

Synthesis and Electrochemical Characterization of Graphene Nanoribbon stacks

Functionalized with Buckyballs – Supporting Information

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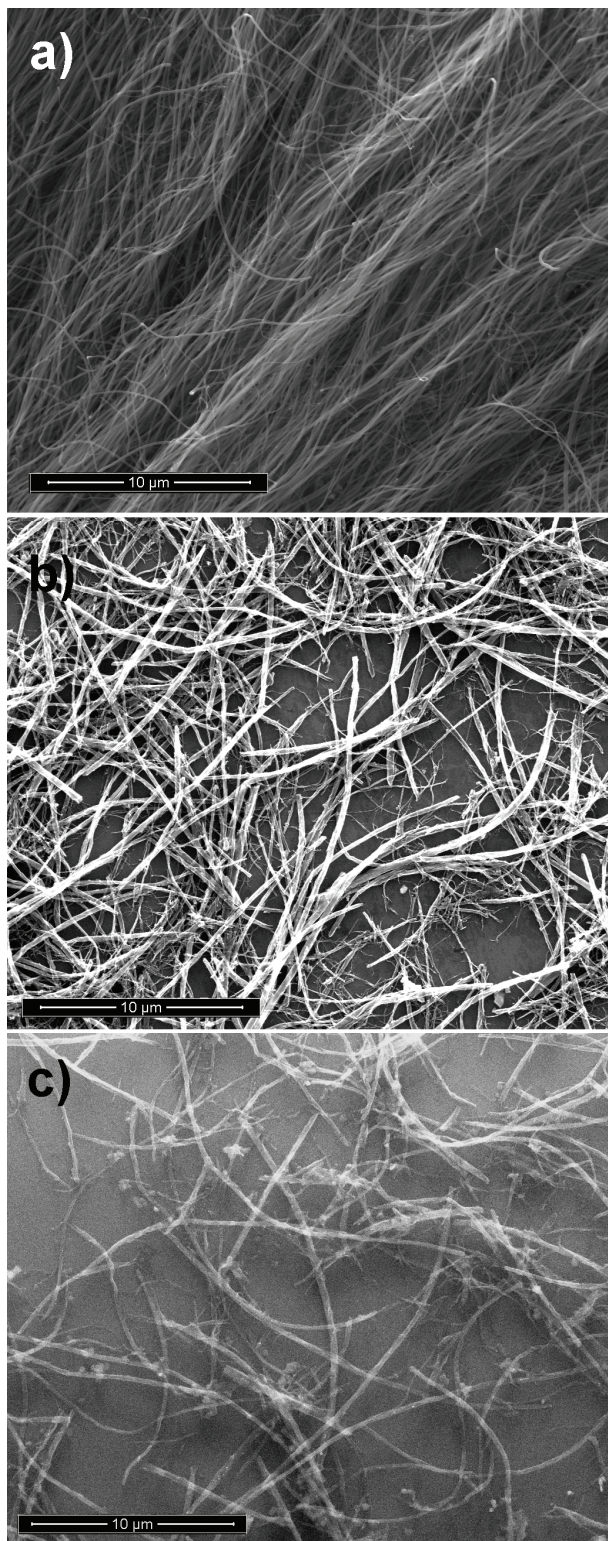


Figure S1. Large scale SEM images of: a) M-grade NTL MWCNTs, b) GNRs and c) C₆₀-GNRs

