Electronic Supplementary Information

Preparation of Hybrid Paper Electrode Based on Hexagonal Boron Nitride Integrated Graphene Nanocomposite for Free-standing Flexible Supercapacitors

Jerome Rajendran[a], Anatoly N. Reshetilov[b] and Ashok K. Sundramoorthy[a*]

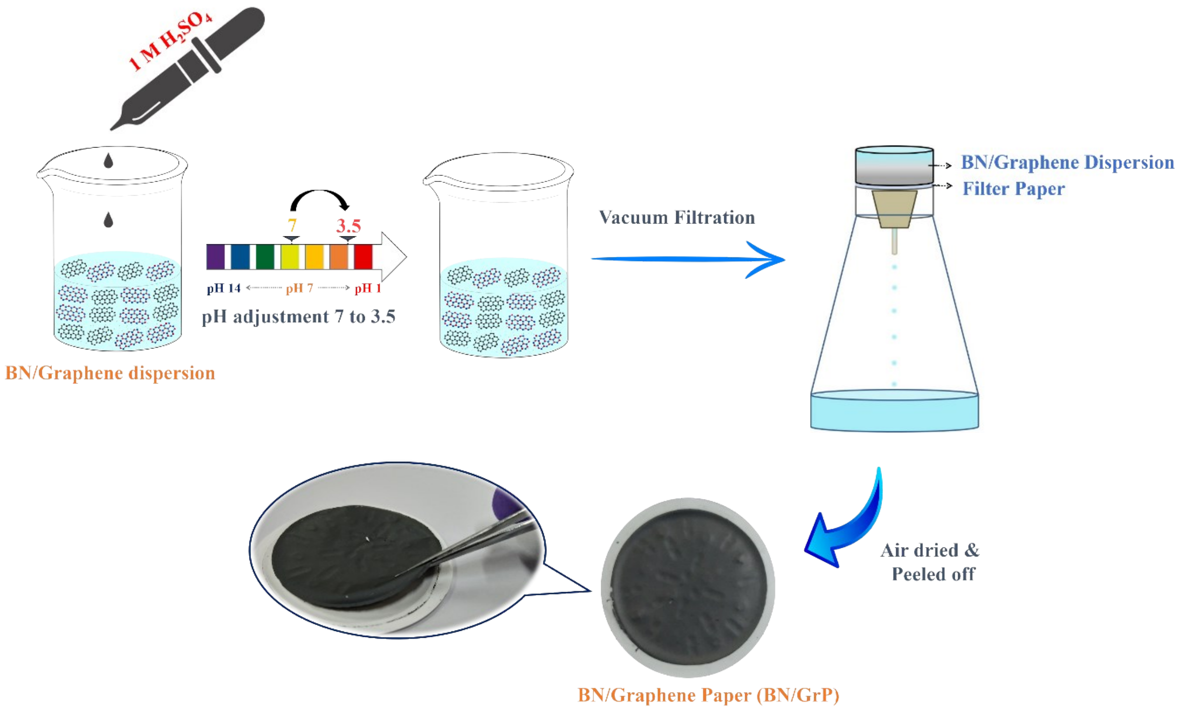
[a]Department of Chemistry, SRM Institute of Science and Technology, Kattankulathur-603 203, Tamil Nadu, India

[b]G.K. Skryabin Institute of Biochemistry and Physiology of Microorganisms of the Russian Academy of Sciences (IBPM RAS),-Subdivision of "Federal Research Center Pushchino Biological Research Center of the Russian Academy of Sciences"(FRC PBRC RAS), 142290, Pushchino, Moscow oblast, Russia

***Corresponding author**

Email: ashokkus@srmist.edu.in

Supporting Figures/Scheme/Table



Scheme S1. Schematic illustration for the preparation of freestanding BN/GrP flexible paper using BN/graphene dispersion.

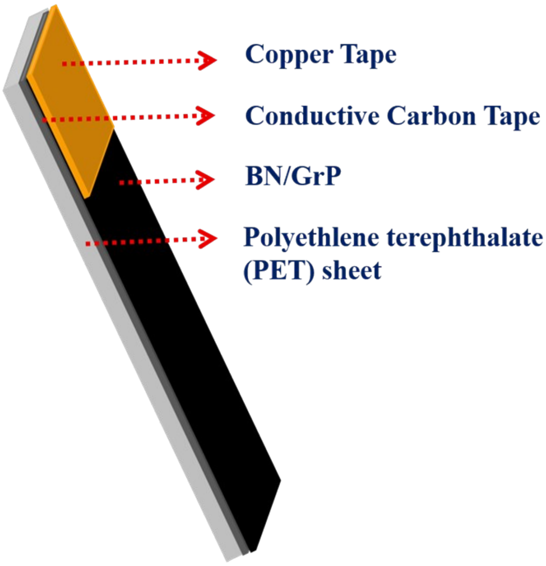


Fig. S1. Preparation of BN/GrP electrode for electrochemical measurements of supercapacitor.

