

# Curated Research Articles

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- **Storage Failure Mechanism of Sodium-Ion Full Cells: Unsteady Structural Transformation and Interfacial Chemical Reconstruction** — score: 1.000 The study investigates the failure mechanisms of sodium-ion batteries during high-temperature storage, revealing that unstable structural transformations and interfacial chemical changes significantly contribute to their degradation and reduced lifespan. Journal: *Wiley: Advanced Energy Materials: Table of Contents*
- **Fluorine-Driven Electrolyte Engineering: Regulating Zn<sup>2+</sup> Coordination and Electrode-Electrolyte Interfacial Chemistry in Aqueous Zinc Ion Batteries** — score: 1.000 The article discusses how fluorinated acetylacetone derivatives optimize zinc ion solvation and enhance solid electrolyte interphase formation in aqueous zinc-ion batteries, leading to improved performance and stability. Journal: *Wiley: Advanced Energy Materials: Table of Contents*
- **Quantitative and Non-Destructive Analysis of Failure Process of Pouch Lithium Metal Batteries** — score: 1.000 The study investigates the failure mechanisms of pouch lithium metal batteries (LMBs) under fast charging, revealing a three-stage degradation pattern and demonstrating real-time, non-destructive monitoring with fiber Bragg grating technology, ultimately leading to improved battery performance and safety. Journal: *Wiley: Advanced Energy Materials: Table of Contents*
- **Unraveling Asymmetric Macroscopic Reaction Dynamics in Solid-State Li-S Batteries During Charge-Discharge Cycles: Visualizing Ionic Transport Limitations with Operando X-Ray Computed Tomography** — score: 1.000 The study utilizes operando X-ray computed tomography to reveal that macroscopic ionic transport limits the performance of solid-state Li-S batteries, highlighting an asymmetric reaction behavior during charge-discharge cycles that contributes to irreversible Li<sub>2</sub>S formation. Journal: *Wiley: Advanced Energy Materials: Table of Contents*
- **A Complete Operando Structural and Redox Perspective on the O<sub>2</sub>-Type Lithium-Rich Manganese Oxide LiMn<sub>0.75</sub>O<sub>2</sub>** — score: 1.000 The study reveals that lithium deintercalation in the O<sub>2</sub>-type LiMn<sub>0.75</sub>O<sub>2</sub> is compensated by reversible anionic oxygen redox, although it also leads to irreversible O<sub>2</sub> release and nano-void formation, highlighting the material's cycling stability and redox behavior. Journal: *Wiley: Advanced Energy Materials: Table of Contents*
- **Controlled Interfacial Stress Platform for Electrochemical-Mechanical Coupling Measurements** — score: 1.000 The article presents a novel Controlled Interfacial Stress Platform for Electrochemical-Mechanical coupling (CISP-ECM) that allows direct measurement of stress-coupled electrochemical processes in solid-state batteries, enhancing understanding of material behavior during lithiation and its implications for various applications. Journal: *Wiley: Advanced Energy Materials: Table of Contents*
- **Crosslinked Vinyl-Capped Polyoxometalates to Construct a Three-Dimensional Porous Inorganic-Organic Catalyst to Effectively Suppress Polysulfide Shuttle in Li-S Batteries** — score: 1.000 The article presents a method to create stable 3D porous polyoxometalate (POM) catalysts that effectively reduce polysulfide shuttle in lithium-sulfur batteries, enhancing their capacity and cycling stability, even under demanding conditions. Journal: *Wiley: Advanced Energy Materials: Table of Contents*
- **Activating Inert Metallic Zinc for Bifunctional Sulfur Reaction Catalysis Through Anion-Controlled Tensile Lattice Strain** — score: 0.900 The article discusses the development of tellurium-induced tensile strained zinc selenides as bifunctional catalysts to enhance lithium-sulfur battery performance by optimizing electronic states for improved sulfur reaction kinetics. Journal: *Wiley: Advanced Energy Materials: Table of Contents*
- **Cellulose-Based Solid-State Electrolytes for Solid-State Lithium Metal Batteries: Advances in Functionalization Strategies and Interfacial Engineering** — score: 0.800 This review article explores recent advancements in cellulose-based solid-state electrolytes (CBSEs) for lithium

metal batteries, focusing on functionalization strategies, interface engineering, and performance optimization methods to address stability and safety challenges. Journal: *Wiley: Advanced Energy Materials: Table of Contents*

