

Fig.1S (a) TEM morphology of Mo@V-VO_{0.2} based 80AMSCs3 and the corresponding element mapping of (b) V, (c) Mo, and (d) O, (e) EDX spectrum, (f) SAED pattern.

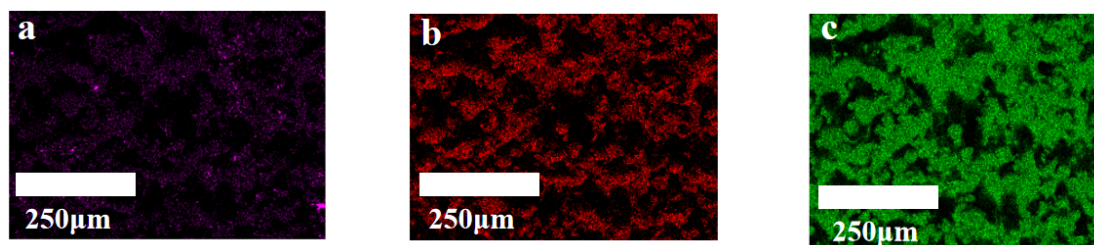


Fig.2S EDS element mapping for (a)Mo, (b)V and (c)O.

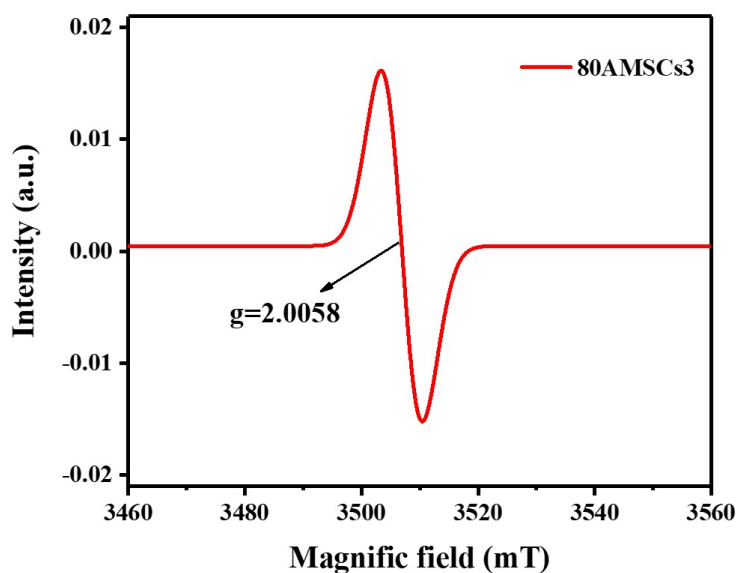


Fig. 3S EPR spectra of the 80AMSCs3.

