

Multifunctional Graphene Sheet-Nanoribbon Hybrid Aerogels

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Supplementary Information:

- 1. Figure S1.** Nitrogen sorption isotherms and pore size distribution of GO-GNR aerogels.
- 2. Figure S2.** a) TEM image of GNR-coated graphene sheet. b) SEM of PPy coated aerogels. c) FT-IR spectra of corresponding materials. d) XRD spectra of GO-GNR aerogels before and after chemical reduction.
- 3. Figure S3.** a, b) XPS spectra of GO-GNR aerogels before and after chemical reduction.
- 4. Table S1.** Supercapacitive performance of typical graphene based aerogel
- 5. Figure S4.** a, b) CVs of 16.4 wt% and 49.1 wt% PPy loaded GO-GNR electrode in 2 M KCl. b) Calculated specific capacitances of the different PPy loaded GO-GNR electrode.

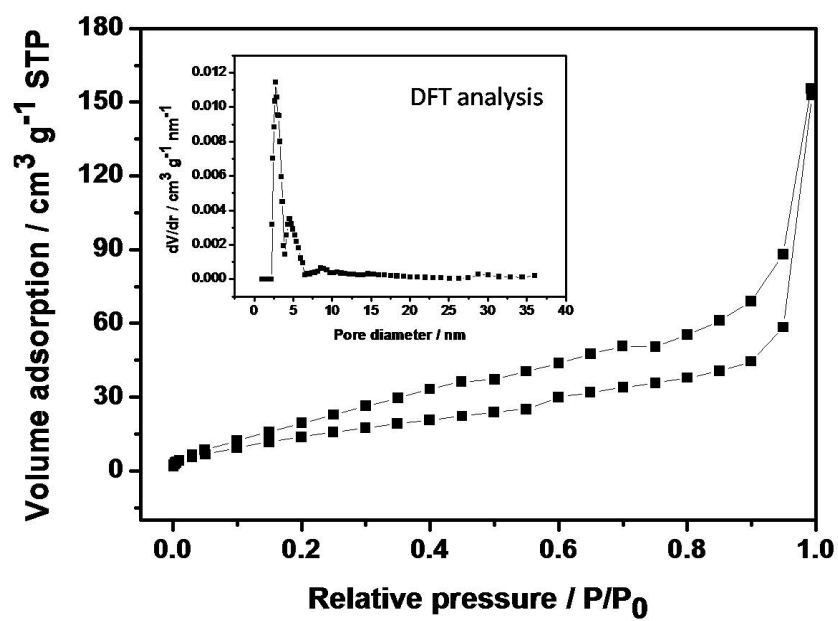


Figure S1. Nitrogen sorption isotherms and pore size distribution of GO-GNR aerogels.

