Electronic Supplementary Material (ESI) for New Journal of Chemistry.

New Journal of Chemistry - Supporting information

Nanostructured 3D porous hybrid network of N-doped carbon, graphene and Si nanoparticles as anode material for Li-ion batteries

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Supporting Figures

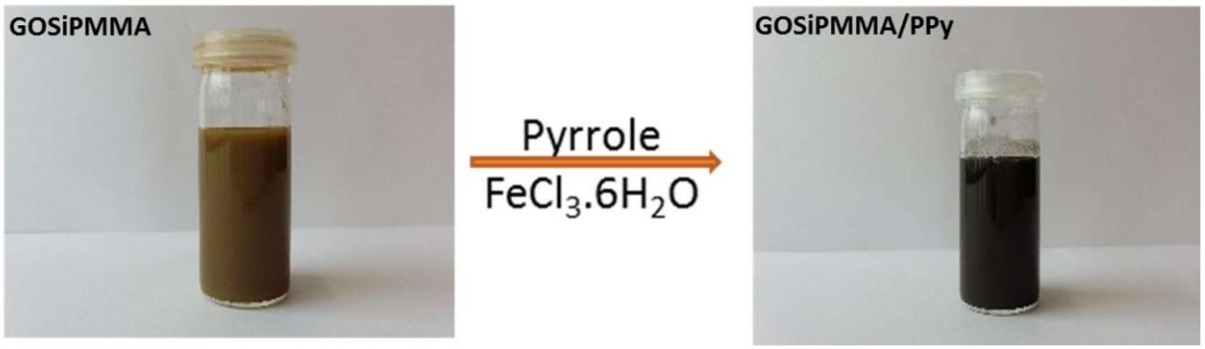

Figure S1. Suspension of Si@GO@PMMA before and after polymerization of Pyrrole.

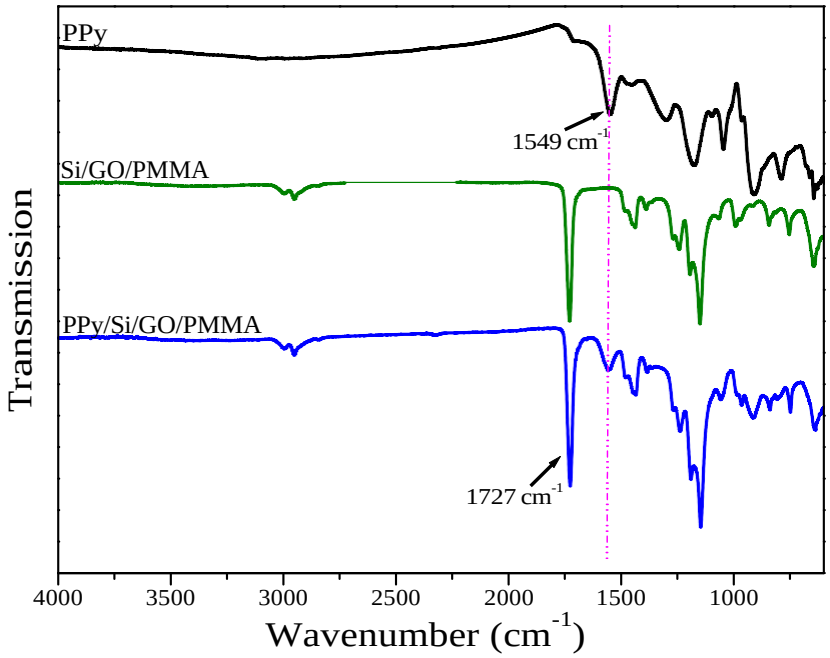

Figure S2. FTIR-ATR spectrum of PPy, Si/GO/PMMA and PPy/Si/GO/PMMA. The characteristic peaks of PMMA/GO (C−O at 1147 cm^{-1}, C−O−C at 1435 cm^{-1} and C=O at 1727 cm^{-1}, green line) and the characteristic peaks of PPy (alkane (C−H) deforma0on at 1455 cm^{-1}, alkane (C−H) bend vibration between 500-1000 cm^{-1}, N−H deforma0on at 1549 cm^{-1},black line) were all observed in the spectrum of PPy/Si/GO/PMMA (blue line). These FT-IR results indicated that the PPy was successfully grafted on the surface of Si/GO/PMMA particles.

