



Supporting Information

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**Carbon-MEMS-Based Alternating Stacked MoS₂@rGO-CNT
Micro-Supercapacitor with High Capacitance and Energy
Density**

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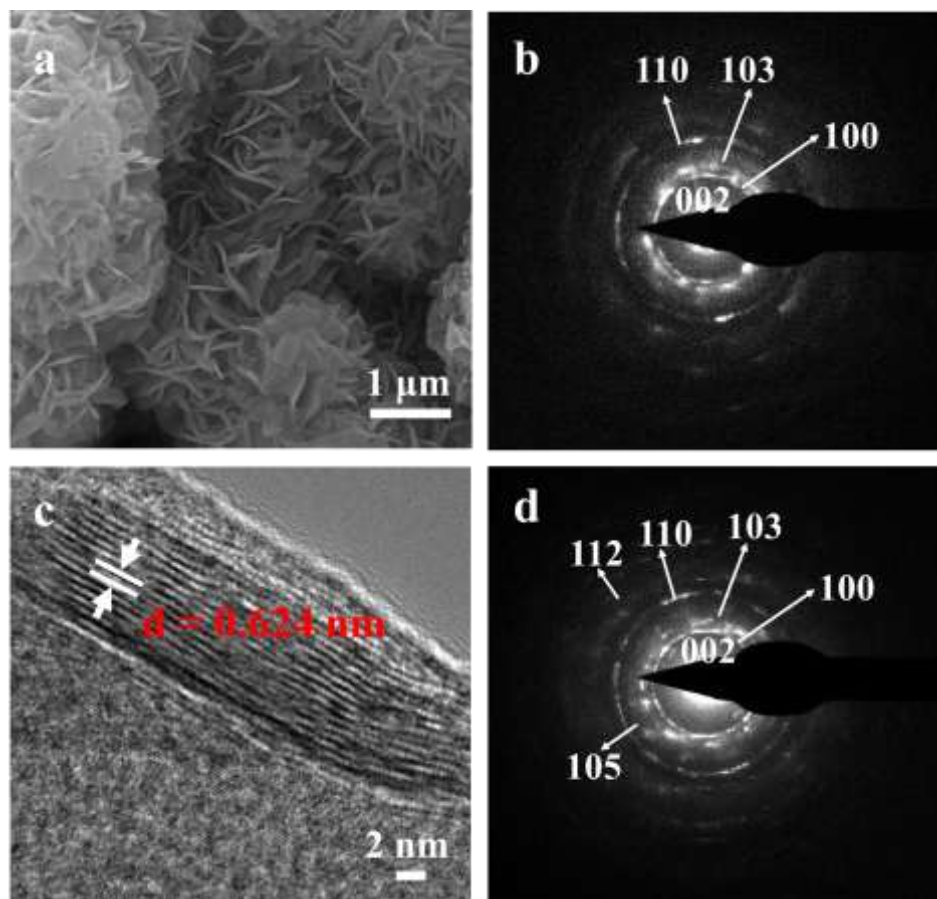


Figure S1. Characterizations results of the samples, (a) SEM image of A-MoS₂, (b) SAED pattern of H-MoS₂, (c) HRTEM image of A-MoS₂, (d) SAED pattern of A-MoS₂.

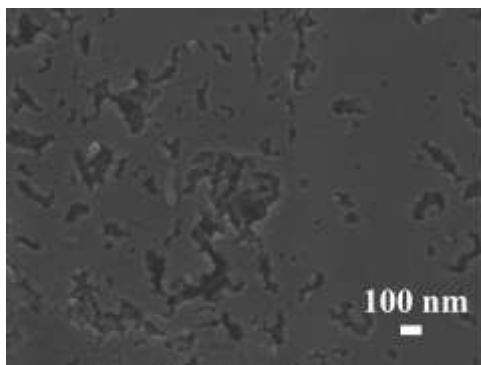


Figure S2. The SEM image of the C-MSiC's surface.

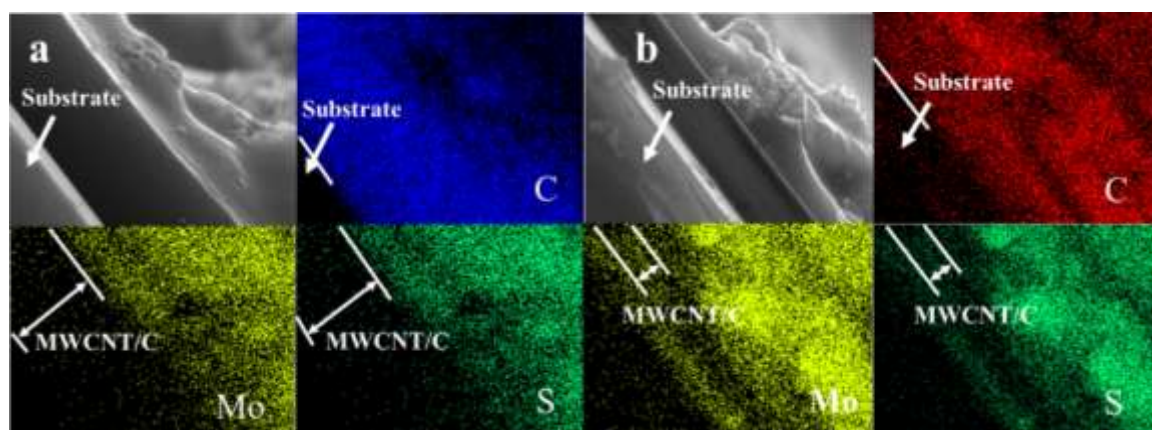


Figure S3. EDS characterizations results. (a) Cross-sectional elements distribution in MC-MS. (b) Cross-sectional elements distribution in MCM-MS.