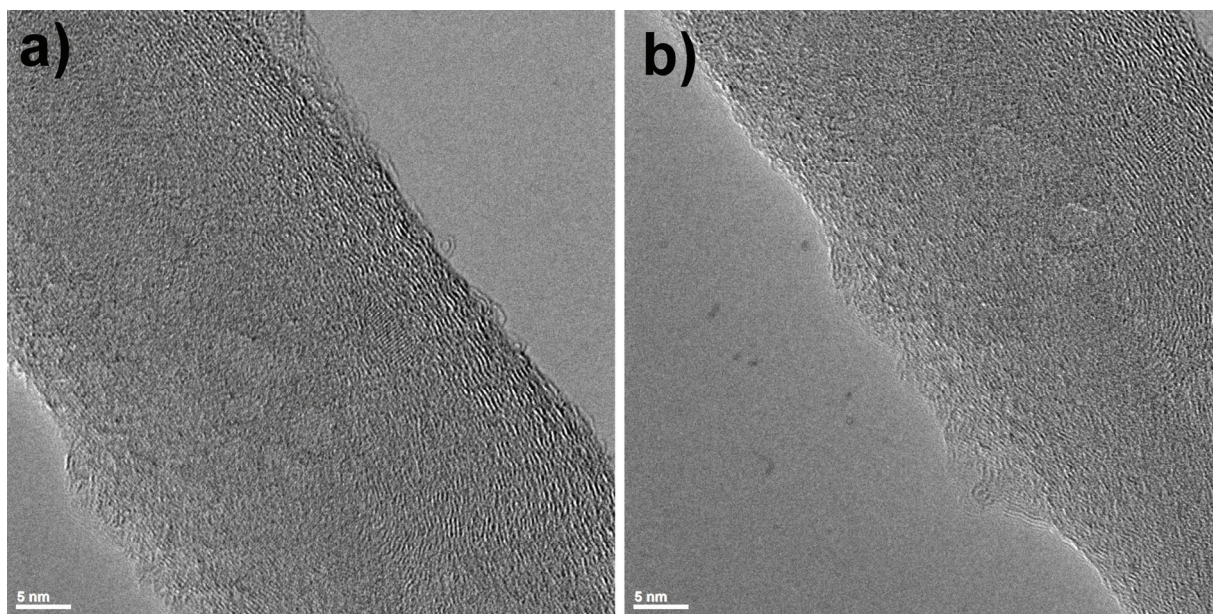


Figure S2. TEM images of C_{60} -GNRs.

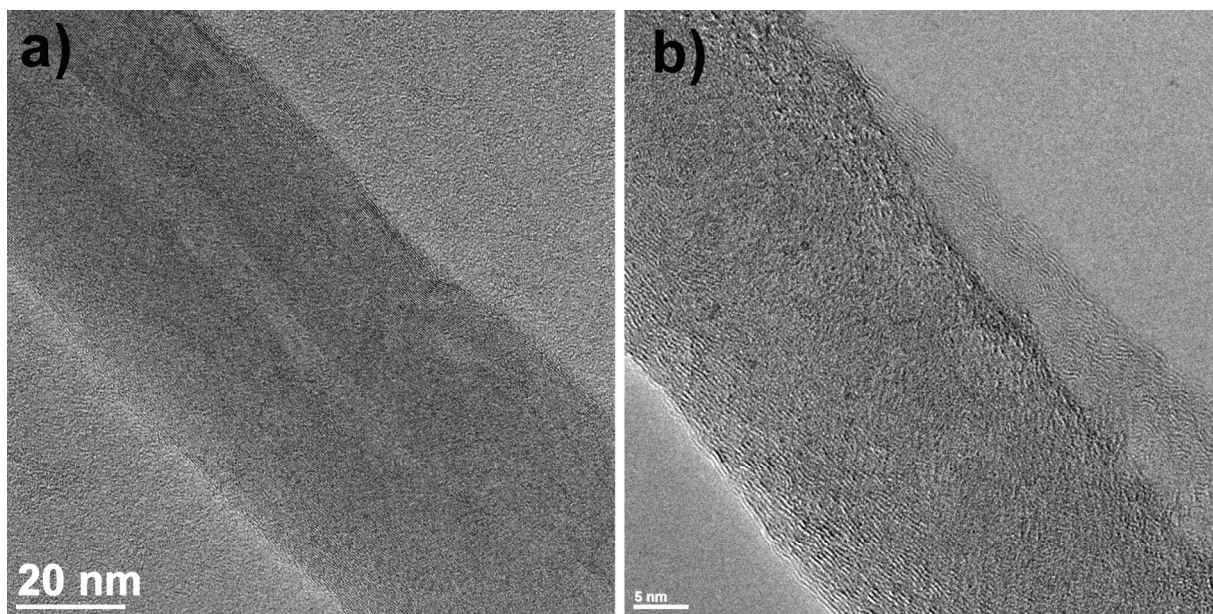
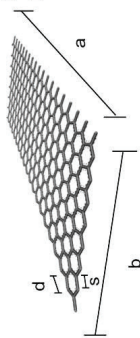