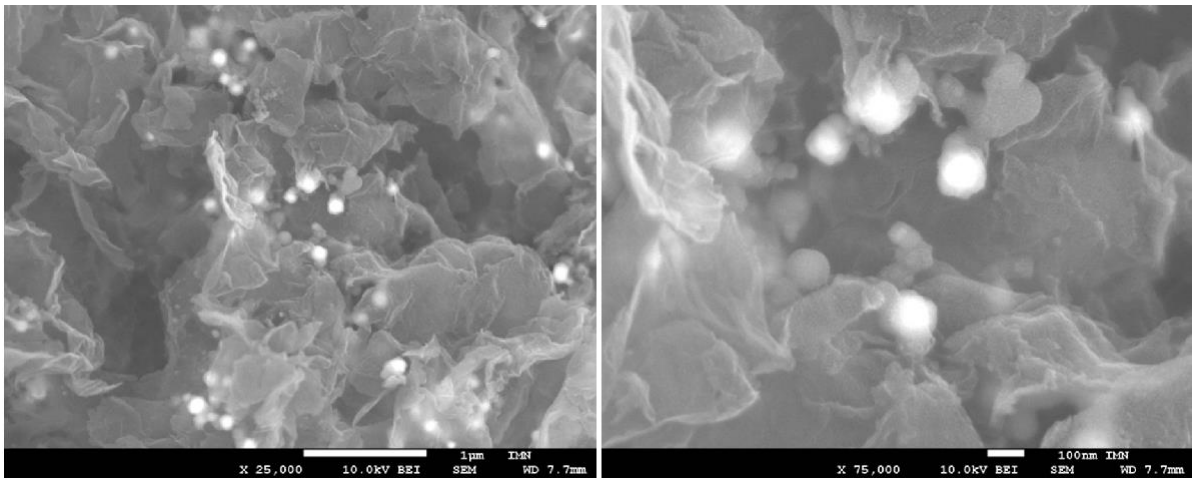

Figure S3. Backscattered electron images (BEIs) of the G@Si@C composite.

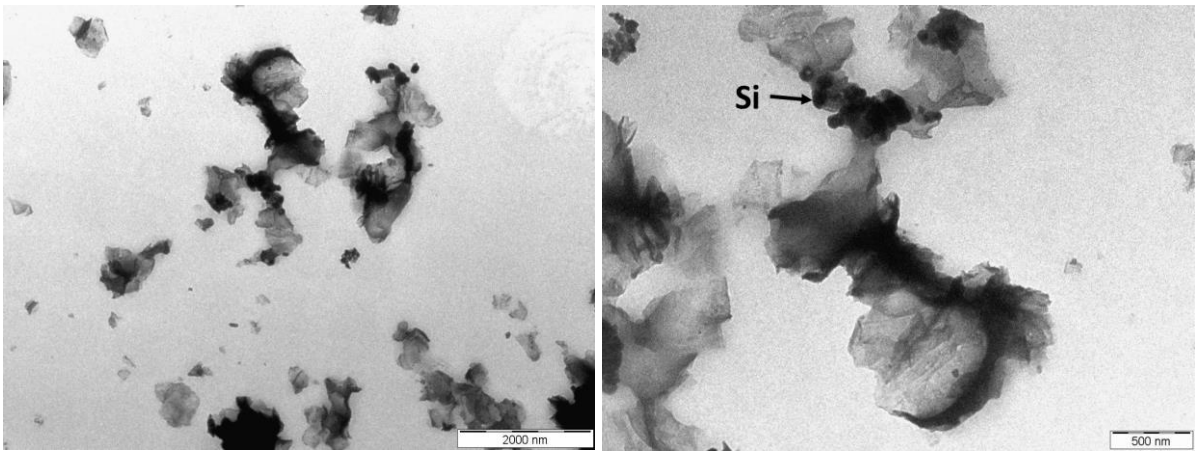

Figure S4: TEM analysis of the finale product G@Si@C at different magnification.

