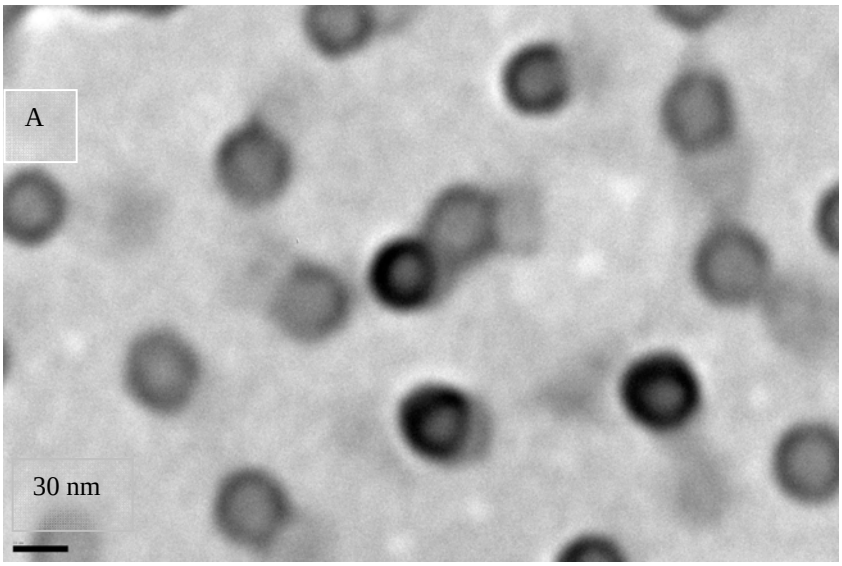
Supporting Information

Periodic organosilica hollow nanospheres as anode materials for lithium ion rechargeable batteries



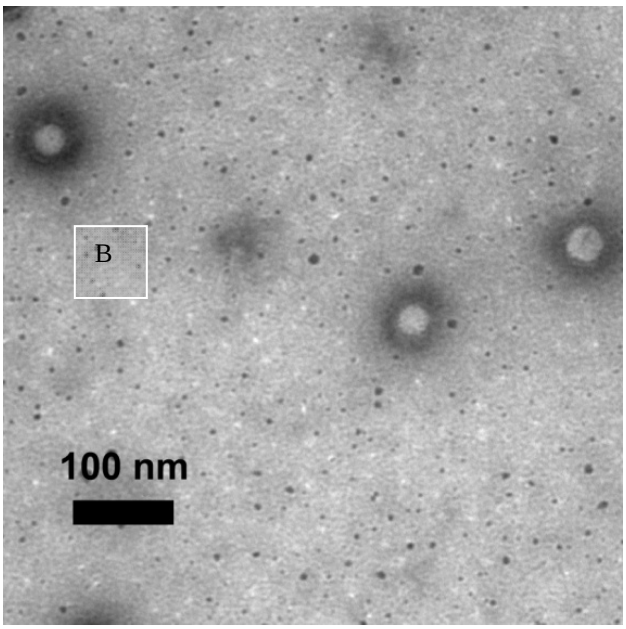


Figure S1. TEM pictures of: (A) PS–PVP–PEO and (B) PS-*b*-PMAPTAC-*b*-PEO micelles.

