# Electronic Supplementary Information

## Synthesis of 3C/2H/6H heterojunction SiC nanowires with high-performance supercapacitors by thermal evaporation †

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**Fig. S1-S9**

**Table. S1**

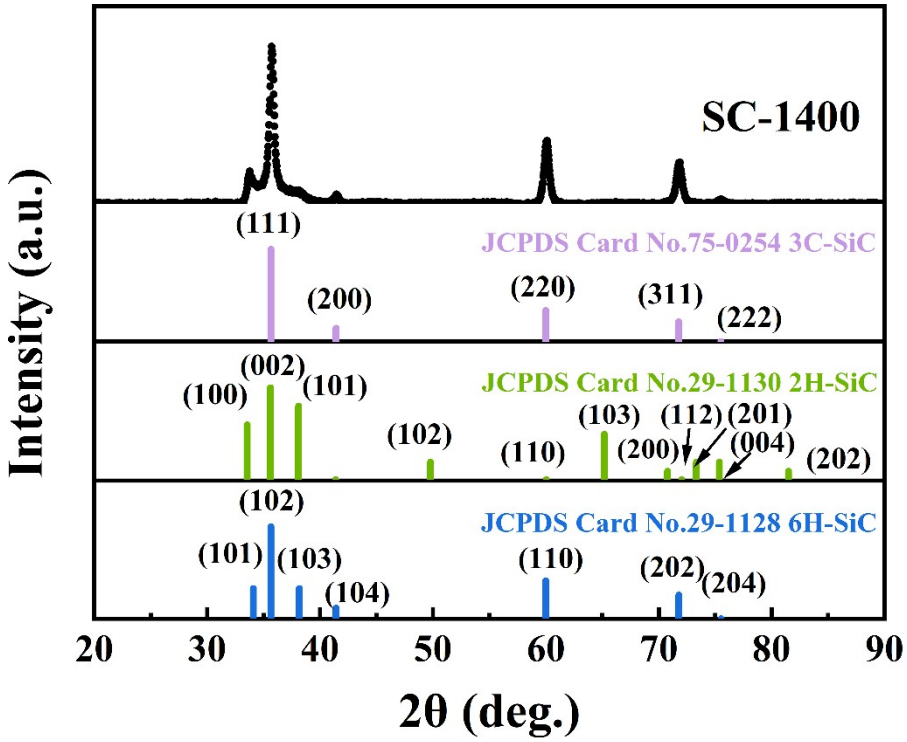


**Fig. S1.** XRD patterns of SC-1400.

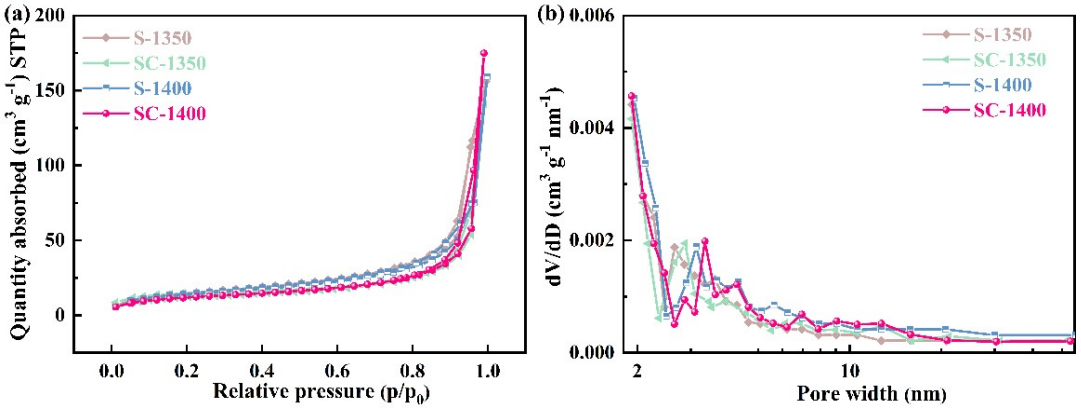


**Fig. S2.** (a) $N_2$ adsorption-desorption isotherms and (b) pore size distributions of S-1350, SC-1350, S-1400, and SC-1400.