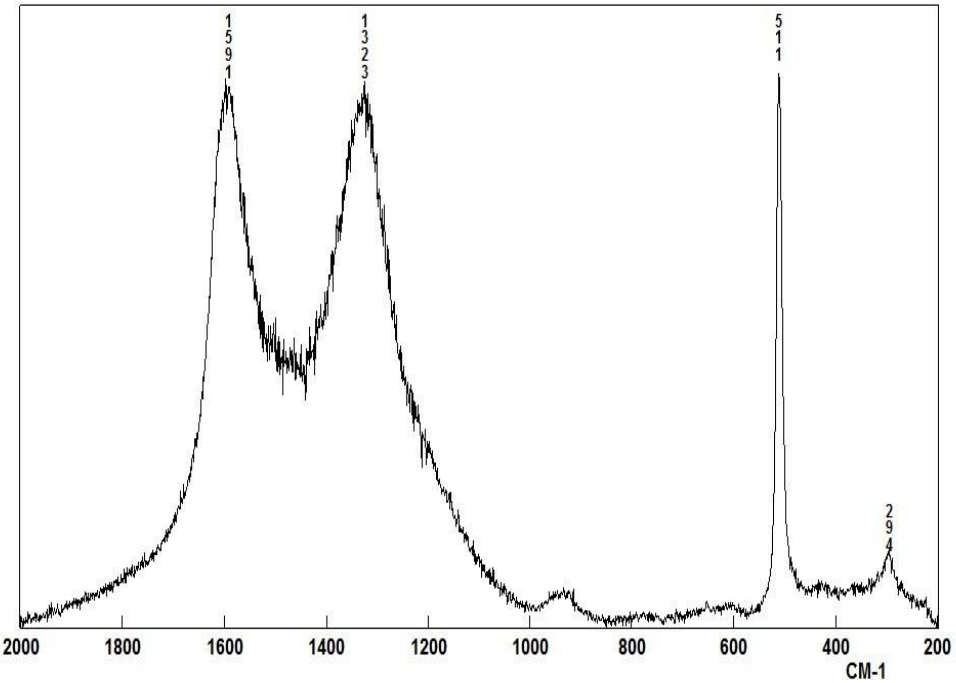

Figure S5. Raman spectra of G@Si@C.

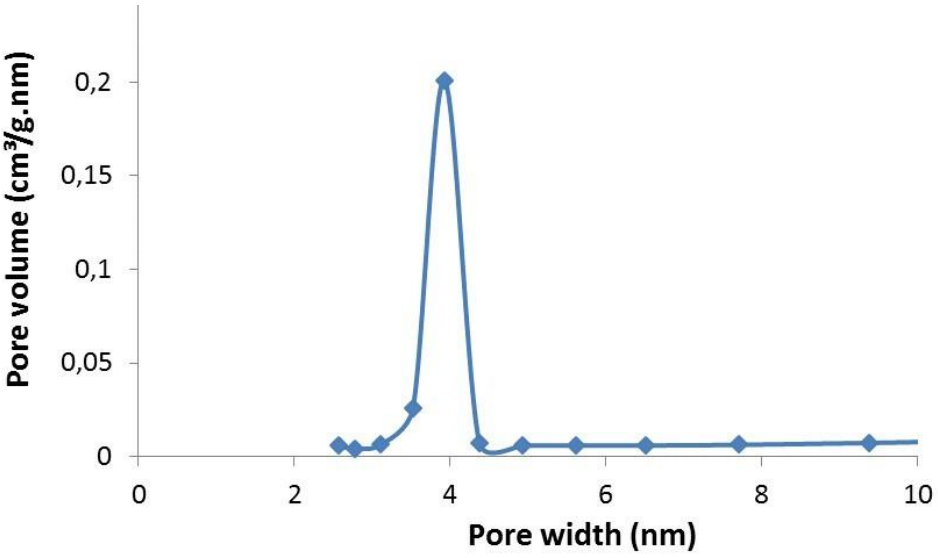

Figure S6. The uniform pore size distribution peaks of G@Si@C centred at 4 nm.

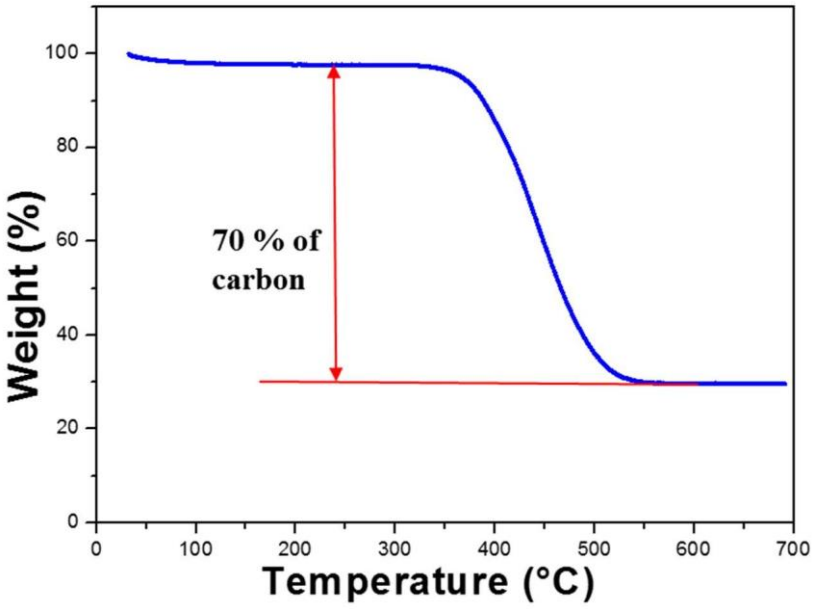

Figure S7. TGA analysis of G@Si@C under air.