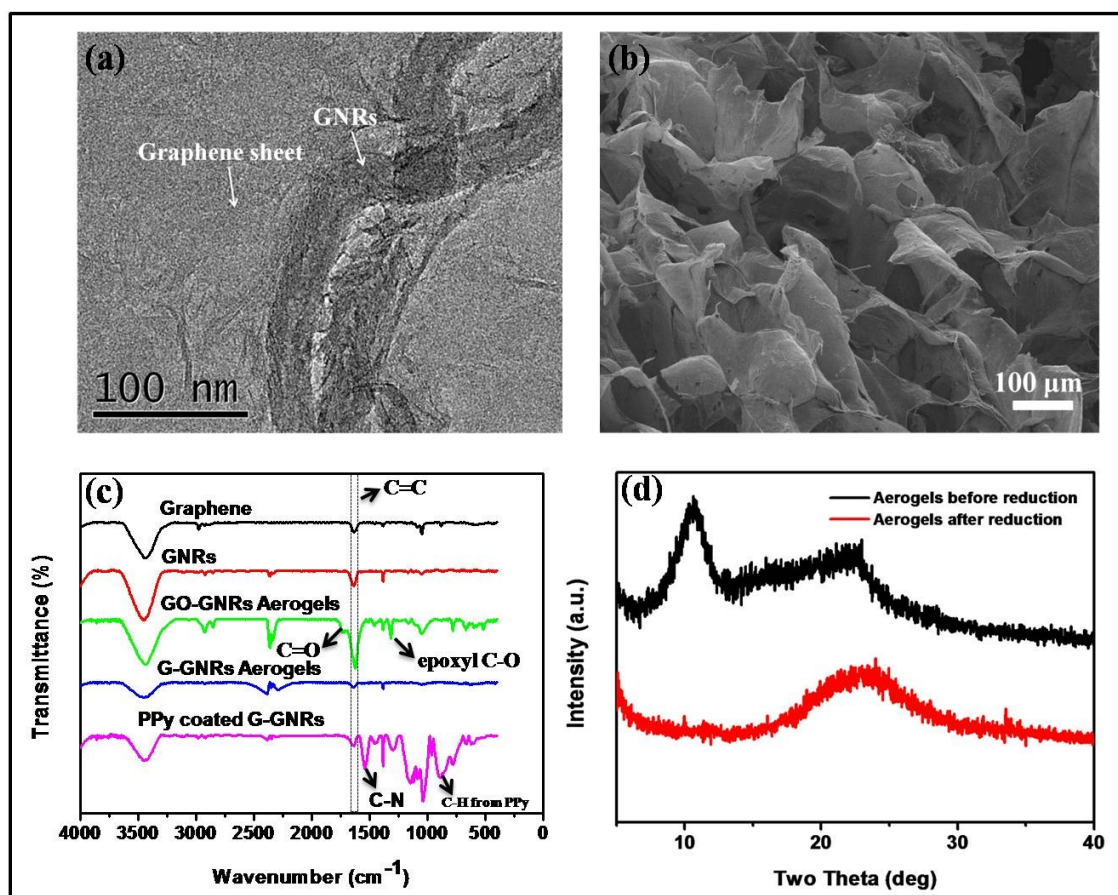


Figure S2. a) TEM image of GNR-coated graphene sheet. b) SEM of PPY coated aerogels. c) FT-IR spectra of corresponding materials. d) XRD spectra of GO-GNR aerogels before and after chemical reduction.

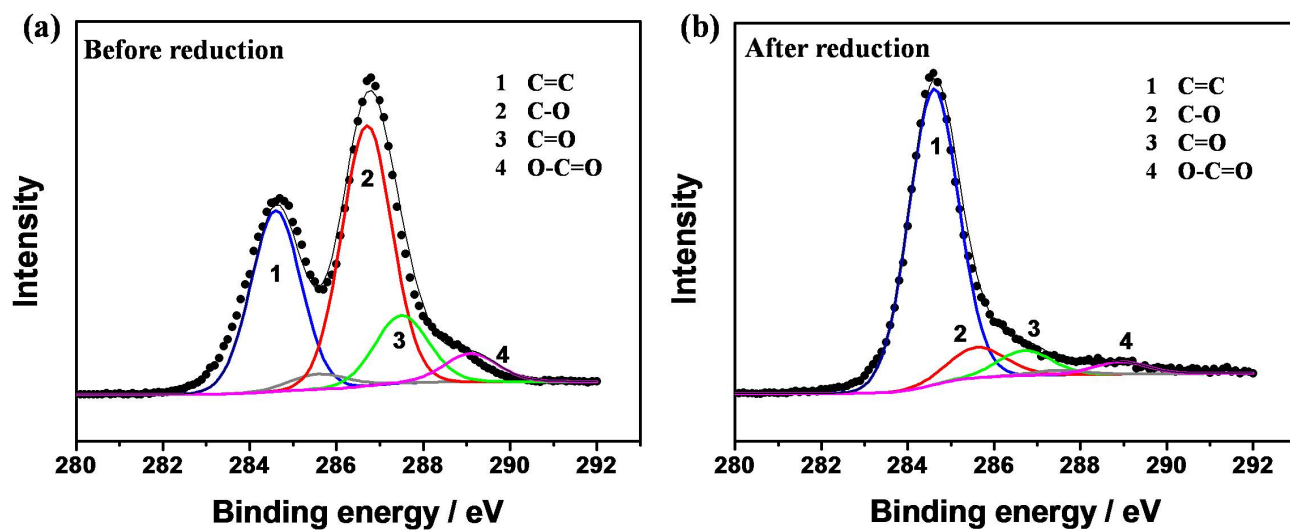


Figure S3. a, b) XPS spectra of GO-GNR aerogels before and after chemical reduction.