Figure S3. TEM images of a) M-grade NTL MWCNTs and b) GNRs

F = Functional Group
C = Carbon
 $n_{C(edges)} = n_{F(edges)}$



	value	unit
a	30000	nm
b	200	nm
d	0.267	nm
s	0.154	nm
$M_{(C)}$	12	g/mol
$M_{(F)}$	720	g/mol
Weight loss % obtained by subtracting GNRs- TG from C60-GNRs TG (region between 380 °C and 600 °C)	3.20	%

	value	unit
Ratio of functionalized edges on GNRs	47	%

	value	unit
$N_{C(all)}$	194,561,992	#atoms
$n_{C(all)}$	3.23E-16	mol
$m_{C(all)}$	3.88E-15	g

	value	unit
$N_{C(edges)}$	226,451	#atoms
$n_{C(edges)}$	3.76E-19	mol
$m_{C(edges)}$	4.51E-18	g

atomic % of the edges	0.12
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	value	unit
$n_{F(TGA)}$	0.0044444444	mol
$n_{C(allTGA)}$	8.066666667	g

Ratio of n_C (all TGA) : $n_{F(TGA)}$	1815 :1
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Ratio of n_C (all) : $n_{C(edges)}$	859 :1
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color	origin of data
	experiment
	literature
	calculated

$m_{(ribbon)}$	3.88E-15	g
$m_{(GF)}$	2.71E-16	g
Wt	6.53	%

Degree of functionalization (N_C ($n_{func.}/N_{C(all)} * 100$)	0.06	atomic %
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check 0.057057813

Table S4. Calculation of degree of functionalization.