**Table S1.** Surface structure of S-1300, SC-1300, S-1400, and SC-1400.

| Sample | S-1350 | SC-1350 | S-1400 | SC-1400 |
|---|---|---|---|---|
| SSA ($m^{-2}$ $g^{-1}$) | 58.21 | 57.34 | 54.08 | 53.61 |
| Total pore volume ($cm^3$ $g^{-1}$) | 0.061 | 0.064 | 0.069 | 0.071 |
| Average pore width (nm) | 2.58 | 2.87 | 3.15 | 3.34 |

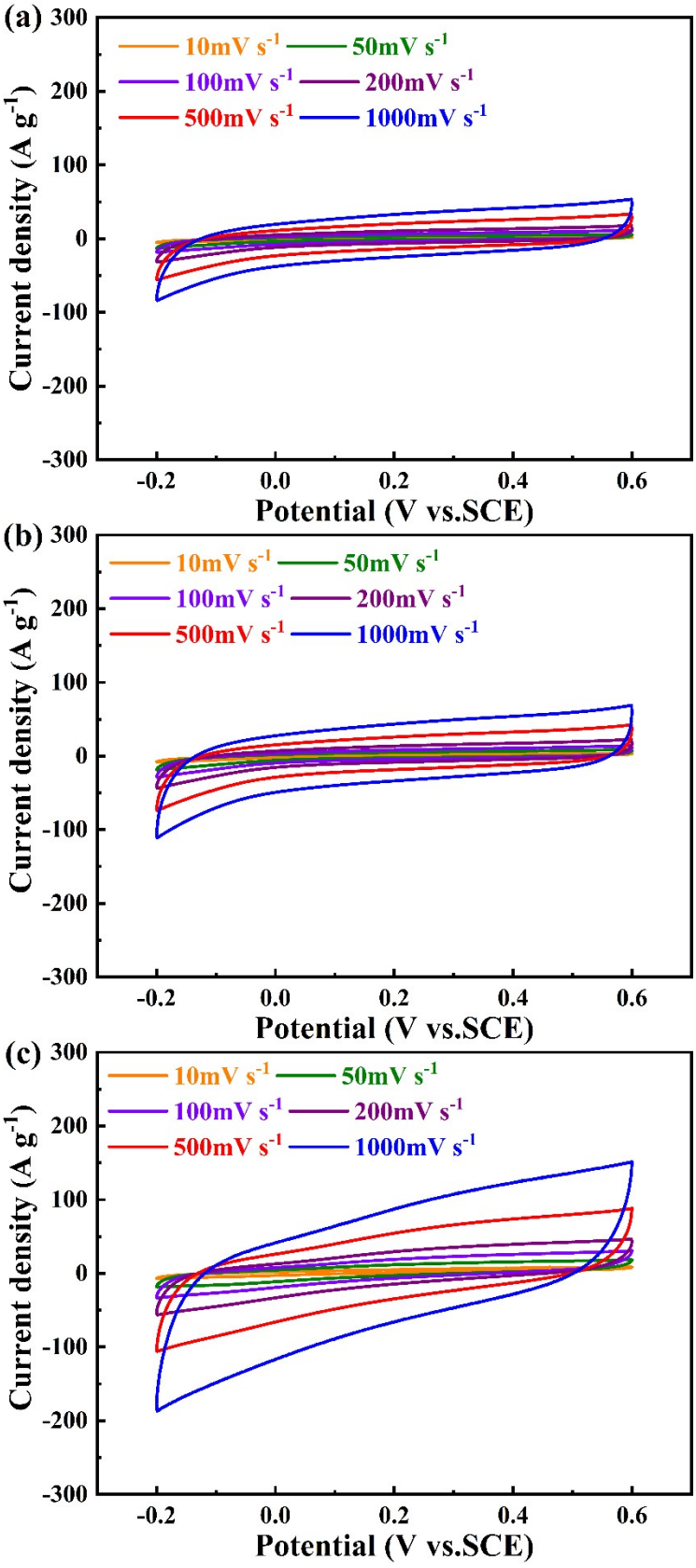


**Fig. S3.** CV curves of (a) sample S-1350, (b) sample SC-1350, and (c) sample S-1400 at various scan rates (10-1000mV $s^{-1}$).

