

## Morphology-dependent enhancement of the electrochemical performance of CNF-guided tunable VS<sub>4</sub> heterostructures for symmetric supercapacitors

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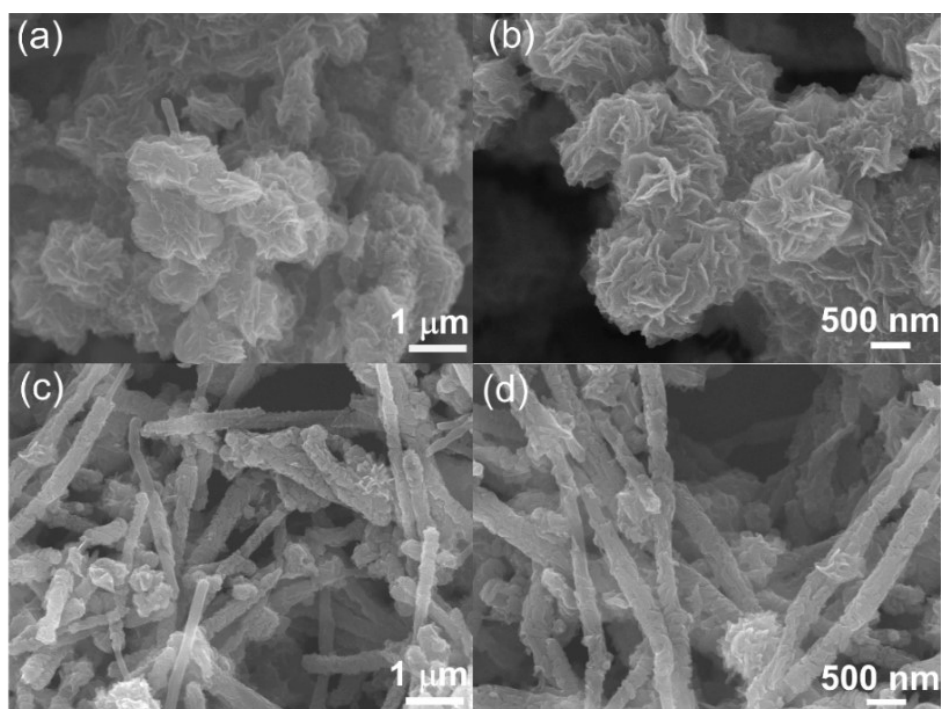
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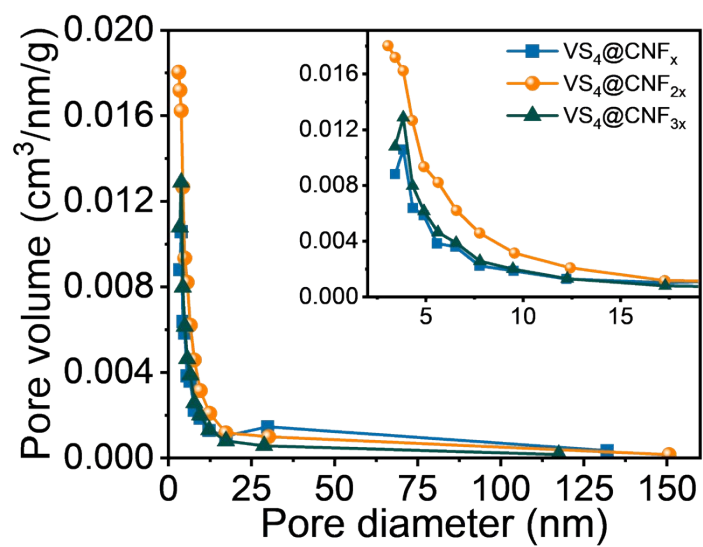
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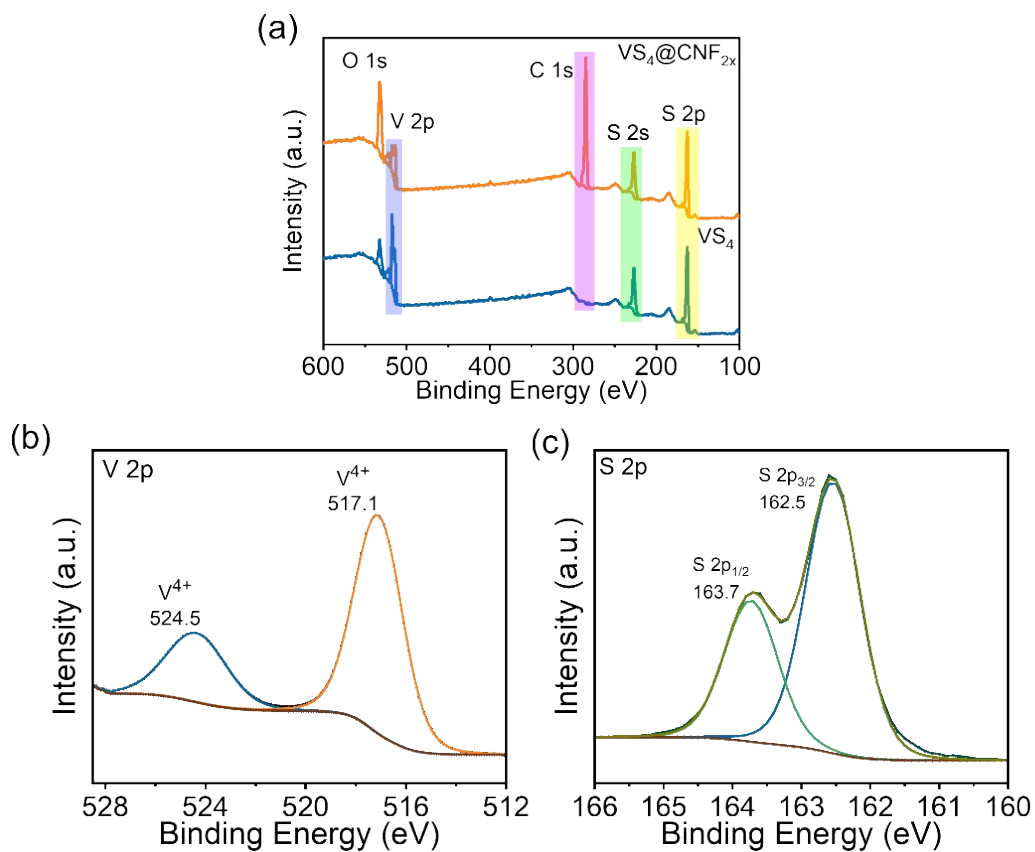
