Supporting Information

PANI-coated VO_x nanobelts with core-shell architecture for flexible all-solid-state supercapacitor

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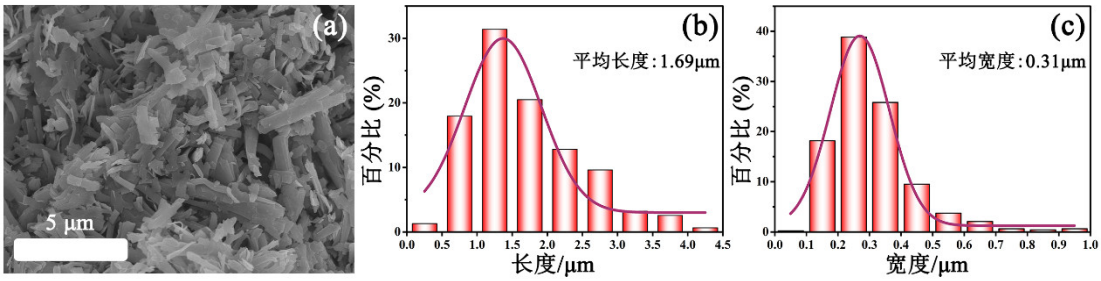


Figure S1 SEM images of (a) V@P-3 hybrid; the corresponding statistical histogram of (b) length and (c) width.

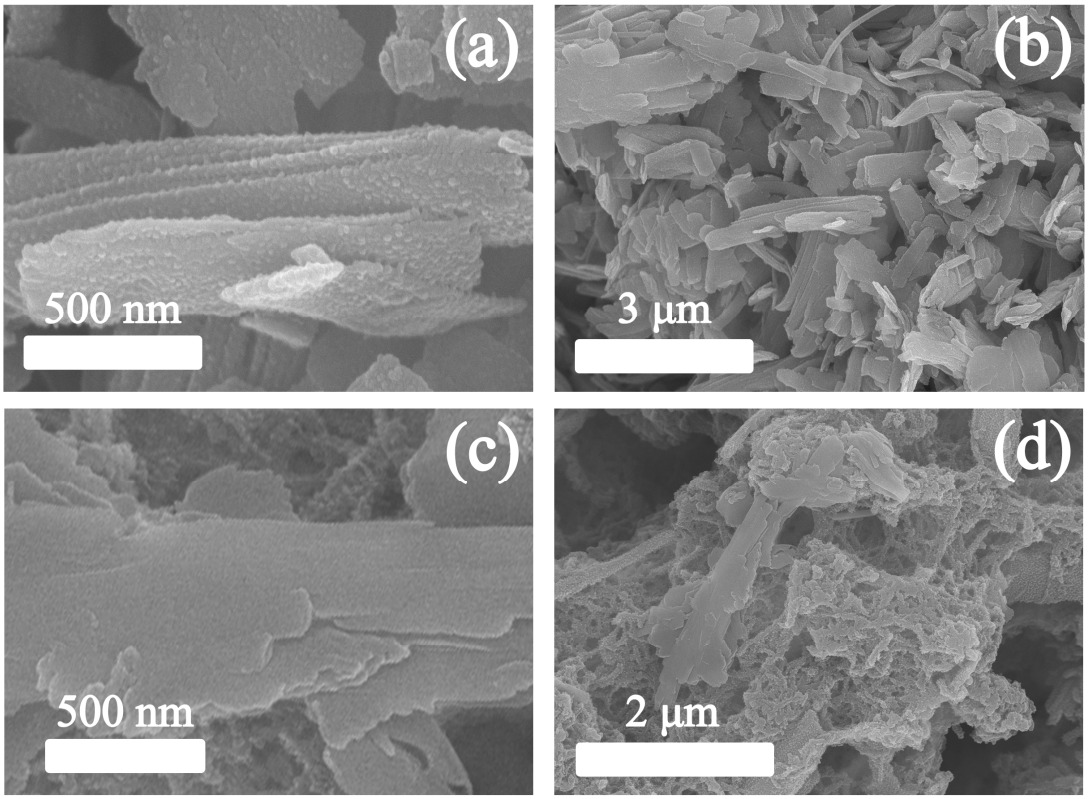


Figure S2 SEM images of (a, b) V@P-1 and (c, d) V@P-5.