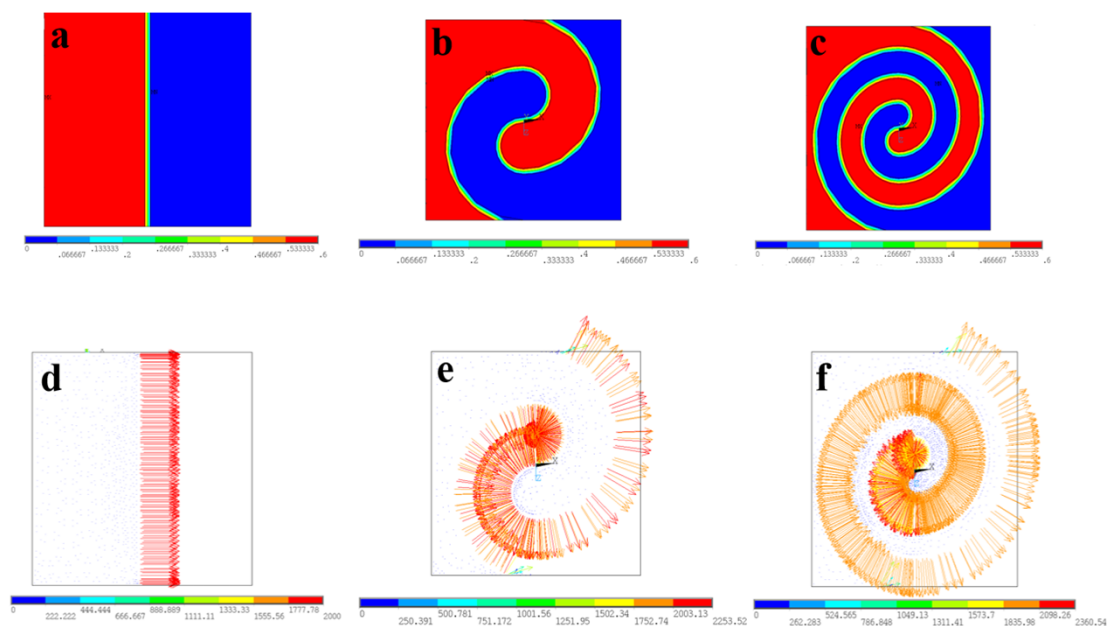


Fig.4S Electric potential distribution of (a) 60AMSCs1 and (b) 60AMSCs2, (c) and 60AMSCs3, electric field intensity distribution of (d) 60AMSCs1 and (e) 60AMSCs2 and (f) 60AMSCs3.

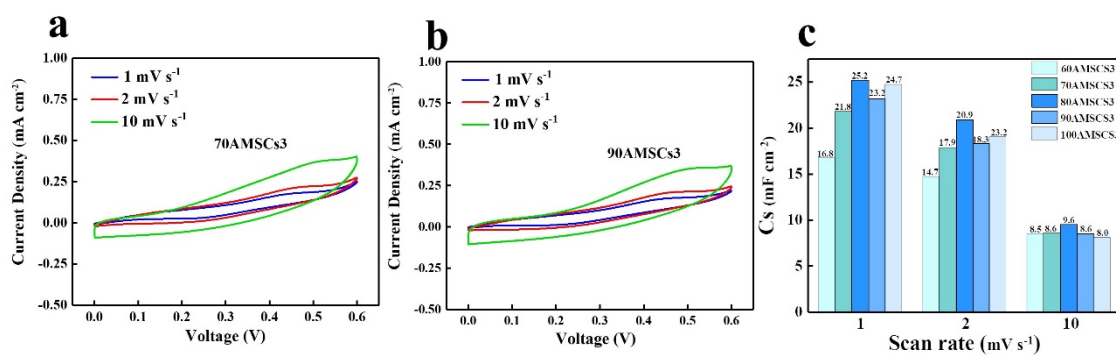


Fig.5S CVs at low scan rates of 1, 2 and 10 mV s⁻¹ for (a) 70AMSCs3 and (b) 90AMSCs3, and (c) areal capacitance of 60AMSCs3, 70AMSCs3, 80AMSCs3, 90AMSCs3 and 100AMSCs3 at different scan rates.