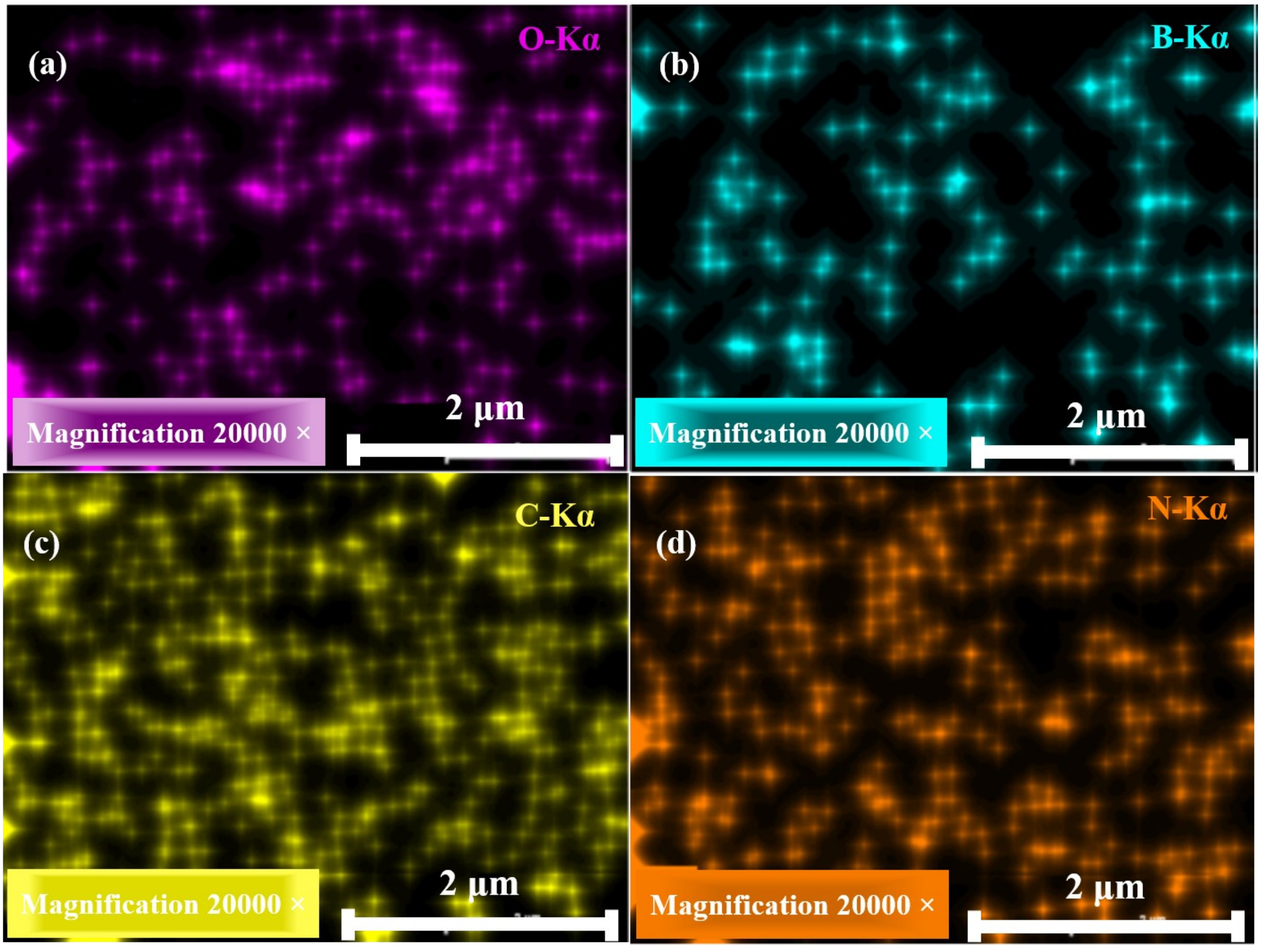


Fig. S2. EDX mapping analysis of BN/GrP: (a) oxygen, (b) boron, (c) carbon and (d) nitrogen.

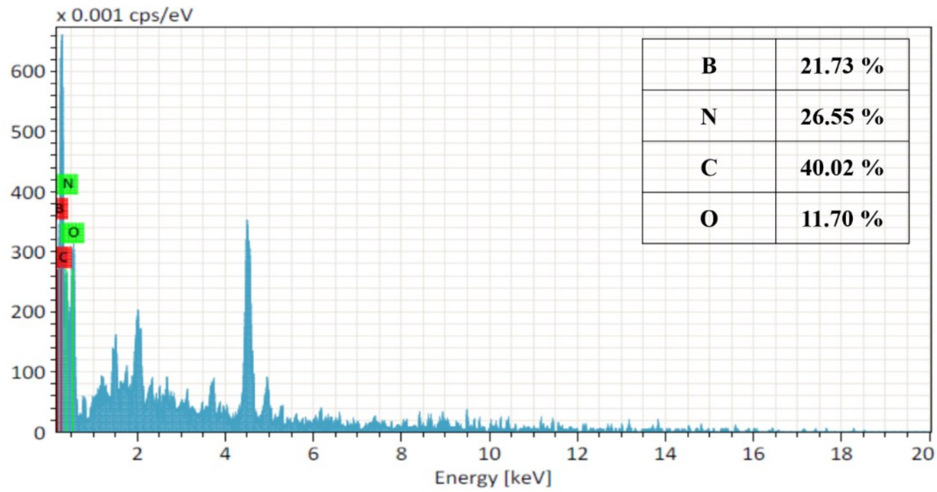


Fig. S3. EDX spectrum of BN/GrP (inset: atomic percentages of elements present in BN/GrP).