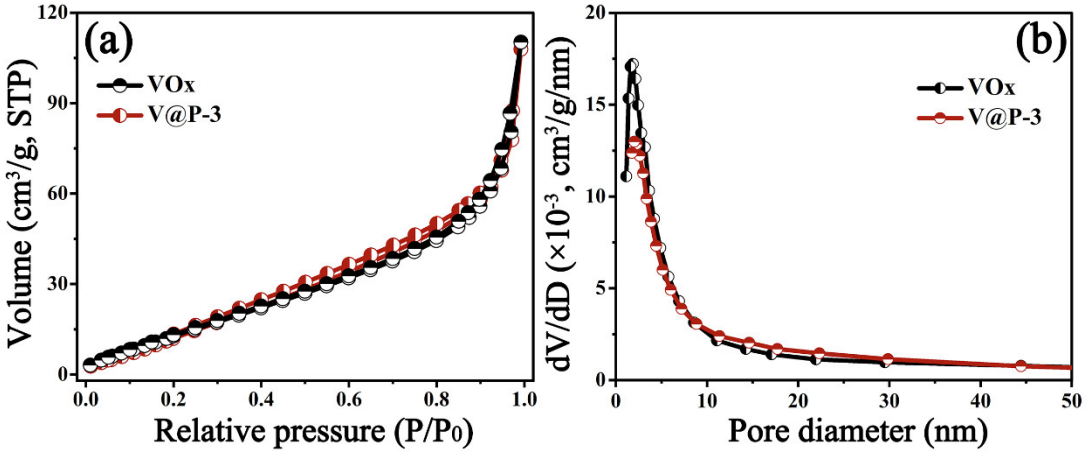


Figure S3 (a) N_2 adsorption/desorption isotherms and (b) the BJH pore size distribution curves of VO_x and V@P-3 samples.

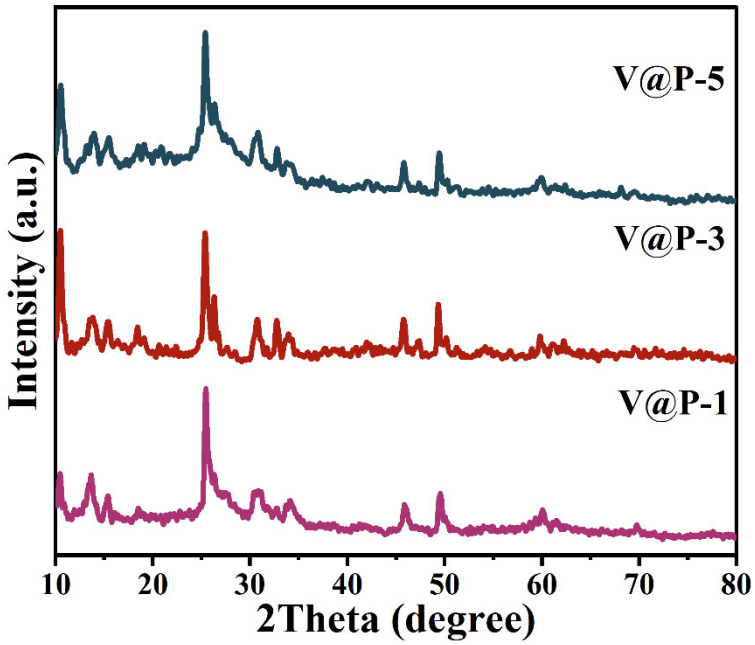


Figure S4 XRD patterns of V@P-1, V@P-3 and V@P-5.

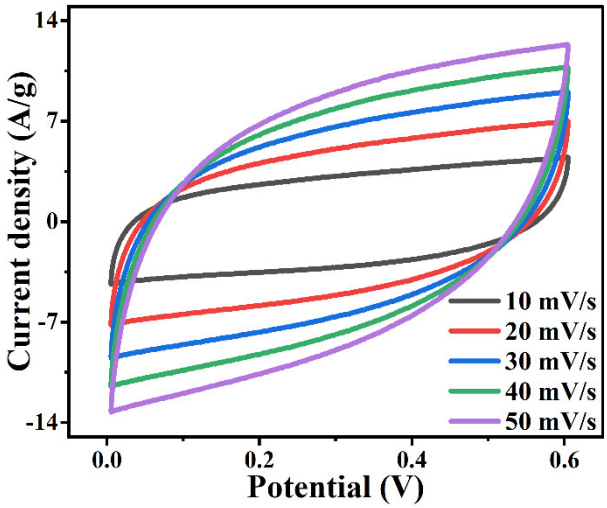


Figure S5 CV curves of V@P-3 electrode at different scan rates ranging from 10 to 50 mV/s.