- **Chromium-Modified Nickel Sulfide Catalysts Enable Energy-Efficient Electrochemical Polyethylene Terephthalate Upcycling** — score: 0.800 The article presents a chromium-modified nickel sulfide catalyst that significantly enhances the electrochemical upcycling of polyethylene terephthalate by achieving high current densities and low energy requirements for ethylene glycol oxidation, while also enabling efficient integration with CO<sub>2</sub> reduction processes. Journal: *Wiley: Advanced Energy Materials: Table of Contents*
- **Biomass-Derived Polyanionic Interface Modulates the Electrical Double Layer to Achieve Ultrareversible Zinc Metal Anodes** — score: 0.800 The study presents a biomass-derived polyanionic interface for zinc metal anodes that enhances Zn<sup>2+</sup> transport, suppresses side reactions, and achieves over 5000 hours of stable cycling performance in aqueous zinc-ion batteries. Journal: *Wiley: Advanced Energy Materials: Table of Contents*
- **Trifluoroacetic Acid-Driven (002) Facet Engineering of Zn Metal Powder Anodes for High-Performance Aqueous Zinc-Ion Batteries** — score: 0.800 The article presents a strategy using trifluoroacetic acid to enhance the (002) plane exposure in zinc metal powder anodes for aqueous zinc-ion batteries, resulting in improved performance, stability, and scalability. Journal: *Wiley: Advanced Energy Materials: Table of Contents*
- **Oxygen-Doped Carbon Monolayer Intercalation and Selenization Stabilizing 1T-Rich MoS<sub>2</sub> to Enable Fast and Durable Sodium-Ion Storage** — score: 0.800 The article discusses a novel approach combining carbon intercalation and selenization to stabilize 1T-rich MoS<sub>2</sub>, enhancing its structural stability and electrochemical performance for sodium-ion batteries, resulting in excellent cycle stability and energy density. Journal: *Wiley: Advanced Energy Materials: Table of Contents*
- **[ASAP] Calendar Aging of LiFePO<sub>4</sub>/Graphite Batteries: Quantitative Analysis of Synergistic Effects of SEI Evolution and Electrolyte Decomposition** — score: 0.800 This article provides a quantitative analysis of the aging process in LiFePO<sub>4</sub>/Graphite batteries, focusing on the synergistic effects of solid electrolyte interphase (SEI) evolution and electrolyte decomposition. Journal: *ACS Energy Letters: Latest Articles (ACS Publications)*
- **[ASAP] Seeking Order in Complex Electrochemical Interfaces: Insights for Energy Conversion Devices** — score: 0.800 The article explores the complexities of electrochemical interfaces to uncover insights that could enhance the performance of energy conversion devices. Journal: *ACS Energy Letters: Latest Articles (ACS Publications)*
- **Multifunctional Dual-Doping Strategy Improving Halide-Based Solid-State Electrolyte** — score: 0.700 A dual-doping strategy enhances both the ionic conductivity and electrochemical stability of a halide-based solid-state electrolyte, making it suitable for high-voltage lithium battery applications. Journal: *Wiley: Advanced Energy Materials: Table of Contents*
- **Molecular Engineering of Hybrid Electrolytes for Aqueous Zinc Ion Batteries** — score: 0.700 The study presents a molecularly engineered hybrid electrolyte that enhances the reversibility of Zn (de)plating in aqueous zinc-ion batteries, achieving a remarkable Coulombic efficiency of 99.96% and improved cycling stability through tailored solvation dynamics and minimized parasitic reactions. Journal: *Wiley: Advanced Energy Materials: Table of Contents*
- **Simultaneous Nb<sup>5+</sup>-Driven Defect Repair and Oxygen Stabilization of Spent LiNi<sub>0.88</sub>Co<sub>0.09</sub>Al<sub>0.03</sub>O<sub>2</sub> Toward High-Voltage and Fast-Charging Cathode** — score: 0.700 The study presents a one-step molten salt strategy that utilizes NbCl<sub>5</sub> to simultaneously repair spent Ni-rich lithium-ion batteries and stabilize their oxygen content, leading to enhanced cycling stability and rate performance in regenerated cathodes. Journal: *Wiley: Advanced Energy Materials: Table of Contents*