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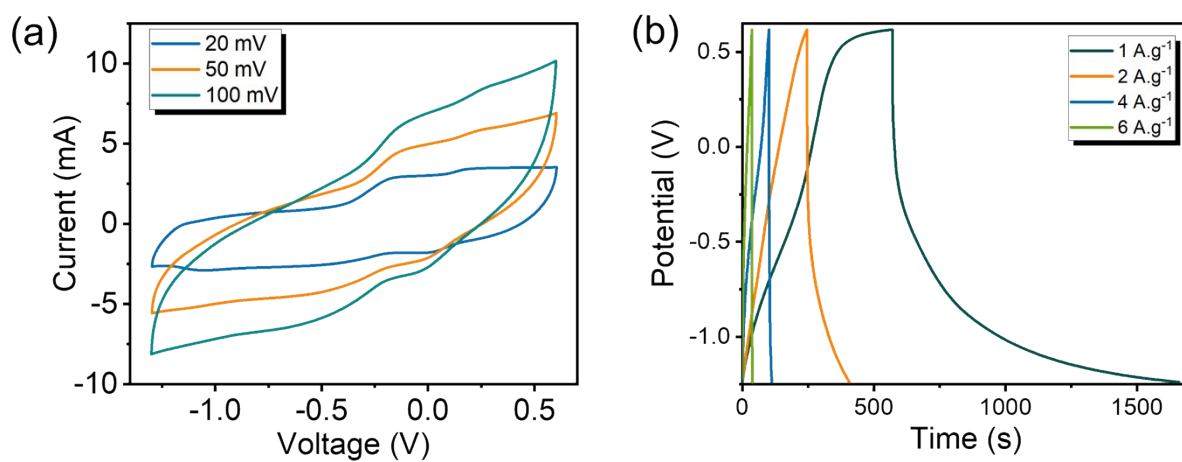
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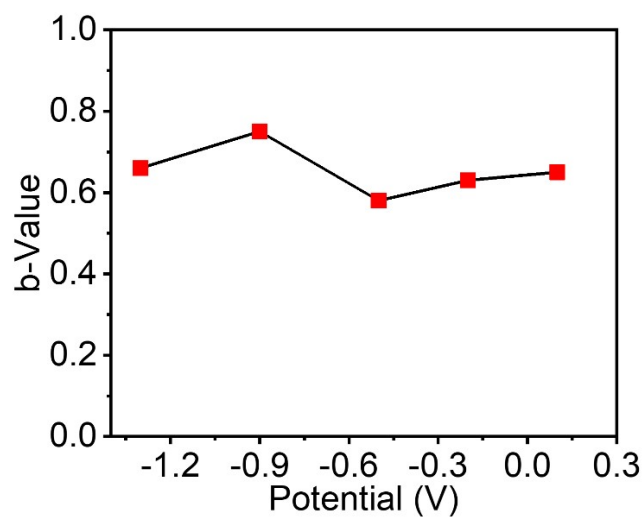
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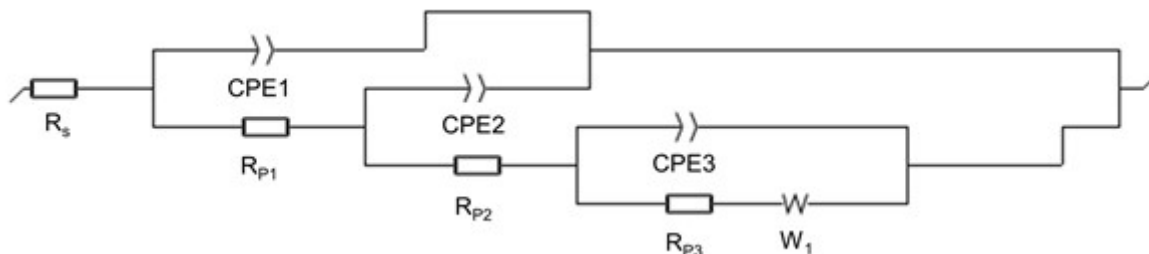
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**Figure S4.** (a) CV curve of VS<sub>4</sub> at different scan rates, and (b) GCD curve of VS<sub>4</sub> at different current density.