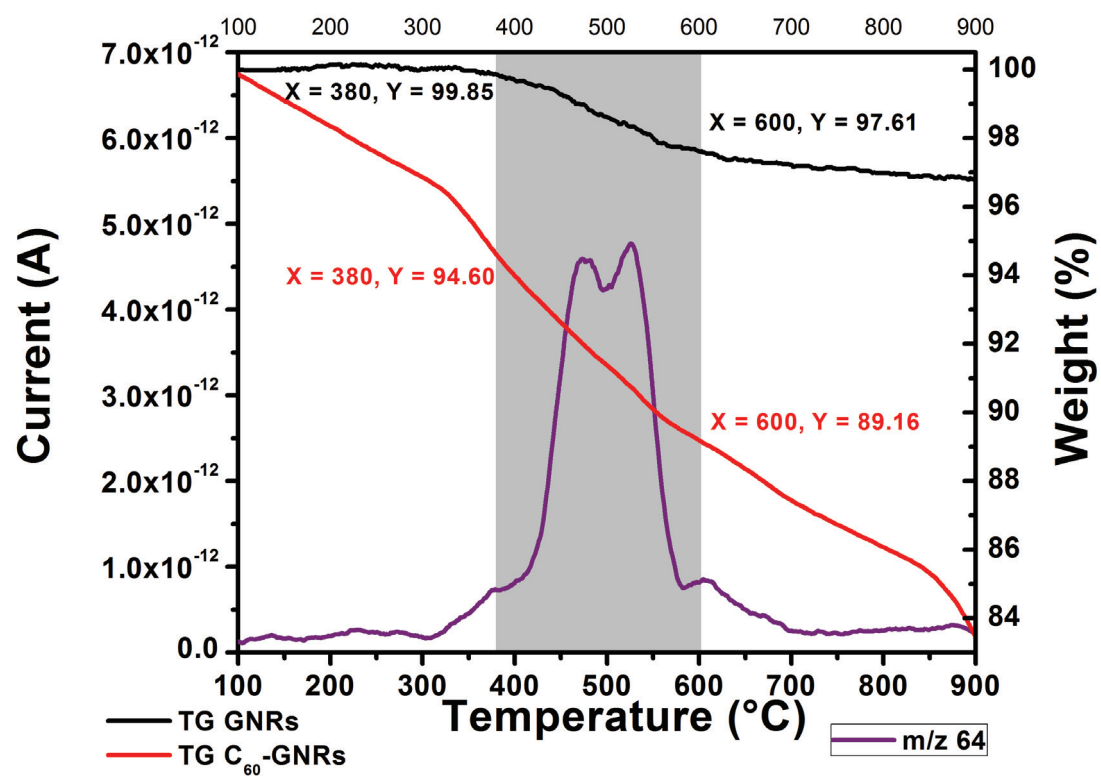


Figure S5. Evolved gas analysis.