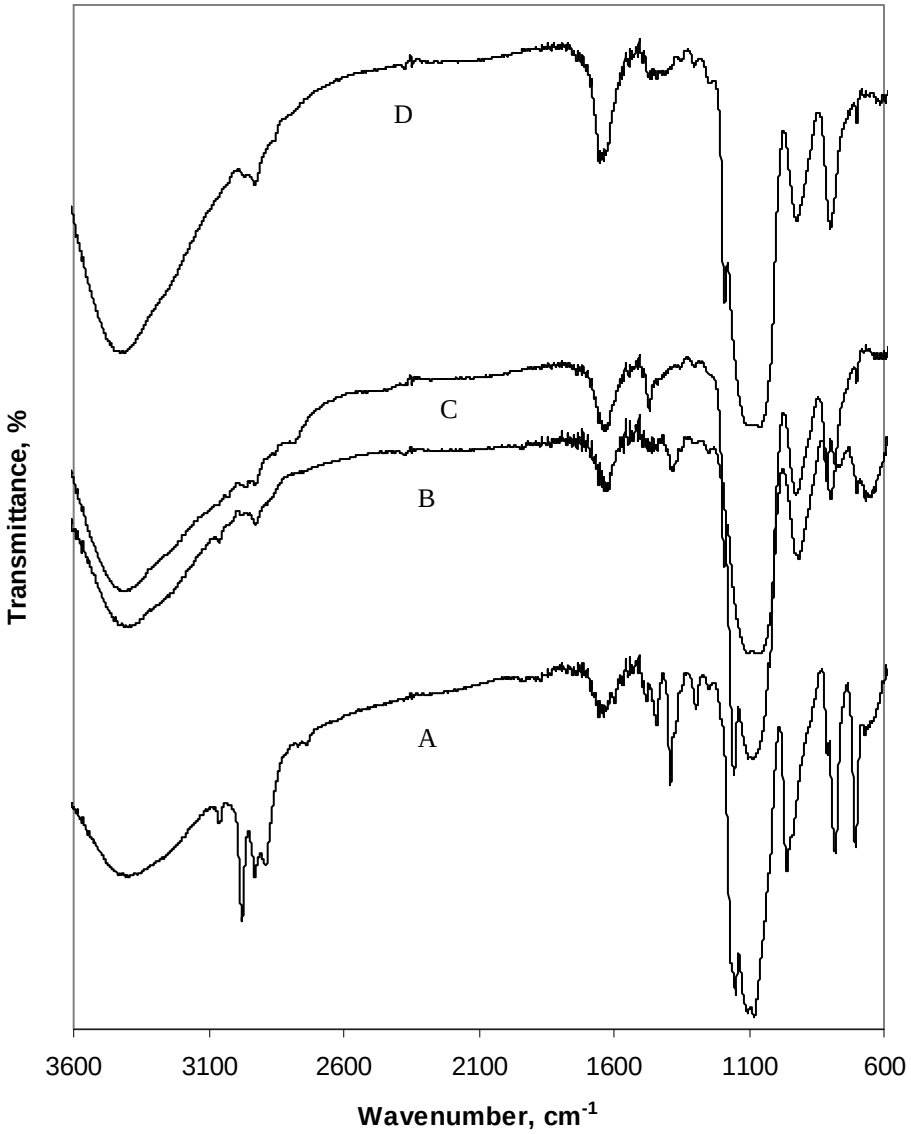


Figure S2. FT IR spectra of hollow silica nanospheres: (A) benzene silica hollow sphere (BS-HS) before solvent extraction; (B)–(D) refers to benzene silica (BS-HS), ethylene silica (ES-HS), and ethylene-dipropyldisulfide silica (EDS-HS) hollow nanospheres, respectively, after solvent extraction.