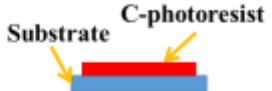




				
		Soft baking (min)	Photolithography (mJ cm ⁻²)	Developing (s)
C-MSC		15	600	70
M-MSC		15	600	85
MC-MSC		16	840	100
MCM-MSC		17	1080	120
MPMP-MSC		18	1440	150

Figure S4. The optimized parameters of the soft baking, photolithography and developing for C-MSC, M-MSC, MC-MSC, MCM-MSC and MPMP-MSC.

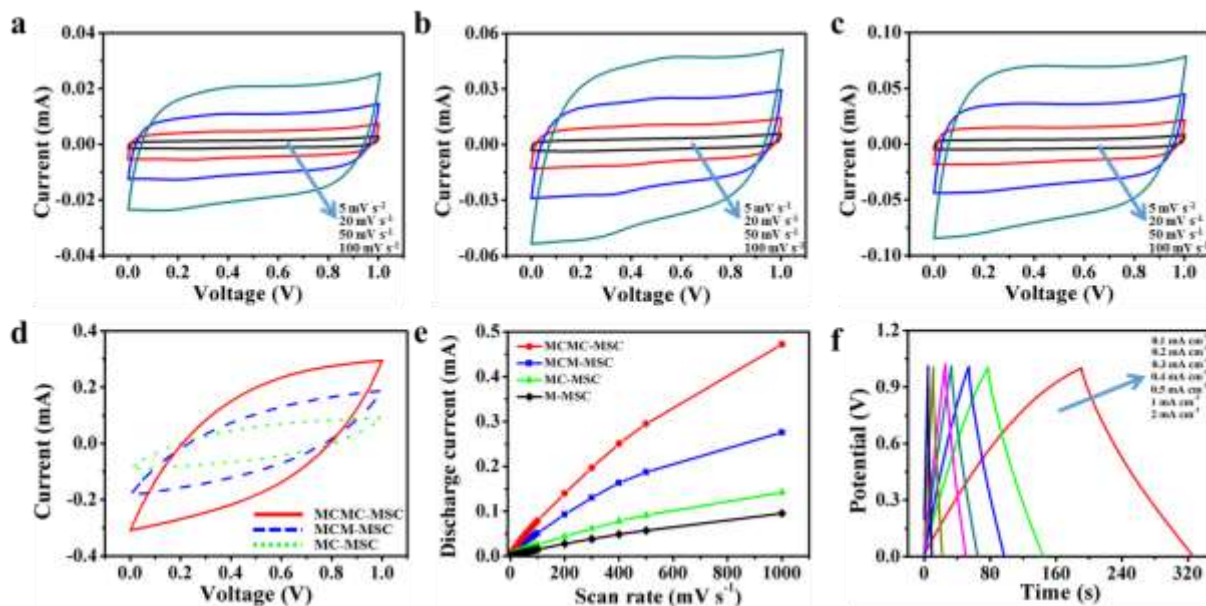


Figure S5. The CV curves of (a) MC-MSC, (b) MCM-MSC and (c) MCMC-MSC with the scan rate ranging from 5 to 100 mV s⁻¹. (d) The CV curves of MC-MSC, MCM-MSC and MCMC-MSC at a scan rate of 500 mV s⁻¹. (e) Plots of the discharge current as a function of the scan rate for MCMC-MSC, MCM-MSC, MC-MSC and M-MSC. (f) GCD plots of MCMC-MSC with the current density ranging from 0.1 to 2 mA cm⁻².