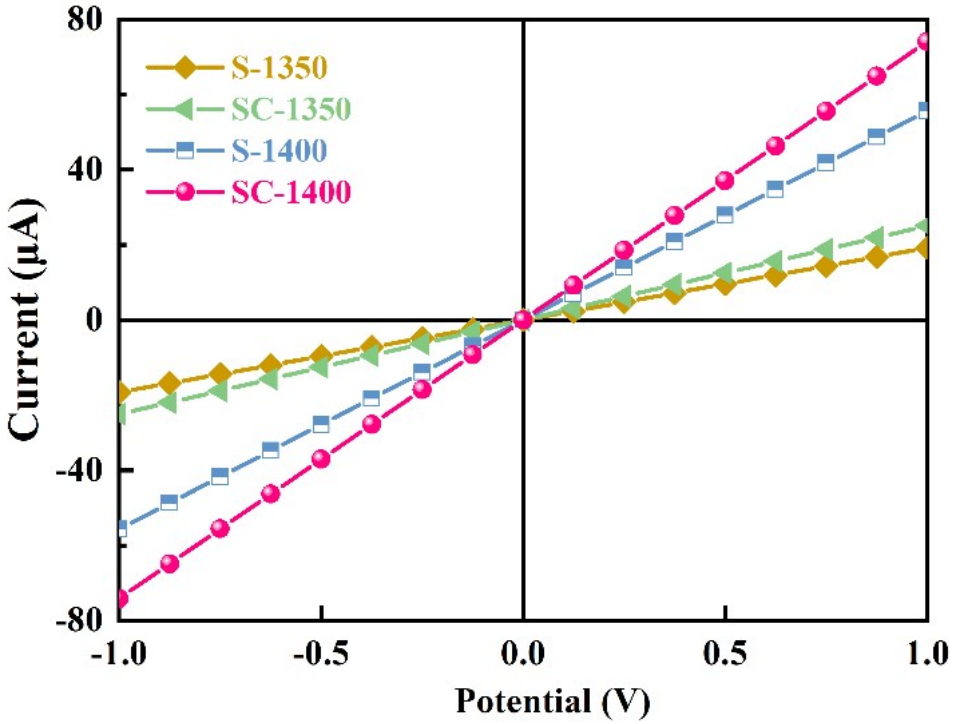


**Fig. S4.** Conductivity characterization of the SiC NWs.

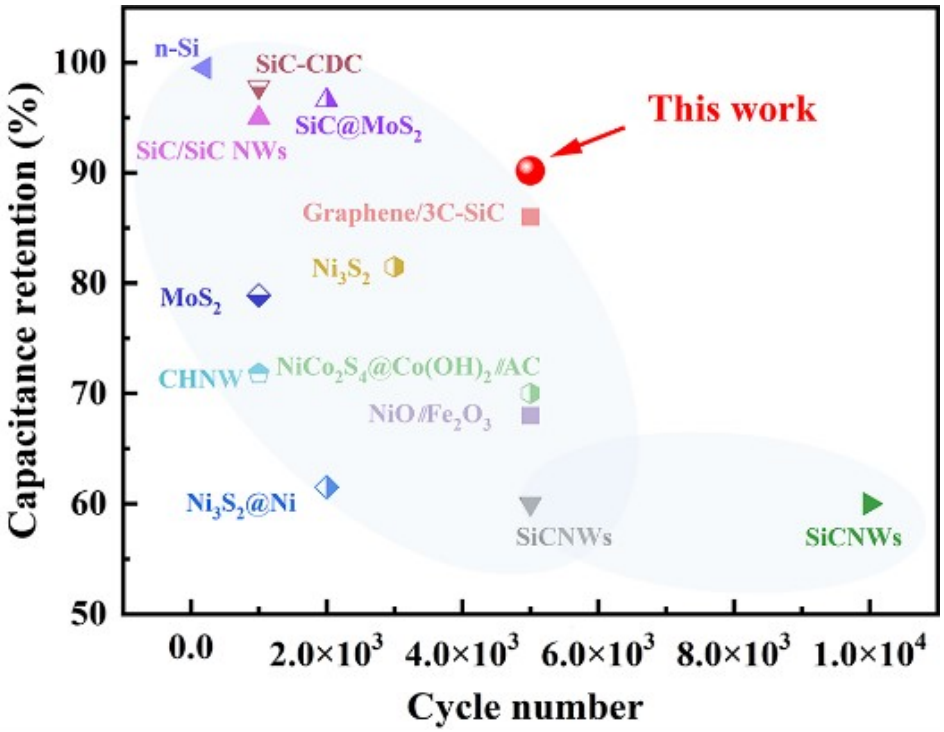


**Fig. S5.** Comparison of the cyclic stability of SiC NWs in this work with those in the literature. (1 2 2 3 4 5 6 7 8 9 10 11 12)