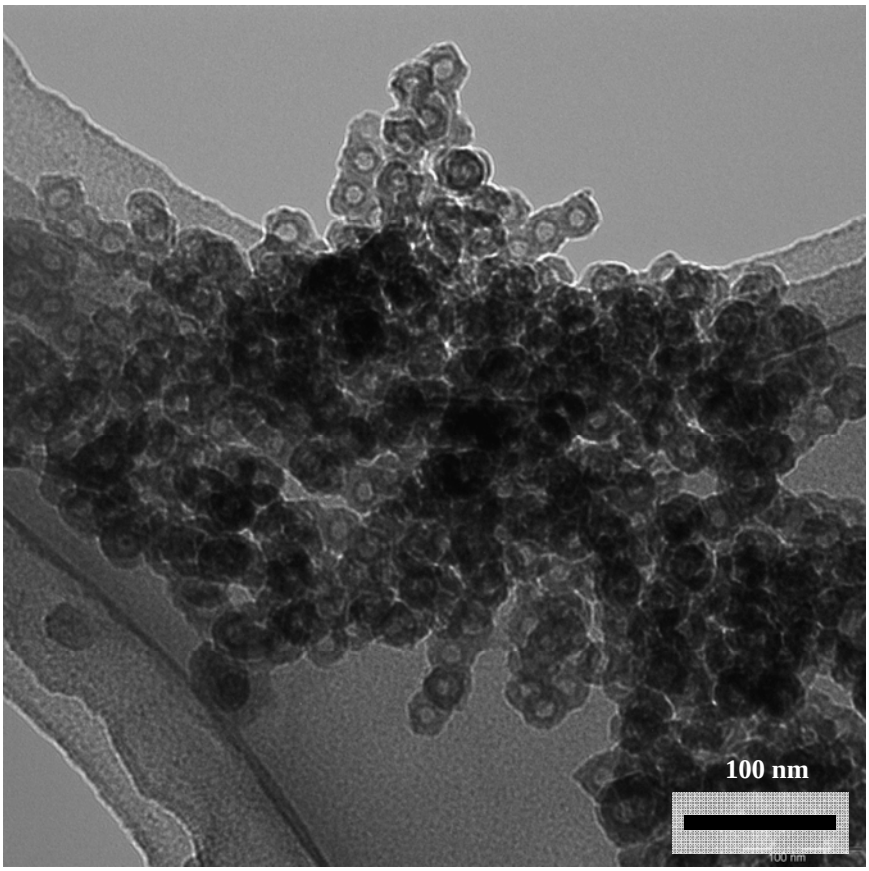


Figure S3. TEM pictures of ES–HS with BTES/PVP ratio 25.

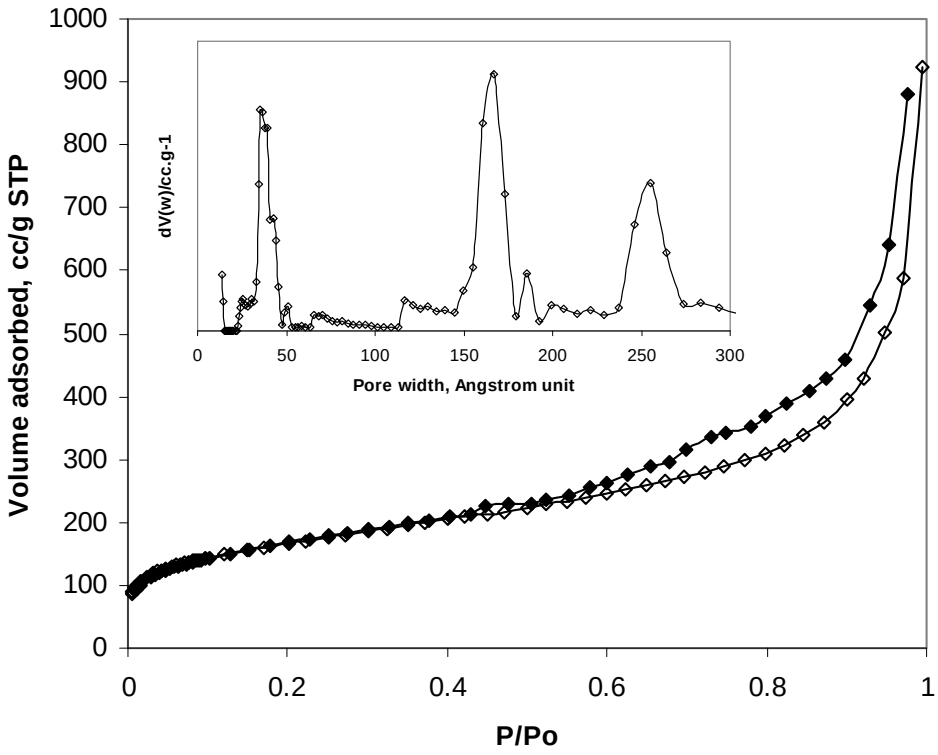


Figure S4. Nitrogen sorption isotherm and pore-size distribution curves (inset) of BS–HS (sample D) synthesized in alkaline medium.

