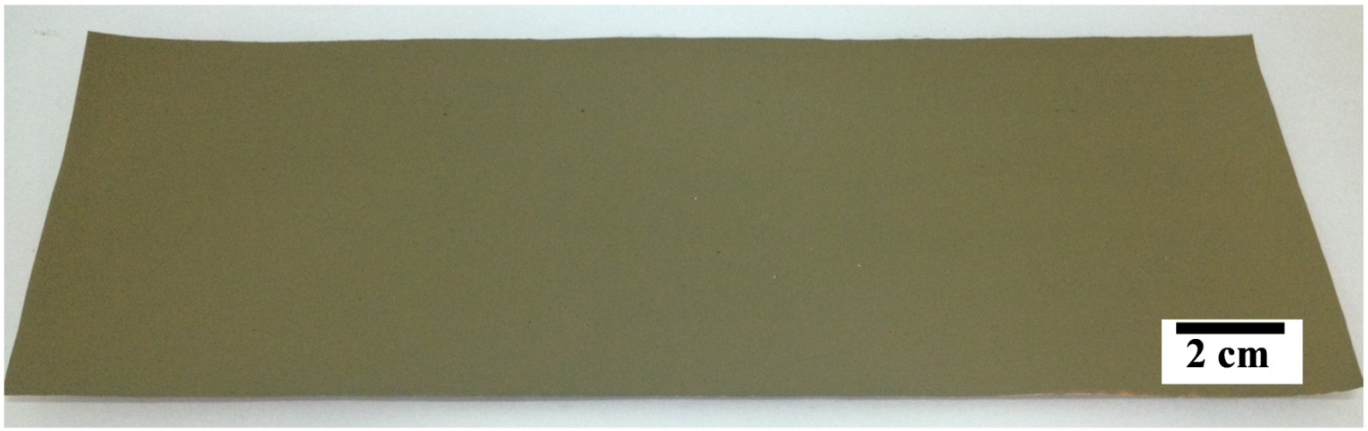

Figure S4. A digital photograph of a uniformly coated electrode film (7 cm × 23 cm) consisting of SiSMPs, Super P carbon black and 3D alginate network.

