

Is oxygen scavenging bad for a capacitor?

Since capacitors without and with scavenging. It was found that oxygen scavenging adversely affected not only endurance properties but also wake-up and fatigue, which are undesirable for the reliability of long-term device operation.

Does oxygen scavenging reduce IL thickness in HfZrOx-based capacitors?

Here, we proposed and demonstrated oxygen scavenging to reduce the IL thickness in an HfZrOx-based capacitor and the thinner IL was confirmed by cross-sectional transmission electron microscopy.  $V_{sw}$  of a capacitor with scavenging decreased by 18% and the same  $P_r$  could be obtained at a lower voltage than a capacitor without scavenging.

How does oxygen content affect a capacitor?

The higher the oxygen content of AC, the greater the contact resistance. Therefore, the high oxygen content is beneficial for improving the pseudo capacitance on the one hand, and on the other hand, it could result in a rise in the internal resistance of the capacitor and a decrease in the specific power.

Do oxygen vacancy supercapacitors improve electrochemical properties?

Oxygen vacancy supercapacitors utilize oxygen vacancies as active reaction sites in electrode materials. This review summarizes various strategies to design metallic electrode materials that harness oxygen vacancy defects to improve electrochemical properties.

Do scavenging capacitors have endurance properties?

The endurance test proved that the endurance properties of the capacitor with scavenging were comparable to or even better than those of the capacitor without scavenging. As mentioned above, this is because  $V_{sw}$  and charge trapping decreased despite the increase in EIL and leakage by oxygen scavenging.

Why does a capacitor with scavenging have higher  $P_r$ ?

The capacitor with scavenging exhibited higher  $P_r$  than the capacitor without scavenging at the same pulse due to the lower  $V_{sw}$  resulting from the thinner IL. At a pulse of 4 V/1 kHz and 5 V/1 kHz,  $P_r$  of the capacitor with scavenging increased by 105 and 57% than that of the capacitor without scavenging, respectively.

1. Aqueous zinc-ion hybrid capacitors (ZIHCs) are promising electrochemical energy storage systems with advantages of high-energy density, low cost, safety and environmental friendliness. However, application of carbon ...

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By performing dc and ac nonlinearity analyses, the effect of defects, especially oxygen vacancies, on the electrical properties of metal-insulator-metal (MIM) capacitors was investigated. ...

The zinc-ion aqueous capacitor was constructed with aluminum foil as the anode, mercury/mercury oxide as the reference electrode, and oxygen-deficient nickel cobaltate ...

demonstrated oxygen scavenging to reduce the IL thickness in an HfZrO<sub>x</sub>-based capacitor and the thinner IL was confirmed by cross-sectional transmission electron microscopy. V<sub>sw</sub> of a ...

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(a) The CV curves of lithium-oxygen capacitor-battery operating between 2 and 4 V at different scan rates ranging from 0.1 to 4 mV s<sup>-1</sup>. (b) Capacity proportions contributed by the lithium ...

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Qiu D, Wang Y, Zhang L, et al. Regulating the oxygen-atom configuration of carbon anode enabling extremely fast-charging potassium-ion hybrid capacitors. Nano ...

Oxygen-rich porous carbons are promising carbon cathode materials for high-performance ZIHCs. Under the synergistic effect of pseudocapacitance by surface oxygen ...

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