ZnS-rGO/CNF free-standing anodes for SIBs: improved electrochemical performance at high C-rate

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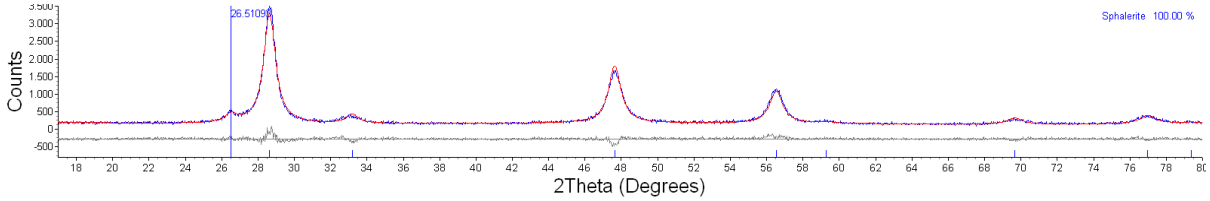
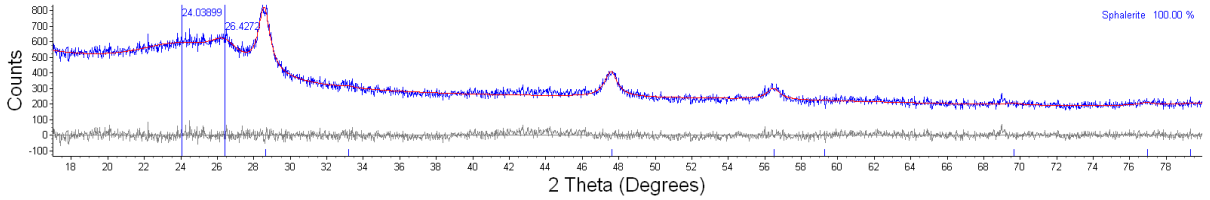


(a)



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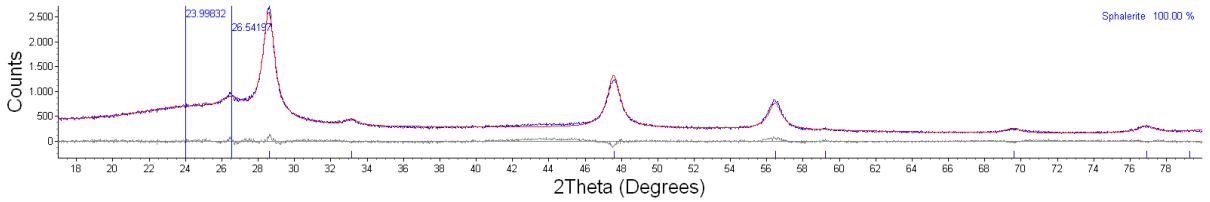

(c)

Figure S1. Rietveld refinement of the X-ray diffraction data of the a) ZnS-GO, b) 10%ZnS-GO/CNF and c) 30%ZnS-GO/CNF samples. Experimental pattern (blue line), calculated pattern (red line), difference curve (gray line). Peaks position of the sphalerite phase (bottom: blue bars). Peaks position of the (0 0 2) plane of graphene and of the amorphous carbon (blue vertical lines).

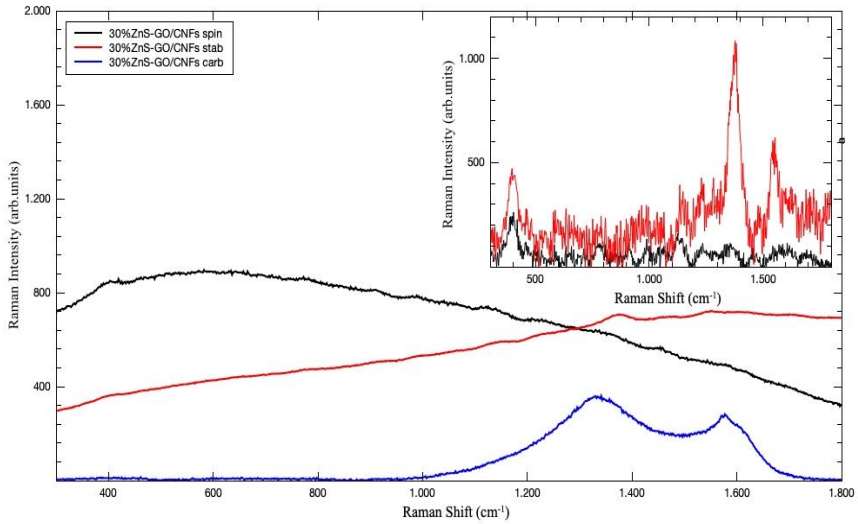

Figure S2. Room temperature Raman spectra for the sample 30%ZnS-GO/CNF as obtained after electrospinning (black line), after stabilization (red line) e post carbonization process (blue line). The inset shows the first two spectra as derived after baseline subtraction using a polynomial curve.

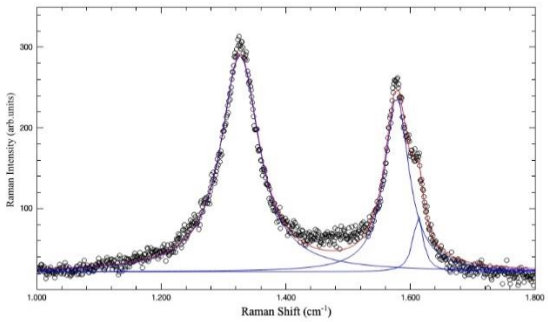

Figure S3. Result from best-fitting procedure (red line) performed in the range 1000-1800 cm^{-1} on the Raman data (empty circle) from Zn-GO sample using a sum of 3 lorentzian curves (blue lines). From the fitting parameters the values for (I_G/I_D) have been derived.

Table S1. Lattice parameters, crystallite size, weighted discrepancy factor and Goodness of Fit obtained by the Rietveld refinement of the diffraction data of the ZnS-GO, 10%ZnS-GO/CNF, 30%ZnS-GO/CNF samples.

SAMPLE	**ZnS-GO**	**10%ZnS-GO/CNF**	**30%ZnS-GO/CNF**
a (Å)	5.3947(7)	5.3961(32)	5.3986(7)
Crystallite size (nm)	11.8	11.7	11.7
R_{wp}	9.7	6.2	5.4
GoF	1.7	1.1	1.1