

Supplementary Information

Cross-linked Composite Gel Polymer Electrolyte using Mesoporous Methacrylate-Functionalized SiO₂ Nanoparticles for Lithium-Ion Polymer Batteries

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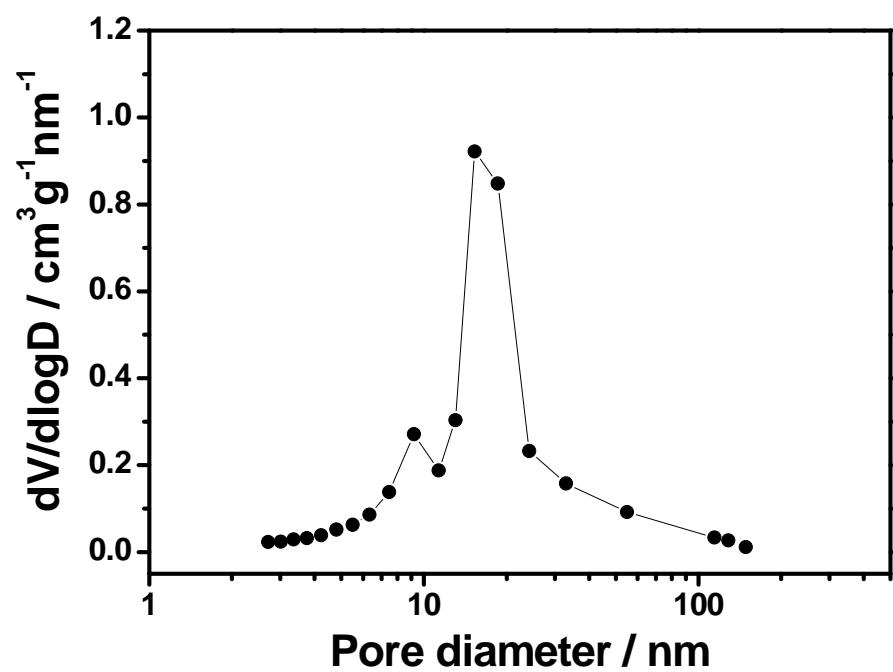


Figure S1. Pore size distribution of the mesoporous MA-SiO₂ particles.

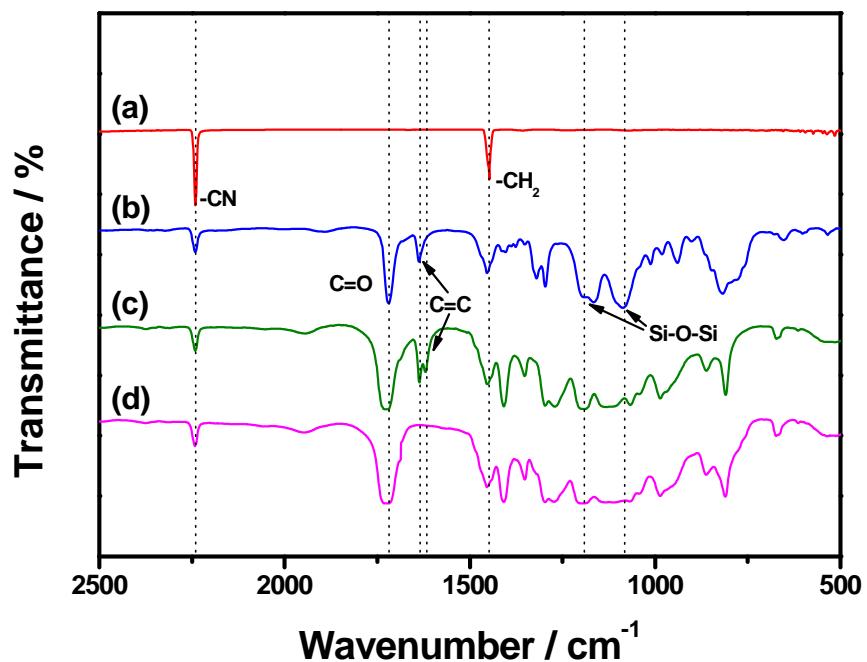


Figure S2. FT-IR spectra of (a) fibrous PAN membrane, (b) composite PAN membrane with mesoporous MA-SiO₂ nanoparticles, and cross-linked composite polymer electrolyte (c) before and (d) after thermal cross-linking.