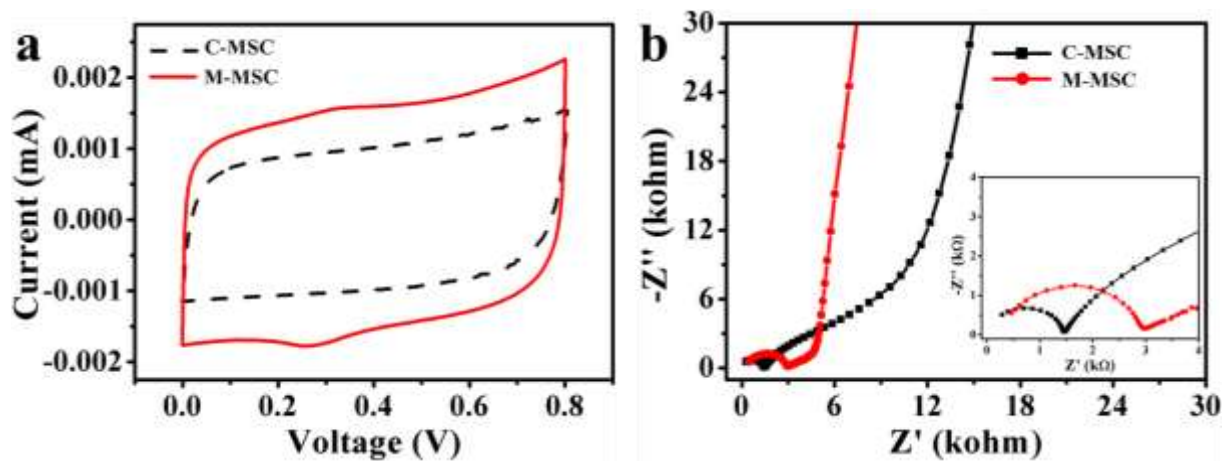


Figure S6. Electrochemical performance of C-MSC and M-MSC. (a) CV curves of C-MSC and M-MSC at 10 mV s^{-1} . (b) Nyquist impedance plots of C-MSC and M-MSC with frequency ranging from 0.01 Hz to 500 kHz.

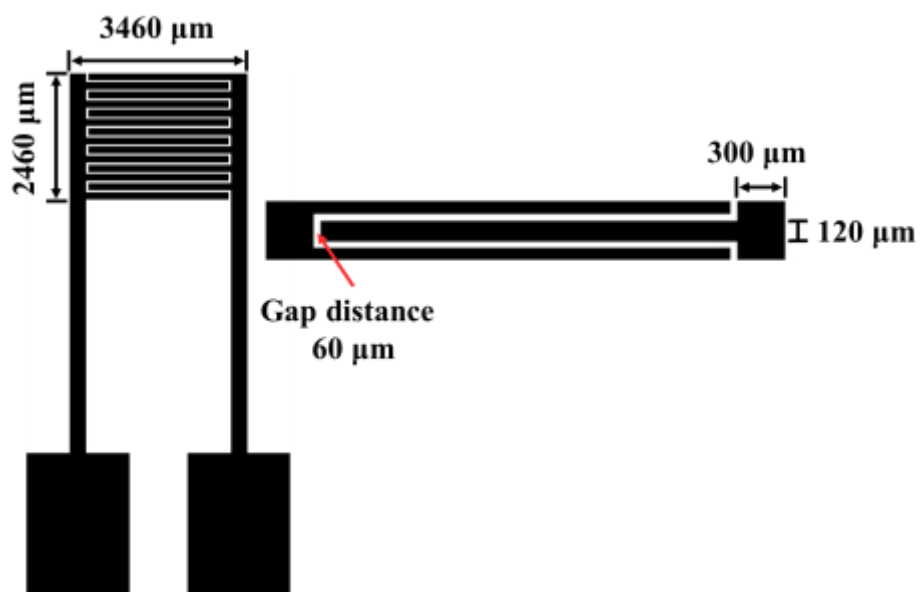


Figure S7. The microelectrodes projection of the mask, and the area of interdigital microelectrodes is $0.0618\ \text{cm}^2$.

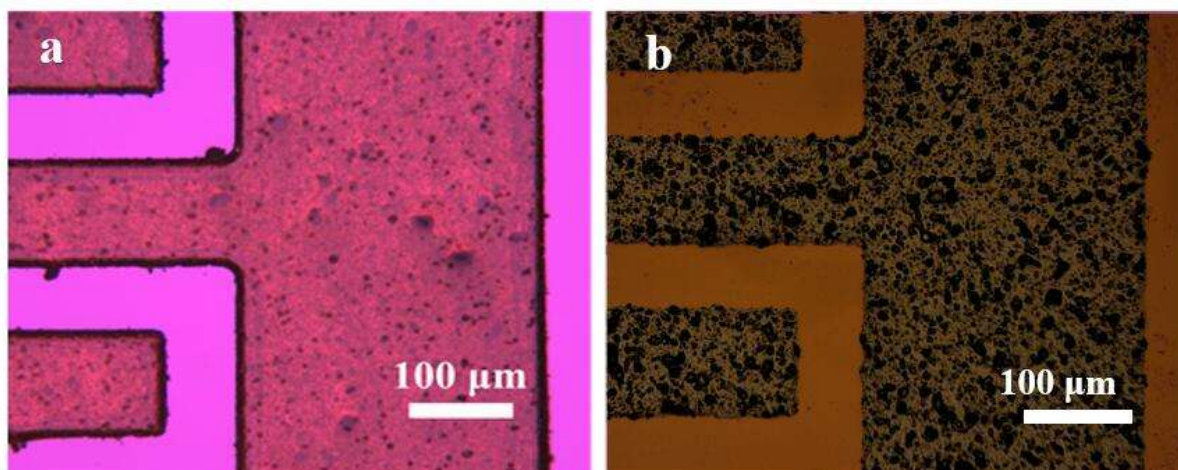


Figure S8. The optical microscope images of MCMC-micropattern (a) before annealing and (b) after annealing.