**Figure S5.** Calculating the slope  $b$  obtained by plotting  $\log(i)$  vs  $\log(v)$ .



**Figure S6.** The equivalent electrical circuit fit for  $VS_4@CNF_x$ ,  $VS_4@CNF_{2x}$ , and  $VS_4@CNF_{3x}$ .

**Table S1.** EIS fitted parameters of  $VS_4@CNF_x$ ,  $VS_4@CNF_{2x}$ , and  $VS_4@CNF_{3x}$  based SC.

Parameter	$R_s$ (ohm)	$R_{p1}$ (ohm)	CPE1 ( $S \times s^a$ ) $\times 10^{-3}$	N1	$R_{p2}$ (ohm)	CPE2 ( $S \times s^a$ ) $\times 10^{-3}$	N2	$R_{p3}$ (ohm) $\times 10^{-3}$	CPE3 ( $S \times s^a$ ) $\times 10^{-3}$	N3	$W_1$
$VS_4@CNF_x$	5.359	0.998	0.782	0.701	24.06	185.7	0.637	1.496	207	1	0.095
$VS_4@CNF_{2x}$	5.100	0.485	0.336	0.835	13.28	103.1	0.741	1.076	304	0.851	0.019
$VS_4@CNF_{3x}$	5.274	1.295	0.391	0.508	24.81	204	0.705	4.32	238	0.932	0.029

**Table S2.** Comparison of VS<sub>4</sub>@CNF<sub>2x</sub> electrode performance with the other reported materials.

Electrode Material	Electrolyte	Specific Capacitance	Retention (after Cycles)	Energy Density (W h kg <sup>-1</sup> )	Power Density (W kg <sup>-1</sup> )
VS <sub>4</sub> nanorods <sup>1</sup>	1 M LiNO <sub>3</sub>	617 F/g @ 0.4 A/g	87.5% (1500)	55	-
Hydrangea-like VS <sub>4</sub> microsphere <sup>2</sup>	1 M Na <sub>2</sub> SO <sub>3</sub>	533 F/g @ 0.1 A/g	80% (500)	60	-
Anemone-like VS <sub>4</sub> microsphere <sup>3</sup>	1 M LiNO <sub>3</sub>	617 F/g @ 0.4 A/g	87.5% (1500)	113.6	720
Petal shape VS <sub>4</sub> /CNT <sup>4</sup>	1 M LiClO <sub>4</sub>	330 F/g @ 1 A/g	63% (5000)	51.2	30.95
VS <sub>4</sub> /CNT/rGO <sup>5</sup>	1 M LiClO <sub>4</sub> /PC	490.7 F/g @ 1 A/g	50% (2000)	72.07	14.69
VS <sub>4</sub> /CNTs/RGO <sup>6</sup>	0.5 M K <sub>2</sub> SO <sub>4</sub>	558.7 F/g @ 1 A/g	90% (1000)	174.6	13.85
NiS <sub>2</sub> @NiV <sub>2</sub> S <sub>4</sub> <sup>7</sup>	6 M KOH	520 C/g at 1 A/g	90% (10000)	19.4	140
VS <sub>4</sub> /rGO <sup>8</sup>	1 M Na <sub>2</sub> SO <sub>4</sub>	877 F/g @ 0.5 A/g	90% (1000)	117	20
rGO-VS <sub>2</sub> -WS <sub>2</sub> <sup>9</sup>	3 M KOH	220 F/g @ 1 A/g	-	30.55	355
<b>VS<sub>4</sub>@CNF<sub>2x</sub> <sup>This work</sup></b>	<b>1 M KOH</b>	<b>840 F/g @ 1 A/g</b>	<b>86% (5000)</b>	<b>91</b>	<b>239</b>

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