Capacity retention vs coulombic efficiency

Iron/iron redox flow batteries (IRFBs) are emerging as a cost-effective alternative to traditional energy storage systems. This study investigates the impact of key operational characteristics, ...

Initial Coulombic efficiency (ICE) in lithium manganese rich cathodes currently ranges between 75-85%, representing a significant capacity loss during the first charge-discharge cycle. This ...

When integrated into all-solid-state batteries (ASSBs) with TiS 2 cathodes, Li 2 ZrCl 5 I electrolytes demonstrated exceptional electrochemical performance, including high initial ...

C/SiO x anode with higher capacity and lower lithiation potential has been recognized as a next-generation alternative to graphite for high-energy-density lithium-ion batteries. However, C/SiO ...

Using such strategy, a Li||LiNi 0.8 Co 0.1 Mn 0.1 O 2 (NCM811) cell achieves a capacity retention of 84.6% after 850 cycles with an upper cut-off voltage of 4.5 V and 94.4% after 400 cycles at...

The uncoated F-Si anode delivered 610 mAh/g initial capacity, 90% initial coulombic efficiency (ICE), and 51% retention after 100 cycles. MS, while lower in active silicon content, showed ...

Compared with HEO, HEO- 0.04 exhibits superior sodium storage performance, delivering a 3.7% higher initial discharge capacity (132.1 vs. 127.4 mAh g -1 at 0.1 C), 12% enhanced initial ...

Notably, the lignite-derived HC material (L-1300) synthesized at 1300 °C achieves a reversible capacity of 295 mAh g?¹, an initial Coulombic efficiency of 89 %, and exceptional ...

High Coulombic Efficiency: The optimized SEI film achieves a Coulombic efficiency of 99.59%, suppresses dendrite growth, and maintains a capacity of 150 mAh g -1 after 1,750 cycles in ...

The NMC811 electrode with the UHV electrolyte (IE) shows excellent discharge capacity retention of 95% after 50 cycles, compared to the OE counterpart, which retains only 68% of the initial ...

Hard carbon (HC) has broad prospects as anode material for sodium-ion batteries (SIBs). However, the low initial coulombic efficiency (ICE) and poor cycle stability limit its further ...

However, its cyclability is severely compromised, exhibiting only 56.4% capacity retention after 200 cycles and ~90% coulombic efficiency. This degradation stems primarily from parasitic ...

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The initial capacity reaches 206.9 mAh g -1 with a high average Coulombic efficiency of 99.86 % at 1C (211 mA g -1). Moreover, the battery maintains a high capacity of 154.6 mAh g -1 after ...

IRFB systems with a volume of 60 mL per tank (20.25 Ah L -1) demonstrated superior capacity utilization, achieving a coulombic efficiency (CE) of up to 95% and an energy efficiency (EE) of ...

Therefore, adjusting factors such as temperature during the carbonization process is essential for controlling the proportion and size of closed pores in hard carbon anode materials. This will ...

Herein, we propose a high-entropy solvation structure through introducing mixed halogen anions to break the trade-off between overpotential and Coulombic efficiency, and therefore, achieve...

In contrast to the baseline (initial CE = 89.26%, capacity fade after 50 cycles), S9 - S11 delivered higher initial Coulombic efficiencies (>94%) and sustained stable capacity retention for over ...

The SnSb-PA (5 h) exhibited a high initial Coulombic efficiency (ICE) of 94 % and stable cycling performance up to 100 cycles, whereas rapid capacity decay was observed in SnSb-FA (5 h) ...

This contributes to excellent long-term cycling stability, as demonstrated by a capacity retention rate of 82.0% after 5000 cycles at a current density of 2 A g -1, and a Coulombic efficiency ...

The overall electrochemical performance of IE cells is superior in terms of discharge capacity, stability, and coulombic efficiency due to ultra-high electrochemical stability and higher ...

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