

What is a 500 V $\text{TiN}/\text{Al}_2\text{O}_3/\text{tin}$ metal-insulator-metal capacitor?

500 V $\text{TiN}/\text{Al}_2\text{O}_3/\text{TiN}$ metal-insulator-metal capacitor was fabricated and characterized. The device exhibits low leakage current density and extremely small voltage coefficients. Leakage mechanisms of the device have been investigated.

What is the capacitance of a TiN_9 thin film electrode?

The specific capacitances of the TiN_9 thin film electrode are 34.6, 29.6, 27.3 and 21.6 mF cm^{-2} at the current densities of 0.2, 0.5, 1.0 and 2.0 mA cm^{-2} , which is much higher than the values reported for TiN nano film (1.53 mF cm^{-2} at 3.5 $\mu\text{A cm}^{-2}$) and CrN thin film (12.8 mF cm^{-2} at 1.0 mA cm^{-2}) (also see Table S4).

Can TiN thin films be used as supercapacitor electrodes?

Achour et al. demonstrated the TiN thin film electrodes sputtered with a highest specific capacitance of 8.8 mF cm^{-2} at a scan rate of 100 mV s^{-1} . Currently, a major challenge of using TiN thin films as supercapacitor electrodes is to further improve their specific capacitance.

What is the decay of capacitance in tin paper?

TiN paper SSC shows zero decay in capacitance after cycling in 0.5 M Na_2SO_4 electrolyte for 200,000 cycles at 1 V s^{-1} , while only 47.5% and 42.4% of capacitance were retained in 1 M H_2SO_4 and 1 M KOH electrolyte, respectively (Fig. 6 a-d).

What is the capacitance of tin@C nanotube-based fiber electrodes?

Sun et al. designed the $\text{TiN}@C$ nanotube-based fiber electrodes by one-step nitridation and complete carbon coating process, and a specific capacitance of 19.4 mF cm^{-2} at a scan rate of 10 mV s^{-1} was achieved.

What is the capacitance of ALD-made tin?

Ultrahigh rates realized by ALD-made TiN. The symmetric full-cell supercapacitors deliver a typical capacitance of 20.7 F cm^{-3} at a scan rate of 1 V s^{-1} , and retain 4.3 F cm^{-3} at high rate of 100 V s^{-1} .

It remains a significant challenge for dielectric materials to meet the requirements of storing more energy in high-temperature environments. In this work, lead-free ...

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This tiny current loss (usually nanoamps or less) is called leakage. Leakage causes energy stored in the

capacitor to slowly, but surely drain away. Equivalent series resistance ... There might be ...

Metal nitrides have received increasing attention as electrode materials for high-performance supercapacitors (SCs). However, most of them are suffered from poor cycling stability. Here we use TiN as an example to ...

Here, we report the fabrication of a porous titanium nitride (TiN) paper as an alternative electrode material for ultrafast-charging devices. The ...

In this work, the metal-insulator-metal (MIM) capacitor with Al₂O₃ dielectric layer above 1 μm and TiN electrodes has been fabricated by magnetron sputtering for power ...

Electrochemical studies showed that the TiN solid-state SCs exhibit extraordinary stability up to 15 000 cycles and achieved a high ...

Abstract: New ZrO₂/Al₂O₃/ZrO₂ (ZAZ) dielectric film was theoretically designed and successfully demonstrated to be applicable to 45nm DRAM devices. ZAZ dielectric film is a ...

In this article we use the vacuum interconnected system to prepare and in situ characterize the TiN/Hf_xZr_{1-x}O₂/TiN metal/insulator/metal (MIM) capacitors on Si(100) substrate. The ...

High Performance Sodium-Ion Hybrid Capacitor Based on Graphene-Tin Pyrophosphate Nanocomposite Anode Gelines Moreno-Fernández,*[a] Miguel Granados-Moreno,[a, b] ...

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