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Supplementary Information

Single-Step Exfoliation of Black Phosphorus and Deposition of Phosphorene via Bipolar Electrochemistry for Capacitive Energy Storage Application

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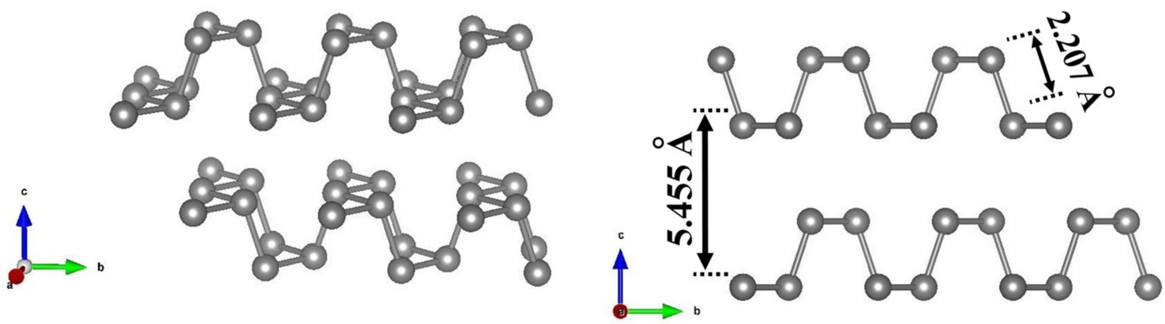

Figure 1S: Atomic structure of black phosphorus.

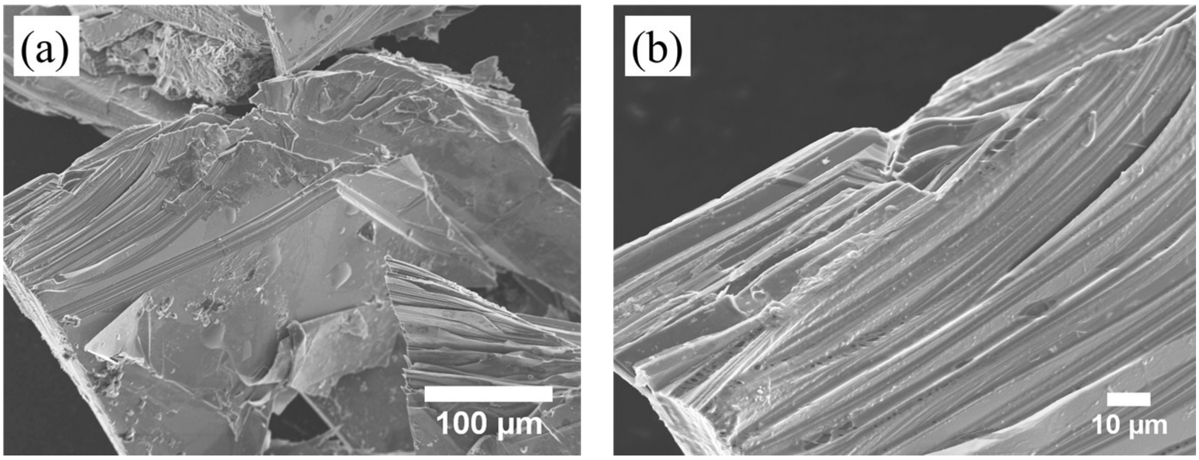

Figure 2S: FESEM images of bulk crystal of black phosphorus in different magnification.

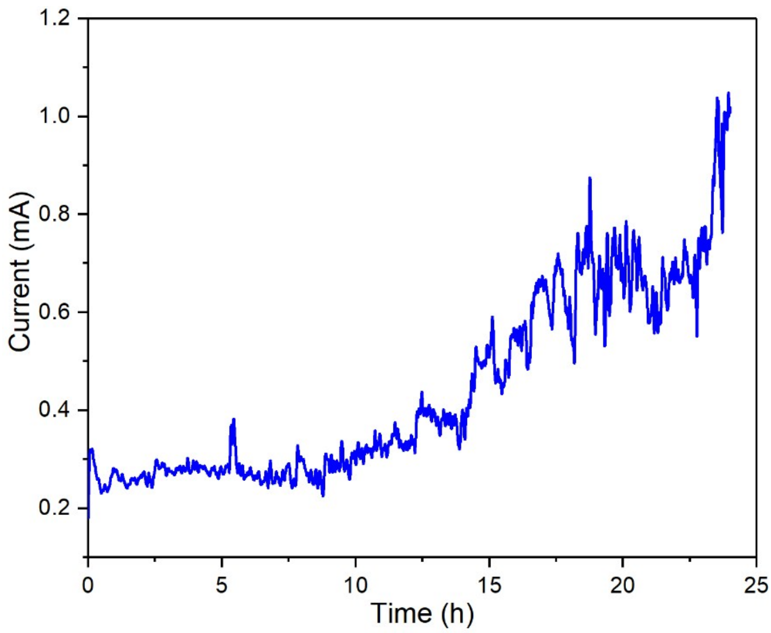

Figure 3S: Change of current vs. time during the bipolar exfoliation of bulk BP into phosphorene.

Table 1S: Summary of electrochemical performance of 2D materials for micro-supercapacitor application.

Material	Experiment Parameter	Power Density ($\mu W\ cm^{-2}$)	Energy Density ($\mu Wh\ cm^{-2}$)	Ref.
Polyelectrolyte-wrapped Graphene/CNT	100 μAcm^{-2}	20	3.84	1
CNT/MnO_2/Polymer Fiber	420 μAcm^{-2}	66.9	2.6	2
Modified Graphene sheets	20 $mAcm^{-2}$	749.8	109.6	3
Vertically aligned CNT	10	1000	0.1	4
Graphene-Ag-3D graphene foam	0.67 $mAcm^{-2}$	270	3.4	5
3D Graphene/graphite	500 μAcm^{-2}	24.5	1.24	6
2D MnO_2	0.5 Acm^{-2}	639	9.0	7
MXene/CNT	2 μAcm^{-2}	2.4	0.05	8
PANI/GO	3 $mAcm^{-2}$	200	2.52	9
MXene/CNF	0.57 $mAcm^{-2}$	145	0.08	10
Laser-assisted GO	1100 μAcm^{-2}	1051	32.1	11
Bipolar Exfoliated Phosphorene	500 μAcm^{-2}	351	0.01	This Work

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