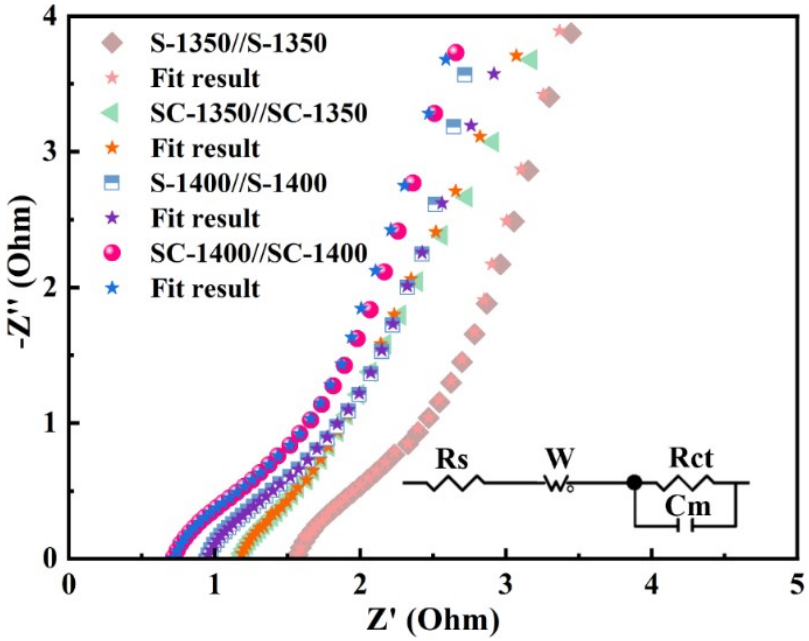


**Fig. S6.** Nyquist plots of SCs based on S-1350, SC-1350, S-1400, and SC-1400 electrodes.

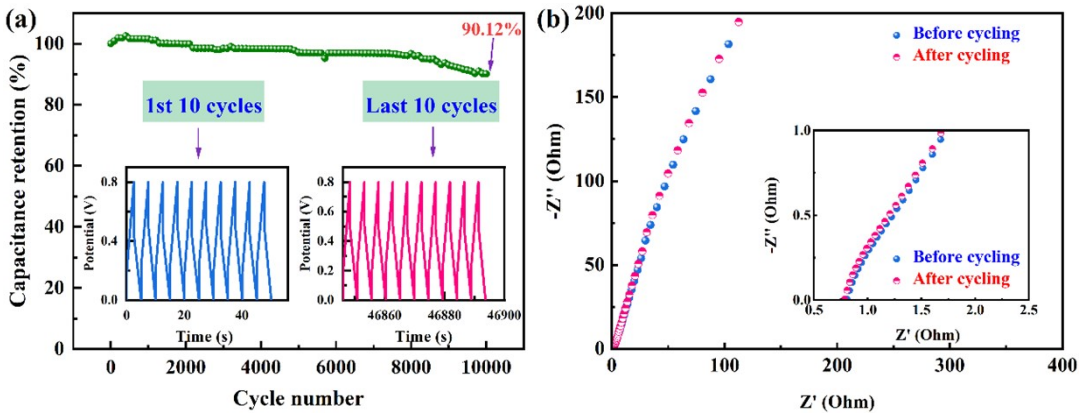


**Fig. S7.** (a) Cycling performance of SCs based on SC-1400 electrodes at 20 A $g^{-1}$ for 10,000 cycles; (b) the Nyquist curves of before and after cycling.

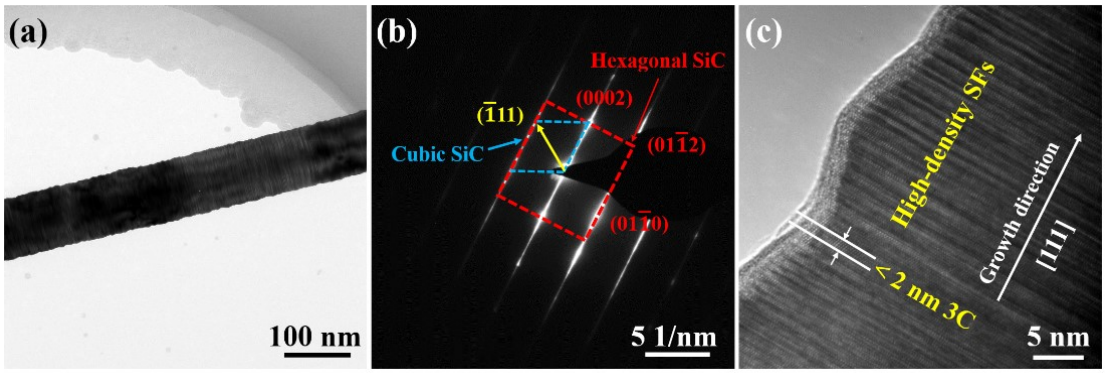


**Fig. S8.** TEM and HRTEM images of Sample S-1400 after 10,000 cycles. (a) TEM image, (b) SAED patterns, and (c) HRTEM image. Compared to the pre-cycle sample, the diameter of SiC NWs remains unchanged after 10,000 cycles (~90 nm, **Fig. S8**a†). SAED patterns show severe streaking along the growth direction (**Fig. S8**b†), indicating a high density of SFs in the SiC NWs. Perfect SiC crystals with crystal domain width greater than 2 nm could not be observed (**Fig. S8**c†). The lattice and interfacial structures of the SiC NWs remained unchanged, suggesting an excellent cycling stability of the sample.

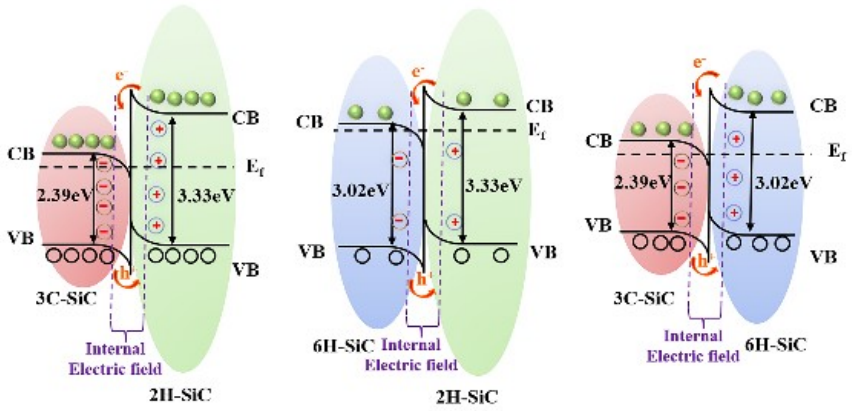


**Fig. S9.** Band diagrams of electric field for 3C/2H, 6H/2H and 3C/6H heterogeneous structures.

## Notes and references


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