Table S1. Supercapacitive performance of typical graphene based aerogel

Materials	Current density	Electrod	Specific	Ref.
	and/or	scan	e	
	rate	system	Capacitance (F/g)	
GO-GNR aerogel	2-100 mV/s	Three	256-121	This work
GO-GNR aerogel @PPy	2-100 mV/s	Three	537-218	This work
MWCNTs/Graphene aerogel	0.1-100 A/g	Two	85-53	S1
N-doped Graphene aerogel	1-100 A/g	Three	484-415	S2
Graphene foam	1.5 A/g	Two	151	S3
PPy@Graphene foam	1.5 A/g	Two	350	S3
Graphene aerogel	25 mV/s	Three	25	S4
MnO ₂ @Graphene aerogel	2-25 mV/s	Three	410-312	S4
Graphene aerogel@Ni Foam	2-20 A/g	Three	366-186	S5

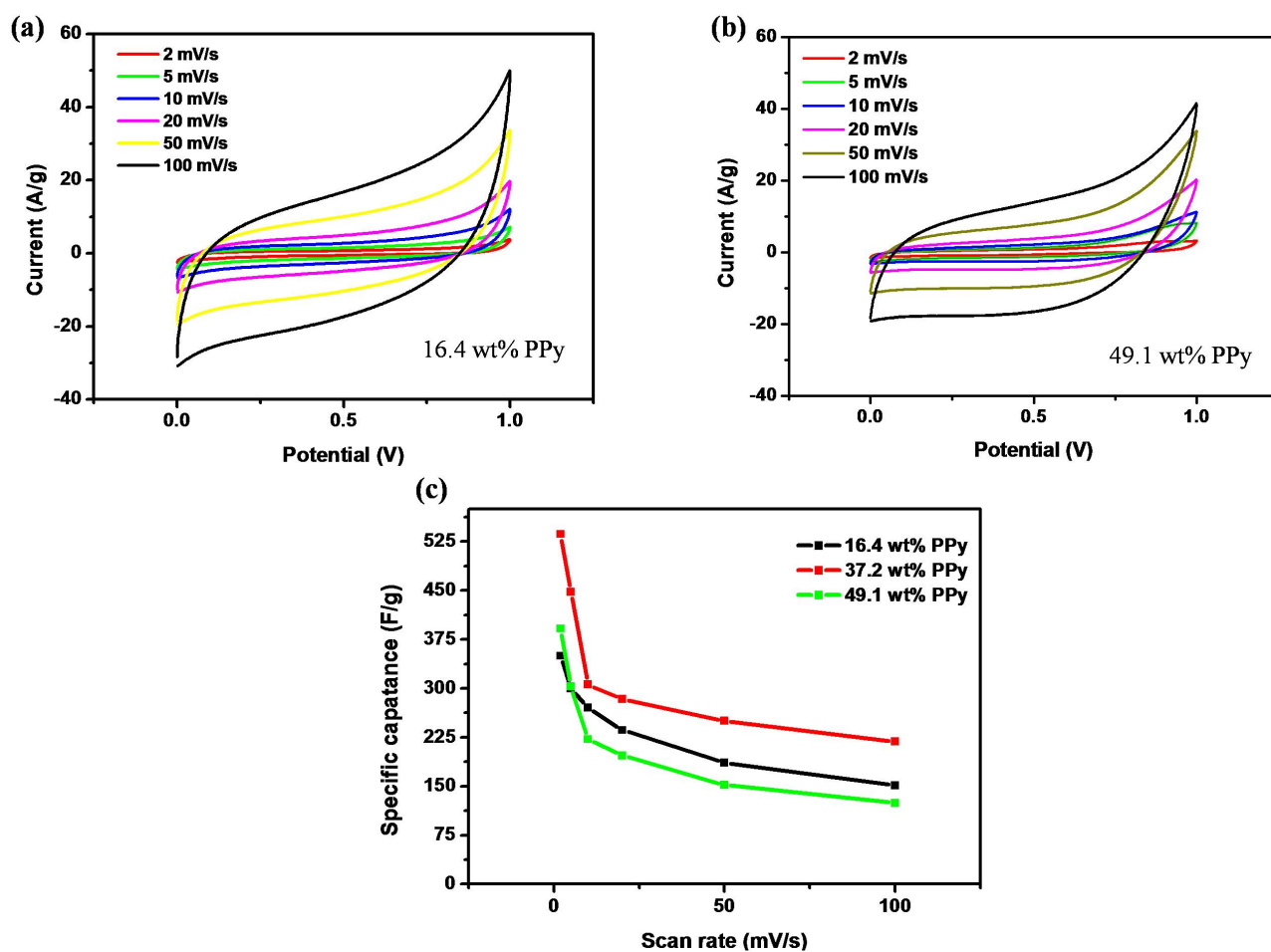


Figure S4. a, b) CVs of 16.4 wt% and 49.1 wt% PPy loaded GO-GNR electrode in 2 M KCl. c) Calculated specific capacitances of the different PPy loaded GO-GNR electrode.

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