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Supporting Information

Scalable synthesis of porous graphite/silicon@pitch carbon nanocomposites derived from wastes of silica fume for high-performance lithium storage

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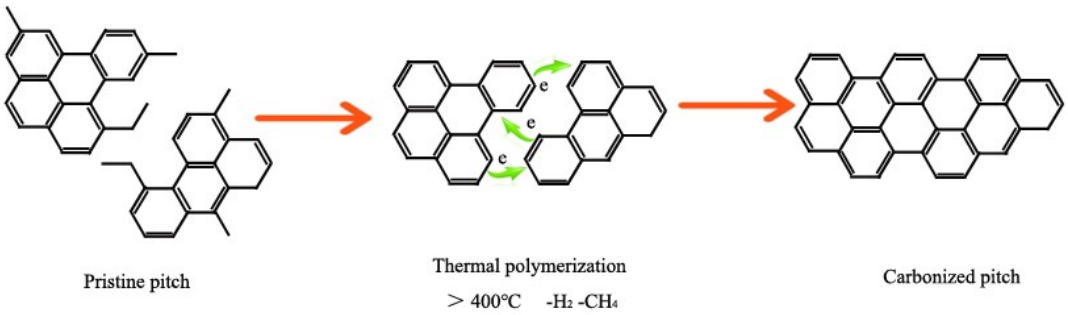

Fig. S1 Schematic of the transformation mechanism for pitch during carbonization. Carbonization induces bond cleavage and thermal polymerization among pitch molecules, thereby forming graphene-like sheets.

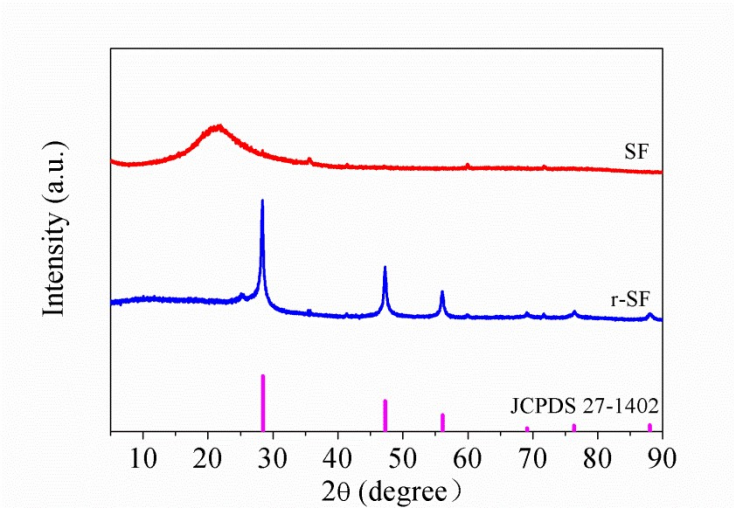

Fig. S2 XRD patterns of silica fume, r-SF and the standard XRD pattern of graphite.

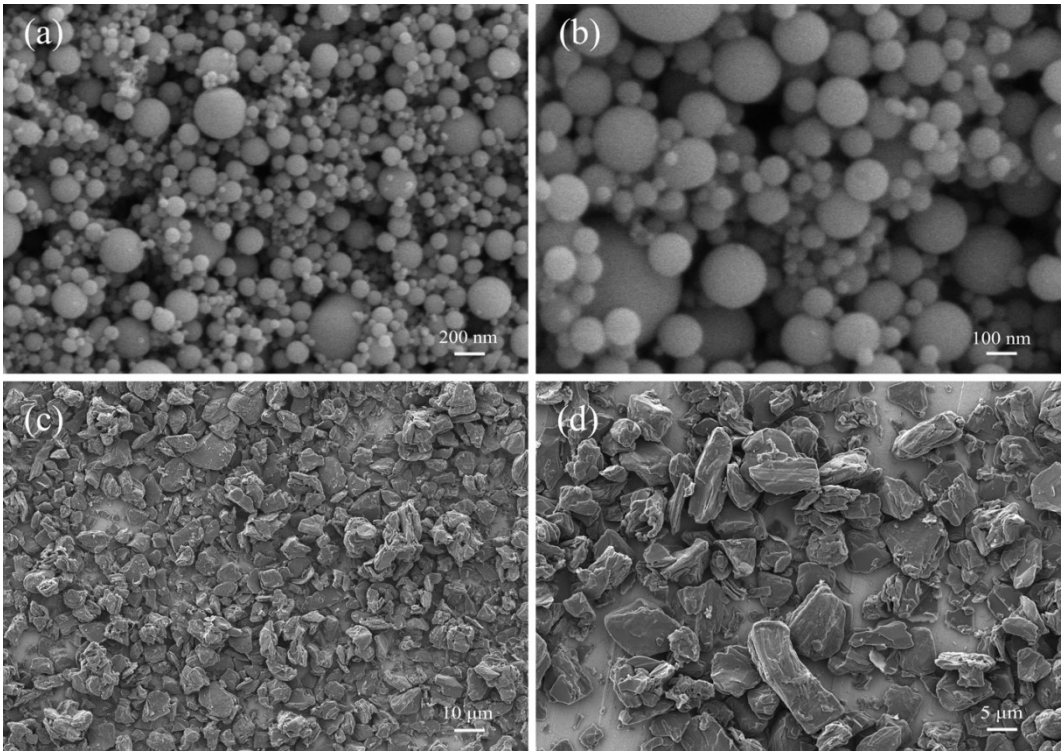

Fig. S3 SEM images of (a and b) silica fume and (c and d) spent graphite at different magnifications.

Table S1 Results of element content analysis for the as-synthesized SG/Si@C-5 composites by EDS.

Element	Weight (%)	Atomic (%)
C K	83.61	88.36
O K	7.97	7.71
Si K	8.42	3.93

Table S2 Electronic conductivity of the r-SF, SG/Si@C-2, SG/Si@C-4, and SG/Si@C-5 composites.

Sample name	Electronic conductivity (σ, S cm^{-1})
r-SF	1.27×10^{-5}
SG/Si@C-2	4.62×10^{-3}
SG/Si@C-4	3.08×10^{-2}
SG/Si@C-5	6.95×10^{-2}