

High-performance Spinel NiMn₂O₄ Hierarchical Microspheres Self-assembled with Nanosheets by Microwave-assisted Synthesis for Supercapacitor

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Tab.S1 The elemental content distribution of NiMn₂O₄ determined by XPS.

Element	Ni	Mn	O
Atomic %	14.61	28.93	56.46

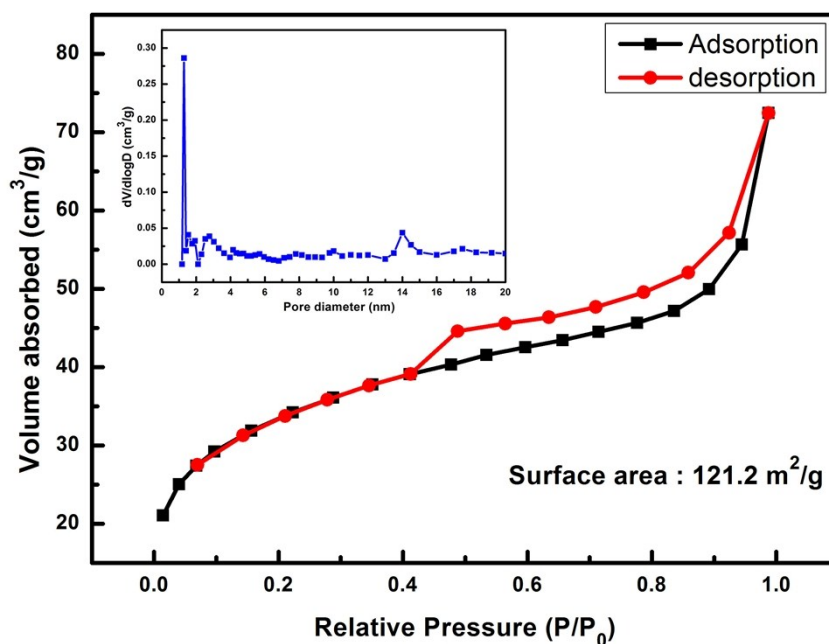


Fig.S1 N₂ adsorption-desorption isotherm of the as-prepared NiMn₂O₄ (Insert shows the pore size distribution curve).

Tab.S2 Supercapacitor performances of NiMn₂O₄-based electrode materials prepared by different methods reported in the literature.

Structure of NiMn ₂ O ₄ based material	Method of synthesis	Specific capacitance	Retention	Electrolyte	Potential window	Reference
NiMn ₂ O ₄	Sol-gel process	243 F/g (5mV/s)	96 % (5000 cycles @ 20mV/s)	1 M Na ₂ SO ₄	-0.2 ~ 0.8 V	1
NiMn ₂ O ₄	Spray pyrolysis	460 F/g (5mV/s)	92.97 % (1000 cycles @ 2A/g)	2 M KOH	-0.2 ~ 0.4 V	2
NiMn ₂ O ₄	Hydrothermal	662 F/g (1A/g)	95.7 % (1000 cycles @ 10A/g)	6 M KOH	-0.2 ~ 0.6 V	3
NiMn ₂ O ₄	Electrospinning process	410 F/g (1A/g)	~95% (5000 cycles@ 5A/g)	1M KCl	0 ~ 1 V	4
Ni-Mn-O	Hydrothermal	284 F/g (5mV/s)	96% (1500 cycles@ 50mV/s)	2 M NaCl	0 ~ 1 V	5
C@NiMn ₂ O ₄	Hydrothermal	471 F/g (1A/g)	89.6% (5000 cycles@ 10A/g)	2 M KOH	0 ~ 0.45 V	6
RGO/NiMn ₂ O ₄	Coprecipitation	693 F/g (1A/g)	91.4 % (2000 cycles @ 5A/g)	1 M Na ₂ SO ₄	0 ~ 0.9V	7
NiMn₂O₄	Microwave assisted hydrothermal	768.9 F/g (1A/g)	85.8% (6000 cycles @ 5A/g)	6 M KOH	-0.2 ~ 0.45 V	This work

Tab.S3 Summary the values of different components in the fitting of EIS data.

Parameter	Value	Deviation
R ₁ (Ω)	0.096	0.223
C ₂ (F)	0.113	0.269
R ₂ (Ω)	0.103	1.481
C ₃ (F)	0.128	0.196
R ₃ (Ω)	0.102	0.439

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