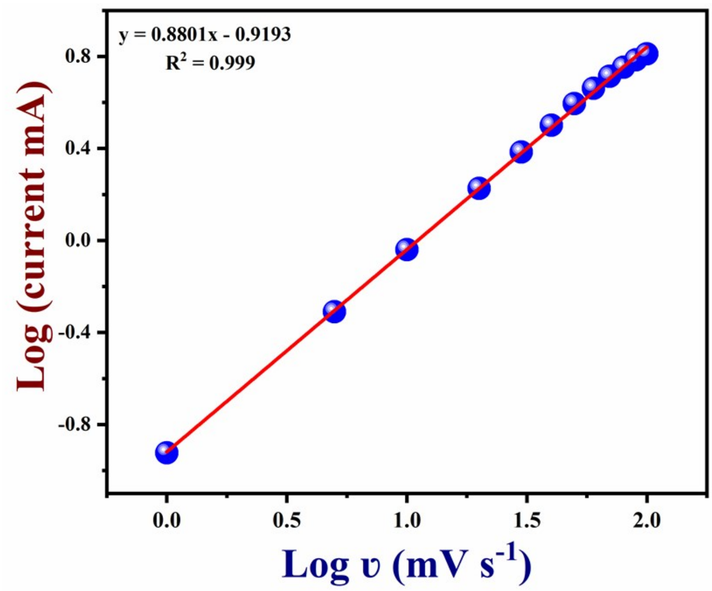


Fig. S4. The log of peak current was plotted against the log of scan rate to determine the "b" value of the BN/GrP from the anodic curve of different scan rates.

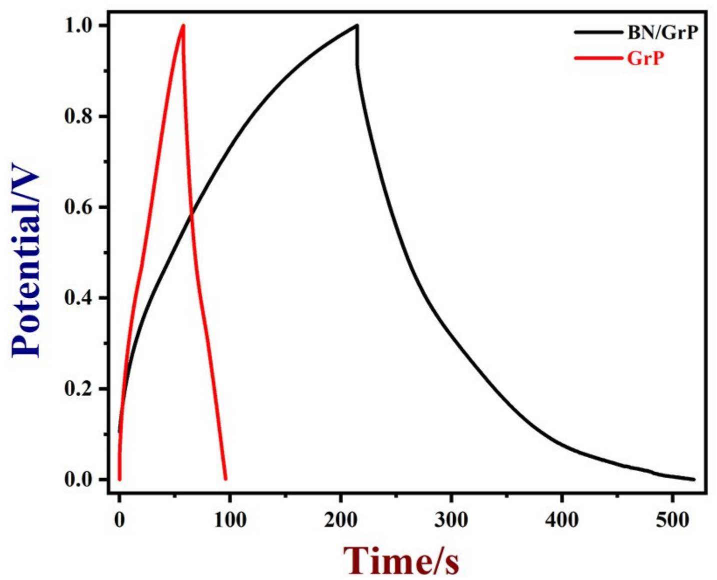


Fig. S5. Galvanostatic charge/discharge (GCD) curves of GrP and BN/GrP electrodes at a current density of 1 Ag^{-1}.

Table S1. Comparison of specific capacitances, retention and power density of the reported supercapacitors.

Active Material	Method of preparation	Electrolyte solution	Capacitance	Power density	Cycles/Retention	Ref.
rGO film	Brush-coating/annealing	6 M KOH	81.7 Fg^{-1} at 10 mV s^{-1}	1.5 $kW.kg^{-1}$ at 3 Ag^{-1}	1500 - 93.8%	[1]
Graphene paper	freeze-drying	1 M H_2SO_4	172 Fg^{-1} at 1 Ag^{-1}	-	5000 – 99%	[2]
MnO_2-coated 3D graphene	Electrochemical deposition on pressed Ni foam	0.5 M Na_2SO_4	130 Fg^{-1} at 1 mV s^{-1}	62 W.kg-1	5000 – 82%	[3]
GrP/10-MnO_2	Vacuum filtration and electrochemical deposition	0.1 M Na_2SO_4	385.2 Fg^{-1} at 1 mV s^{-1}	3.72 $kW.kg^{-1}$ at 4 Ag^{-1}	5000 – 85.4%	[4]
GrP	Vacuum filtration	1 M H_2SO_4	195.8 Fg^{-1} at 1 mV s^{-1}	-	10000 - 93.2%	[5]
BN/GrP	Vacuum filtration method	1M H_2SO_4	321.95 Fg^{-1} at 0.5 Ag^{-1}	3.5 $kW.kg^{-1}$ at 9 Ag^{-1}	6000 - 96.3%	**This work**

Supporting references

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