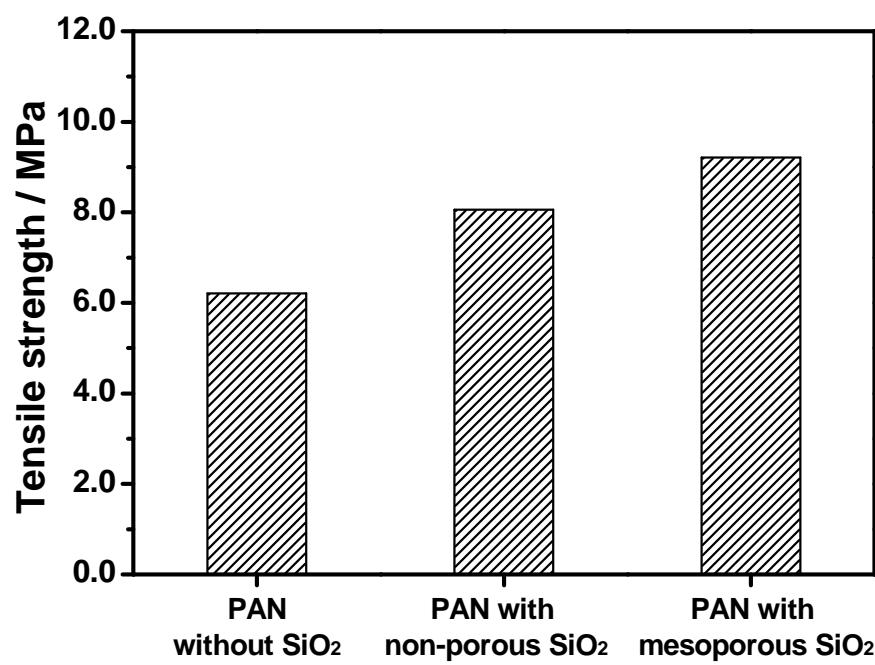


Figure S3. Mechanical strength of cross-linked PAN-based polymer membranes containing different types of SiO₂ particles.

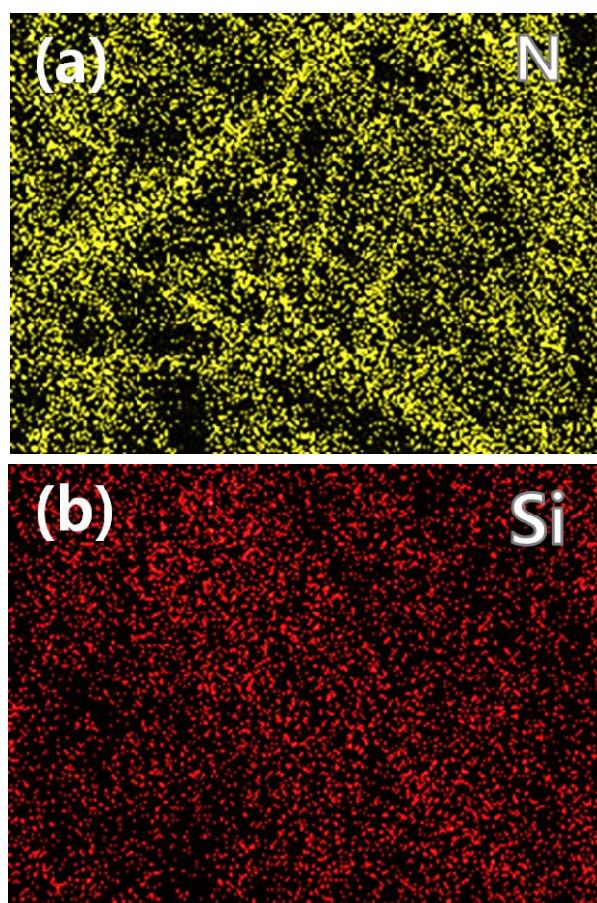


Figure S4. EDS elemental mapping images corresponding to (a) N and (b) Si in the cross-linked composite gel polymer electrolyte with mesoporous MA-SiO₂ nanoparticles.