Table.1S Comparison of MSCs fabricated by different processing methods

Devices	Electrodes Fabricated Techniques Used	Materials used for Electrodes Fabrication	Current collectors	Capacitance (mF cm ⁻²)	References
PANI/V ₂ O ₅	Electrodeposition Spray coating Solvothermal method, Centrifugation, Pyrolysis, Annealing, Dispersing	VCl ₃ , p-benzenedicarboxylic acid, ethanol, N ₂ gas, Ar-H ₂ gas, dimethylformamide, isopropanol, aniline, H ₂ SO ₄ , SnO ₂ : F (FTO)	FTO prepared by coating	12.3	[1]
rGO/V ₂ O ₅	Spray coating, Sputtering, Modified Hummer's method, Annealing, Stirring, Ultrasonication, Filtering	N ₂ gas, NH ₄ VO ₃ , Ammonium hydroxide, C ₂ H ₅ NS, ethanol, dimethylformamide, graphite powder, H ₂ SO ₄ , ice, KMnO ₄ , H ₂ O ₂ , HCl	Au/Cr current collectors fabricated by Sputtering	24	[2]
Graphene-PEDOT-PSS	Mask-assisted spray deposition, Electrochemically exfoliating, Stirring, Heating, Sonication	Graphite foil, N ₂ gas, H ₂ SO ₄ , 2-propanol, PEDOT, PSS, platinum	Integrated electrodes	5.4	[3]
MXene	Laser machining Spray-coating, Etching, Stirring, Centrifugation, Filtering	Ti ₃ AlC ₂ , HF, LiF, HCl	Integrated electrodes	23	[4]
CNT	Spin coating, Photolithography, Ultrasonication, Stirring, Centrifugation, Drying, Pyrolysis	CNTs, chitosan, acetic acid, ammonia, formalin, photoresist, Si/SiO ₂ wafer, N ₂ gas	Integrated electrodes	6.1	[5]

	baking				
Activated carbon	Inkjet printing, Photolithography, Chemical vapour deposition, Evaporation, Etching	Activated carbon powder, polytetrafluoroethylene binder, Triton X100, ethylene glycol, titanium, gold	Gold current collector	5.1	[6]
Carbon onions	Electrophoretic deposition, Photolithography, Etching, Thermal growing, Annealing, Heating	Nanodiamond, titanium, gold, HClO ₄ , ethanol-water, silicon dioxide, MgCl ₂	Gold current collector	1.7	[7]
Graphene	Spin coating, Lithography, O ₂ plasma treatment, CH ₄ plasma treatment	Graphene oxide, O ₂ , CH ₄ , photoresist, Au, KI/I ₂ solution	Gold current collector	0.08	[8]
Graphene	Laser-scribing, Modified Hummer's method, Stirring, Drop-cast	Graphite powder, H ₂ SO ₄ , K ₂ S ₂ O ₈ , P ₂ O ₅ , KMnO ₄ , H ₂ O ₂ , HCl	Integrated electrodes	2.3	[9]
rGO	Laser radiation, Vacuum filtration, Modified Hummer's method, Stirring, Filtering, Washing, Heating	Graphite powder, H ₂ SO ₄ , K ₂ S ₂ O ₈ , P ₂ O ₅ , ice, KMnO ₄ , H ₂ O ₂ , HCl	Carbon-coated aluminium foils	0.51	[10]
Mo@VO _{0.2}	WEDM	Vanadium metal sheet, Molybdenum wire	Integrated electrodes	25.2	This work

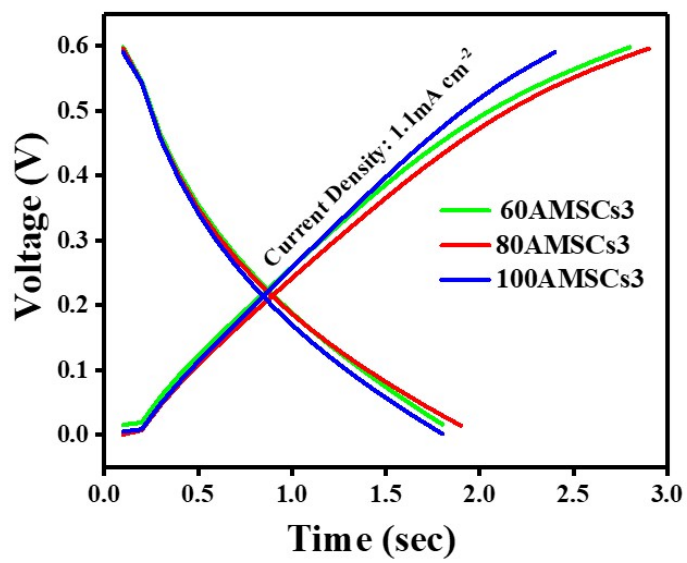


Fig. 6S The GCD images of 60AMSCs3, 80AMSCs3 and 100AMSCs3.

References

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