Solid-state micro supercapacitors for on-chip energy storage

What is in-plane micro-supercapacitors?
In-plane micro-supercapacitors for an integrated device on one piece of paper. Adv. Funct. Mater. 27, 1702394 (2017). Cai, J., Lv, C. & Watanabe, A. Laser direct writing of high-performance flexible all-solid-state carbon micro-supercapacitors for an on-chip self-powered photodetection system.

Do symmetric micro-supercapacitors have low energy density?
npj 2D Materials and Applications 2,Article number: 7 (2018) Cite this article Planar micro-supercapacitors are recognized as one of the most competitive on-chip power sources for integrated electronics. However,most reported symmetric micro-supercapacitors suffer from low energy density.

What is a micro-supercapacitor based on?
Beidaghi,M. &Wang,C. Micro-supercapacitors based on interdigital electrodes of reduced graphene oxideand carbon nanotube composites with ultrahigh power handling performance. Adv. Funct. Mater. 22,4501-4510 (2012). Meng,Q. et al. High-performance all-carbon yarn micro-supercapacitor for an integrated energy system. Adv.

Can mask-assisted micro-supercapacitors have high energy density?
Herein, we demonstrate the facile mask-assisted fabrication of new-type all-solid-state planar hybrid micro-supercapacitors with high energy density, based on interdigital patterned films of porous vanadium nitride nanosheets as negative electrode and Co (OH) 2 nanoflowers as positive electrode.

Are all-solid-state planar micro-supercapacitors cyclable?
Moreover,all-solid-state planar hybrid micro-supercapacitors show excellent cyclabilitywith 84% capacitance retention after 10000 cycles,and exceptionally mechanical flexibility.

Are flexible supercapacitors a new paradigm for low-cost energy storage?
Jost, K., Dion, G. & Gogotsi, Y. Textile energy storage in perspective. J. Mater. Chem. A 2, 10776-10787 (2014). Zhang, Y.-Z. et al. Flexible supercapacitors based on paper substrates: a new paradigm for low-cost energy storage.

The resultant planar hybrid micro-supercapacitors display high areal capacitance of 21 mF cm-2 and volumetric capacitance of 39.7 F cm-3 at 0.2 mA cm-2, and exhibit ...

or nanoscale power sources and energy storage units. Supercapacitors, also called electrochemical capacitors, are energy storage devices with long service life and high ...

energy and power densities, are considered to be favorable on-chip energy sources for microelectronic devices. This review describes the state-of-the-art of miniaturized lithium-ion ...

Solid-state micro supercapacitors for on-chip energy storage

The urgent demands of portable/wearable electronic equipment drive the development of miniaturized high-performance energy storage and conversion devices with ...

Some materials have been extensively studied for micro-supercapacitors. Among them, carbon-based materials, e.g. carbon nanotubes (CNTs) [8], activated carbon [9] and ...

Here, this review focuses on the recent progress of advanced MSCs in fabrication strategies, structural design, electrode materials design and function, and integrated ...

These ultra-thin all-solid-state micro-supercapacitors bring strong benefits for on-chip energy storage and open up interesting new avenues for autonomous and flexible ...

Flexible on-chip micro-supercapacitors: Efficient power units for wearable electronics ... the lightweight and deformable micro energy storage devices that can be ...

A micro-supercapacitor with PVA/H 3 PO 4 gel electrolyte, had a volumetric energy density of ~6.3 mWh/cm 3, and the all-solid-state micro-supercapacitors could be easily ...

Functionalized graphene quantum dots combine the properties of both functionalized graphene and quantum dots, and are expected to promote further development ...

Application of hard ceramic materials B4C in energy storage: design B4C@C core-shell nanoparticles as electrodes for flexible all-solid-state micro-supercapacitors with ultrahigh ...

All-solid-state flexible micro-supercapacitors (MSCs) are currently a prominent field tendency for research as energy storage devices in the new era for more widespread ...

The current development trend towards miniaturized portable electronic devices has significantly increased the demand for ultrathin, flexible and sustainable on-chip micro ...

In this Review, we discuss the progress and the prospects of on-chip microsupercapacitors designed to be assembled onto microelectronic devices; we evaluate ...

Small-scale supercapacitors or microsupercapacitors (MSCs) can be integrated with miniaturized electronics to work as stand-alone power sources, or as efficient energy storage ...

INTRODUCTION. Supercapacitors (also called electrochemical capacitors or ultracapacitors) have attracted great interest in recent years because they offer a balanced energy density and power density that bridge ...

Solid-state micro supercapacitors for on-chip energy storage

Scalable fabrication of high-power graphene micro-supercapacitors for flexible and on-chip energy storage. Nat. Commun., 4 (2013), p. ... Paper-based all-solid-state flexible ...

3D printing high-efficiency energy storage electrode provides new possibilities for the application of portable and micro devices. This paper reports the preparation of quasi-solid ...

The rapid development of portable and miniaturized electronic devices, such as micro-electromechanical systems, biosensors, micro-robots and implantable biomedical ...

Here, all-solid-state on-chip planar micro-supercapacitors (PMSCs) were fabricated based on aminated graphene quantum dots by modified liquid-gas interface self ...

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