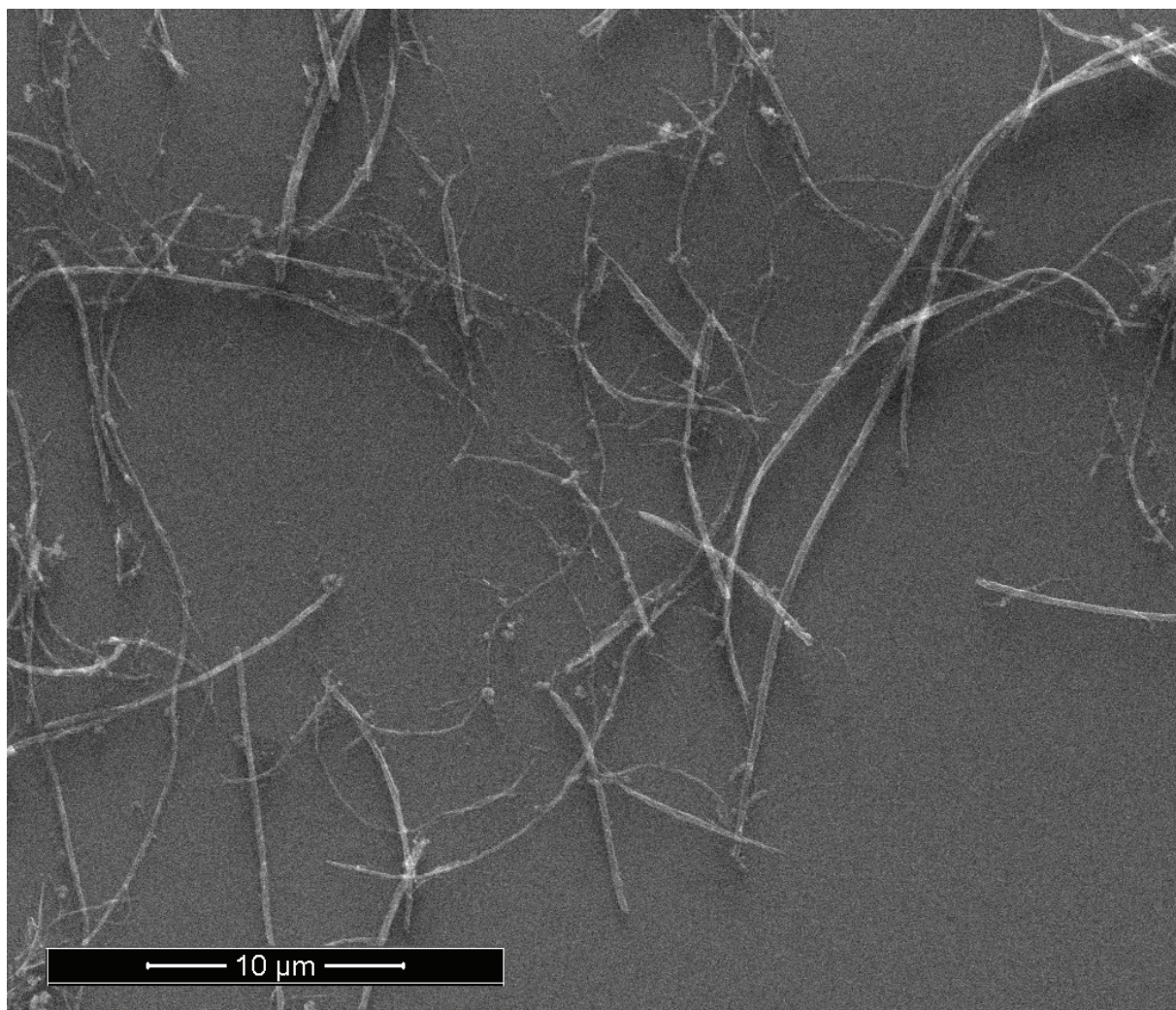
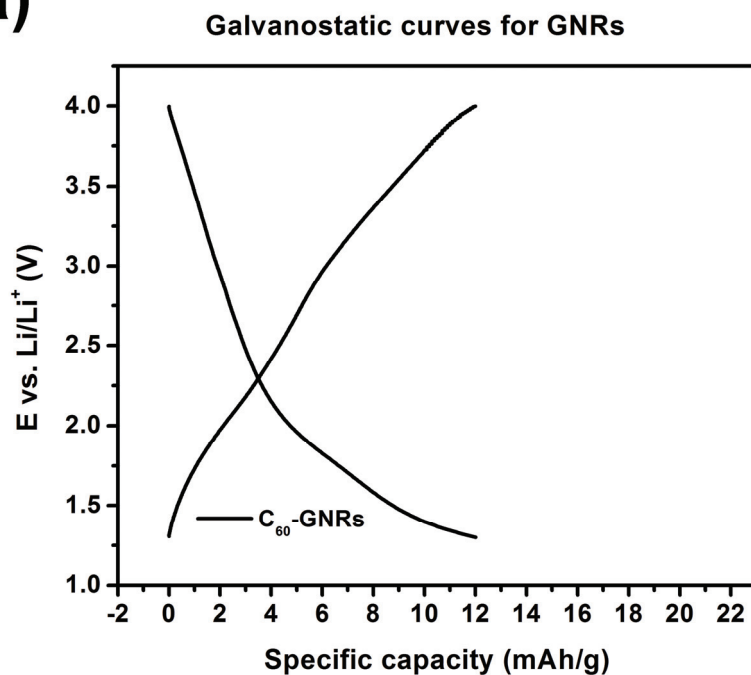