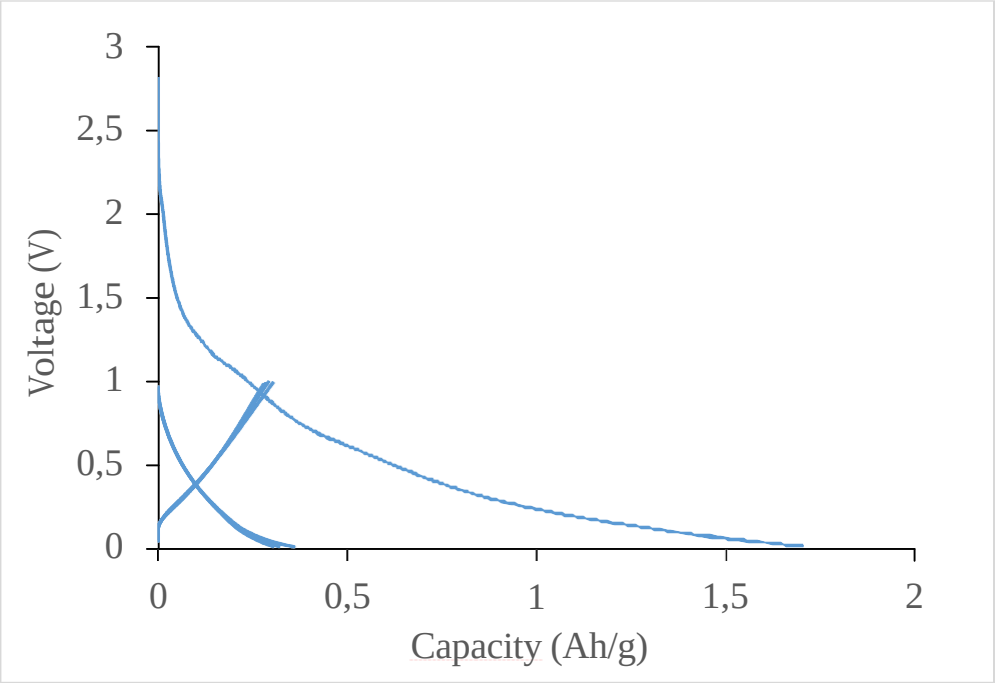

Figure S8. Galvanostatic charge/discharge curves measured for the G@C anode obtained using the same process.

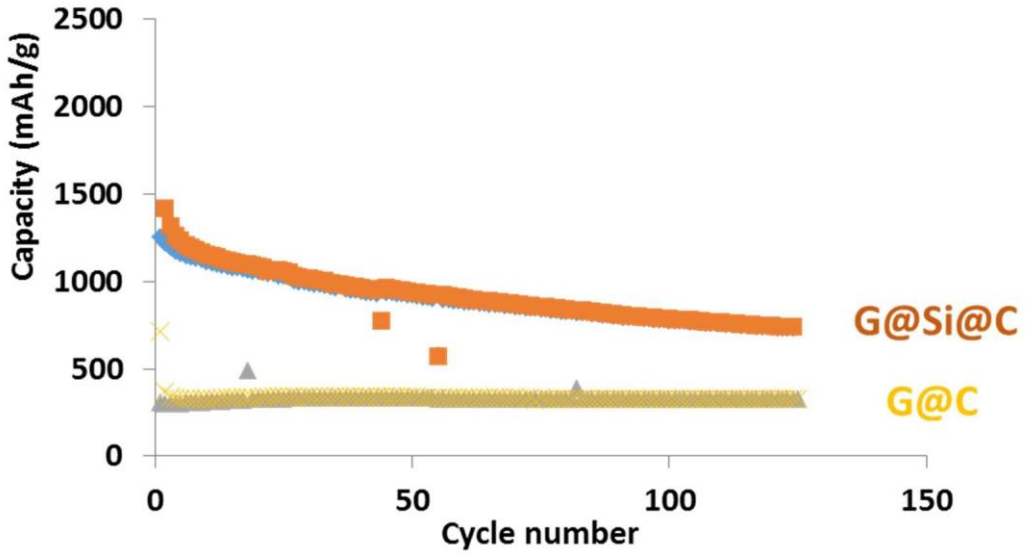

Figure S9. Reversible discharge charge capacity versus cycle plot for the G@C and G@Si@C electrodes, based on the total electrode weight.