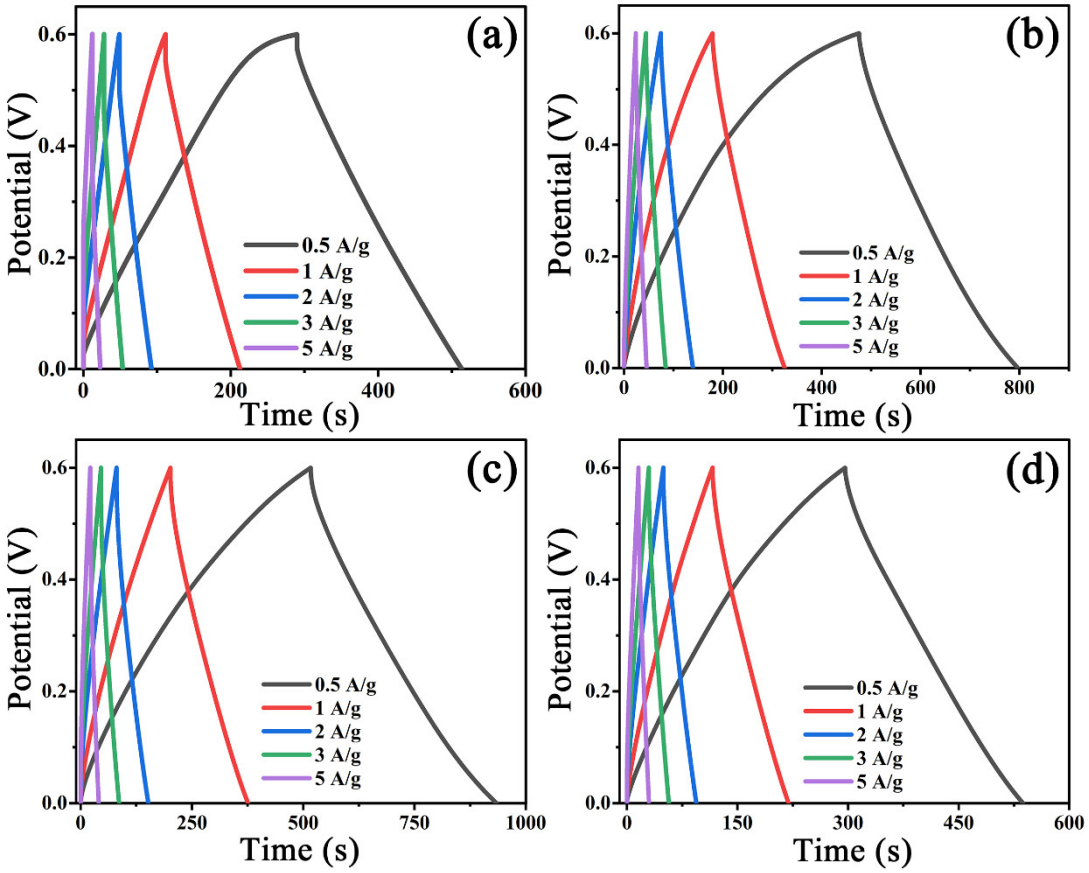


Figure S6 GCD curves at different current densities ranging from 0.5 to 5 A/g of (a) VO_x, (b) V@P-1, (b) V@P-3, and (b) V@P-5 electrode.

Table S1 The content of C, N, O, V elements for V@P-3 composite by EDS analysis.

Element	Weight/%	Atomic/%	Net error/%
C K	33.56	51.11	0.50
N K	16.31	21.30	2.34
O K	12.21	13.97	2.64
V K	37.92	13.62	0.78

Table S2 Impedance values of the VO_x and V@P-3 according to the equivalent circuit.

Samples	Parameters			
	R_0 (Ω)	R_{ct} (Ω)	C_p (F)	Z_W (Ω)
VO_x	3.16	0.48	0.98	0.39
V@P-3	3.01	0.12	1.12	0.44

Table S3 Comparison of areal power density and energy density for VO_x@PANI SSC and other reported vanadium oxide-based supercapacitors.

Supercapacitor	Energy density	Power density	Refs.
α-V_2O_5 SSC	0.48 μWh/cm^2	0.11 mW/cm^2	[1]
V_2O_5/PDOTE SSC	11.00 μWh/cm^2	0.19 mW/cm^2	[2]
V_2O_5@PDOTE/graphene SSC	0.18 μWh/cm^2	0.01 mW/cm^2	[3]
$V_2O_5 \cdot H_2O$/graphene SSC	1.13 μWh/cm^2	0.01 mW cm^2	[4]
MnO_2/V_2O_5@MWCNT SSC	6.58 μWh/cm^2	0.20 mW/cm^2	[5]
VO_x@PANI SSC	115.17 μWh/cm^2	0.39 mW/cm^2	this work

Reference

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5. Park, H.; Song C.; Jin, S.W.; Lee, H.; Keum, K.; Lee, Y.H.; Lee, G.; Jeong, Y.R.; Ha, J.S. High performance flexible micro-supercapacitor for powering a vertically integrated skin-attachable strain sensor on a bio-inspired adhesive. *Nano Energy*, **2021**, 83: 105837.