Figure S6. Large scale C₆₀-GNRs SEM image.

a)



b)

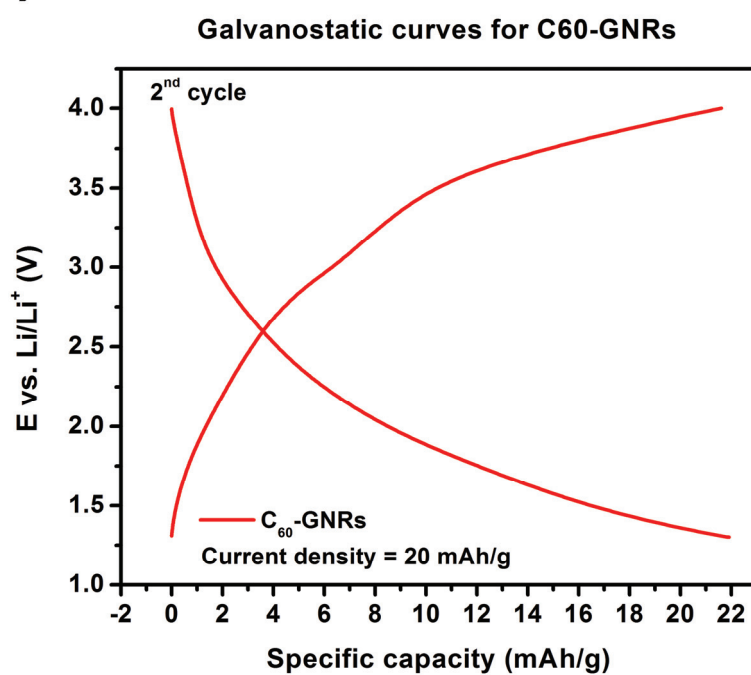
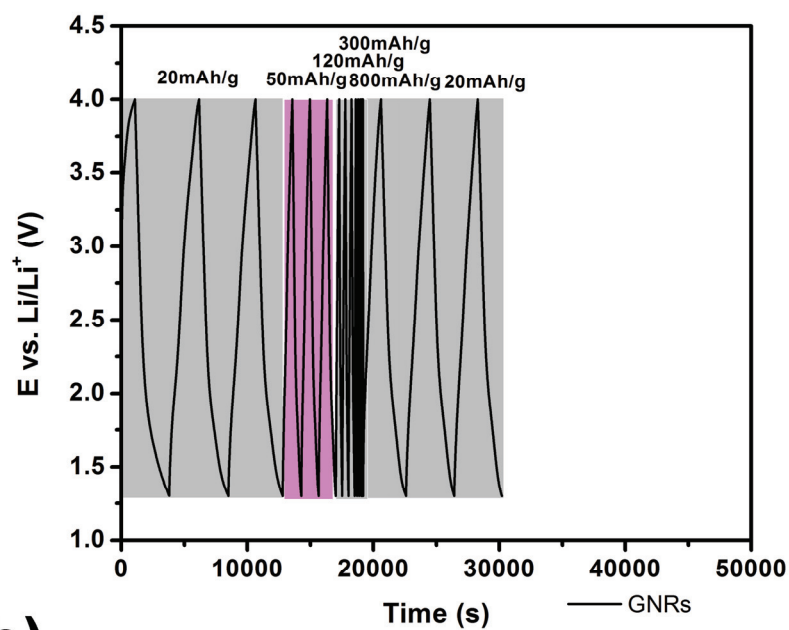


Figure S7. Galvanostatic curves for: a) GNRs and b) C₆₀-GNRs.

a) GNRs Charge-Discharge Curves at Different Current Densities



b) C_{60} -GNRs Charge-Discharge Curves at Different Current Densities

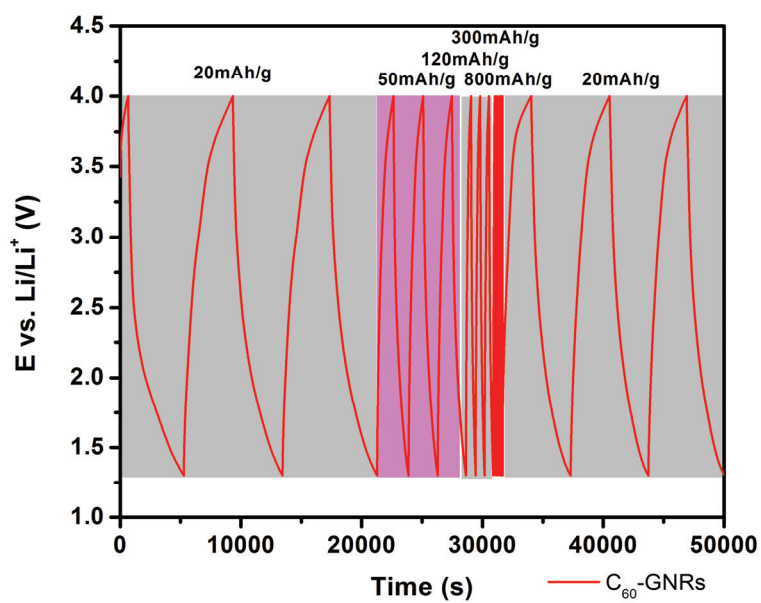


Figure S8. Charge-Discharge curves at different current densities: a) GNRs and b) C_{60} -GNRs