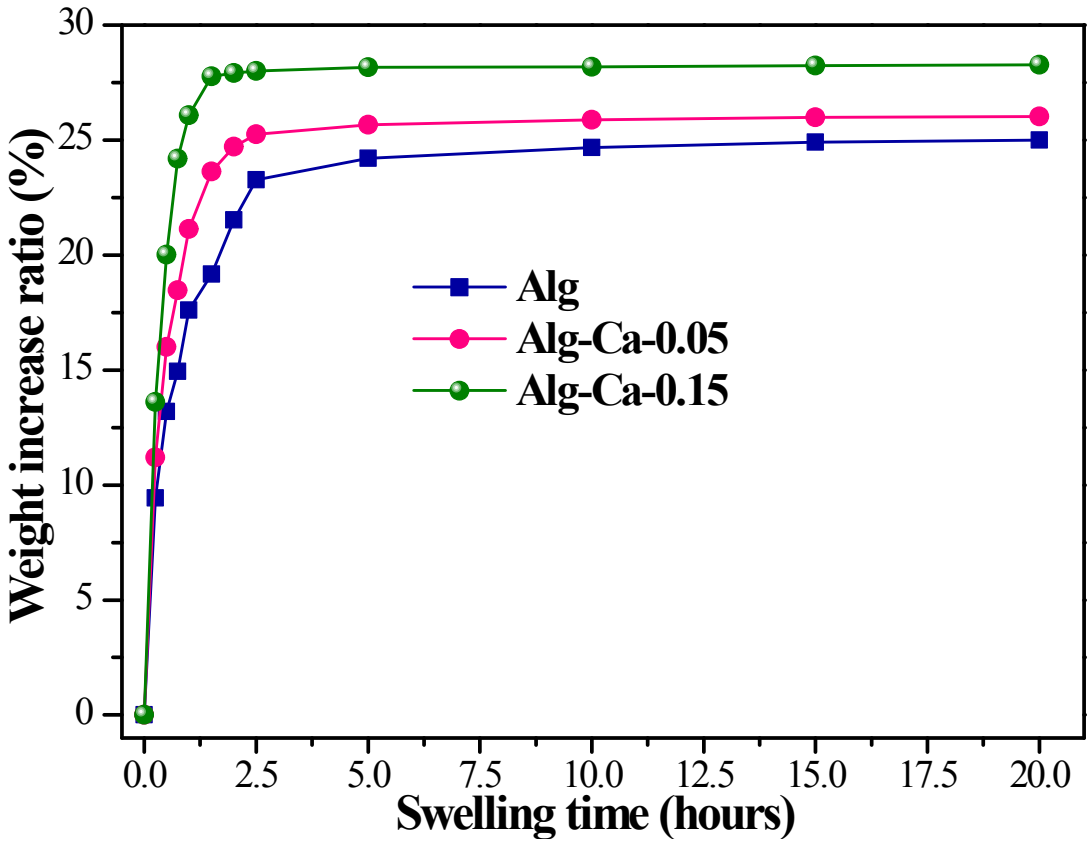

Figure S5. The swelling tests of pure alginate, Alg-Ca-0.05 and Alg-Ca-0.15 sheets in the 1 M $LiPF_6$ EC/DMC/EMC (1:1:1) electrolyte.

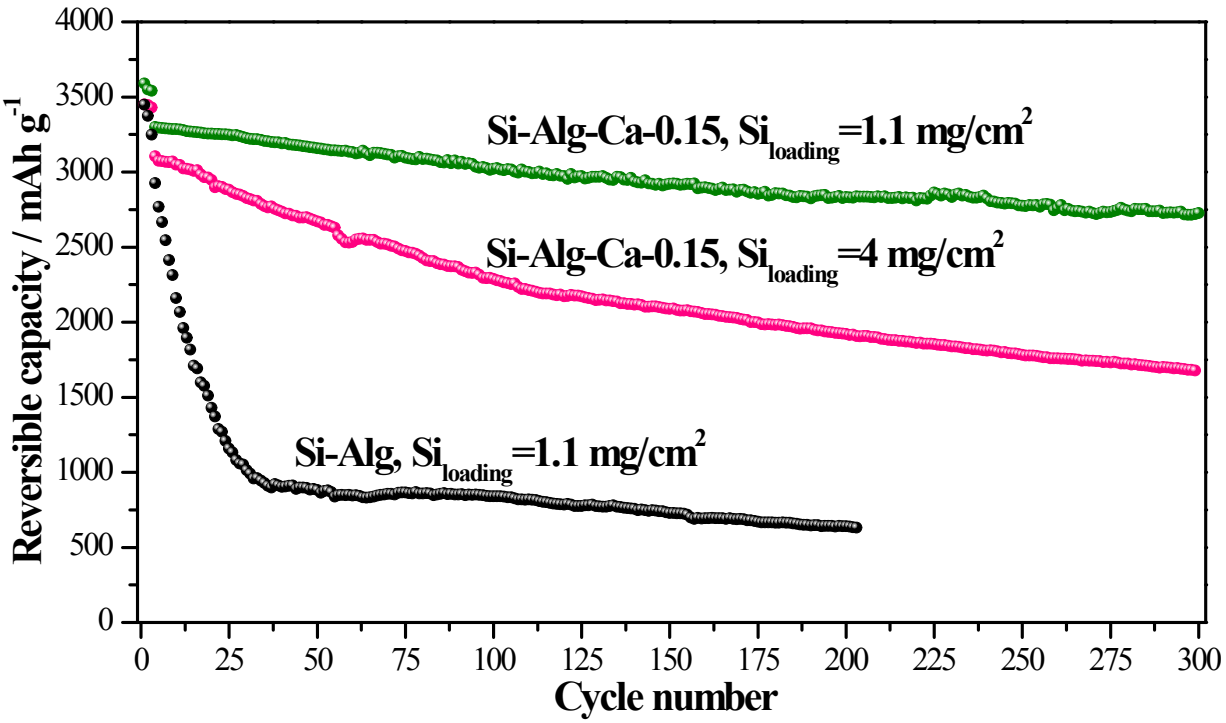

Figure S6. Plots of reversible charge capacity versus cycle number for the Si-Alg ($Si_{loading}$=1.1 mg/cm^2), Si-Alg-Ca-0.15 ($Si_{loading}$=1.1 mg/cm^2) and Si-Alg-Ca-0.15 ($Si_{loading}$=4 mg/cm^2) electrodes.