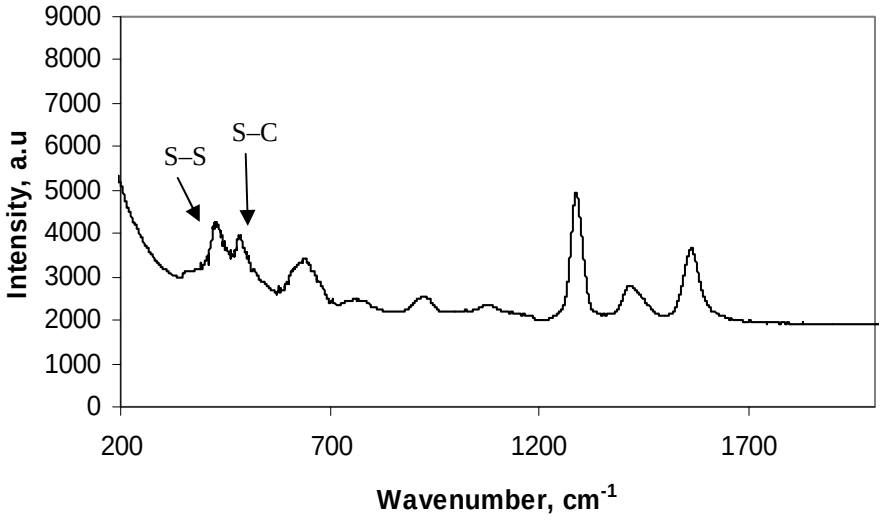


Figure S5. Raman spectrum of ethylene-dipropyldisulfide hollow silica nanosphere.

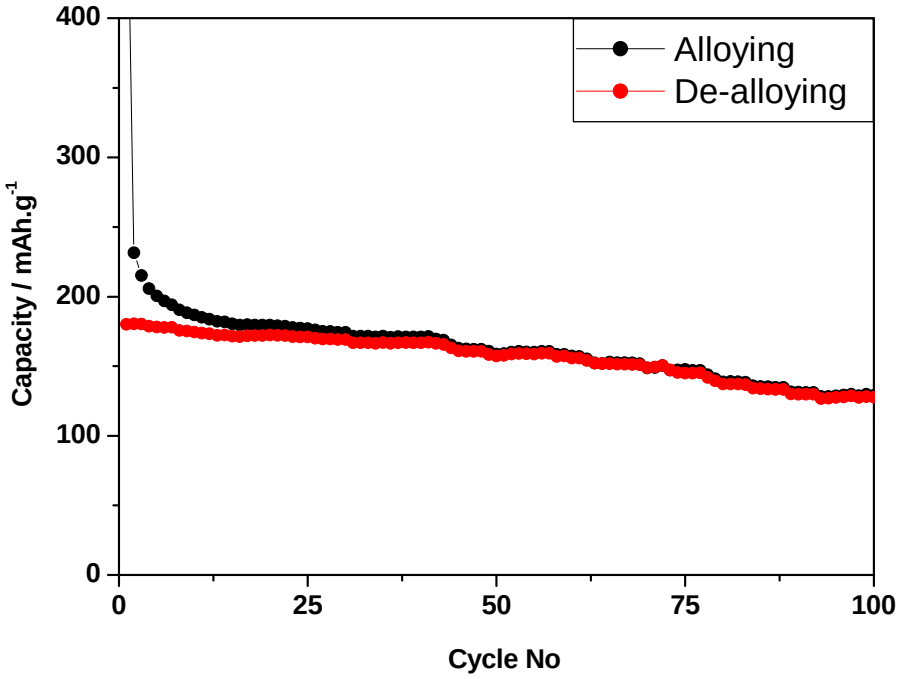


Figure S6. Cyclic performance of dense silica powder at 1 C rate between 0.0 and 2.5 V vs. Li/Li^+.

Table S1. Physical characteristics of organosilica hollow nanospheres

Samples	Particles diameter/nm[a]	Void space diameter/nm[a]	Shell thickness /nm[a]	BET[b] surface area/m^2g^{-1}	Pore volume[a] / cm^3g^{-1}
BS-HS (sample A)[c] (PS-PVP-PEO)	30.5 ± 1.5	17.5 ± 1.4	6.5 ± 0.5	436	1.03
ES-HS (sample B)[c] (PS-PVP-PEO)	30.3 ± 1.5	17 ± 1.7	6.6 ± 0.5	465	1.30
EDS-HS (sample C)[c] (PS-PVP-PEO)	31.8 ± 1.5	15.8 ± 1.5	8.0 ± 1.0	411	0.94
BS-HS (sample D)[d] (PS-PMATAC-PEO)	34.6 ± 1.5	16.2 ± 1.5	9.2 ± 1.0	429	1.48
ES-HS[e]	34.1 ± 1.5	15.8 ± 1.5	9.1 ± 1.0	383	0.85

[a]Void space diameter, wall thickness, and particles diameter were calculated from TEM image.

[b]BET surface areas and pore volumes were obtained from nitrogen adsorption/desorption analyses.

[c]Hollow silica nanospheres were synthesized in acidic-medium using PS–PVP–PEO.

[d]Benzene silica was prepared in alkaline-medium using PS–PMAPTAC–PEO.

[e]PVP: BTES ratio is 1: 25.