- **Novel Sodium-Rare-Earth-Silicate-Based Solid Electrolytes for All-Solid-State Sodium Batteries: Structure, Synthesis, Conductivity, and Interface** — score: 0.600 The article introduces sodium rare earth silicate ( $\text{Na}_5\text{RESi}_4\text{O}_{12}$ ) as a novel solid electrolyte for all-solid-state sodium batteries, detailing its structure, synthesis, ionic conductivity, and strategies to address interface issues, providing insights for future advancements in high-performance batteries. Journal: *Wiley: Advanced Energy Materials: Table of Contents*
- **Thermal Runaway in Sulfide-Based All-Solid-State Batteries: Risk Landscape, Diagnostic Gaps, and Strategic Directions** — score: 0.600 This article reviews the thermal runaway risks associated with sulfide-based all-solid-state batteries (ASSBs), highlighting the importance of understanding interfacial interactions and degradation mechanisms while calling for improved diagnostic standards and mitigation strategies to enhance safety. Journal: *Wiley: Advanced Energy Materials: Table of Contents*
- **A Review on the Energy Storage Mechanisms of Transition Metal Sulfide and Selenide Cathode Materials for Non-Aqueous Aluminum Batteries** — score: 0.600 The article reviews transition metal sulfides and selenides as promising cathode materials for non-aqueous rechargeable aluminum batteries, discussing their charge storage mechanisms, existing literature contradictions, and future research directions to enhance these batteries' performance. Journal: *Wiley: Advanced Energy Materials: Table of Contents*
- **Microfluidic-Enabled Solid-State Electrolytes With Enhanced Electrochemical Performance** — score: 0.600 This study presents a microfluidic method to synthesize ceramic solid-state electrolytes, resulting in enhanced ionic conductivity and reduced interfacial impedance, thus improving the electrochemical performance of sodium and lithium solid-state batteries. Journal: *Wiley: Advanced Energy Materials: Table of Contents*
- **Hyperquaternized Biomass-Derived Solid Electrolytes: Architecting Superionic Conduction for Sustainable Flexible Zinc-Air Batteries** — score: 0.500 This study develops a chitosan-based solid-state electrolyte with ultra-high ionic conductivity for sustainable zinc-air batteries, achieving significant performance enhancements while also being biodegradable and environmentally friendly. Journal: *Wiley: Advanced Energy Materials: Table of Contents*
- **High-Throughput Synthesis of Mn-Based Disordered Rock-Salt Li-Ion Cathodes with Improved Rate Capability via Rapid Joule-Heating** — score: 0.500 The article discusses the use of rapid Joule-heating synthesis to produce high-performance manganese-based disordered rock-salt lithium-ion cathodes, achieving significant improvements in rate capability and efficiency compared to traditional methods, thus enabling swift discovery of advanced cathode materials. Journal: *Wiley: Advanced Energy Materials: Table of Contents*
- **Generalized capacity estimation for retired lithium-ion batteries: Unsupervised electrochemical impedance spectroscopy dimensionality reduction under random retirement conditions** — score: 0.400 This article presents a method for estimating the capacity of retired lithium-ion batteries using unsupervised dimensionality reduction of electrochemical impedance spectroscopy data, specifically under random retirement conditions. Journal: *ScienceDirect Publication: Energy Storage Materials*
- **Dual-Enhanced Iodine Confinement and Conversion of Single-Atom Mn-N<sub>3</sub>-C Catalyst for Long-life Electrolytic Zn-I<sub>2</sub> Batteries** — score: 0.400 Researchers have developed a highly efficient single-atom Mn catalyst embedded in a porous carbon matrix, enhancing iodine confinement and conversion, which significantly improves the performance and longevity of aqueous Zn-I<sub>2</sub> batteries. Journal: *Wiley: Advanced Energy Materials: Table of Contents*
- **Electrochemical Ammonia Oxidation Reaction on Nickel-Based Non-Noble Metal Electrocatalysts: From Mechanistic Understanding to Practical Applications** — score: 0.400 The article reviews the advancements in nickel-based non-noble metal electrocatalysts for the electrochemical ammonia oxidation reaction (AOR), highlighting their potential for practical applications and

providing insights for the development of next-generation AOR catalysts. Journal: *Wiley: Advanced Energy Materials: Table of Contents*

- **Recycling Spent Lithium Iron Phosphate via Contact-Electro-Catalysis** — score: 0.400 The study presents a catalytic method using contact-electro-catalysis to efficiently recycle spent lithium iron phosphate (LFP) batteries, achieving over 99% recovery of lithium and iron within 8 minutes, thus highlighting its potential ecological and economic benefits. Journal: *Wiley: Advanced Energy Materials: Table of Contents*
- **Chemical Pre-Lithiation Toward Scalable Manufacturing of Aluminum Foil Anodes With Unique Gradient Surface Layer for Copper-Free Lithium-Ion Batteries** — score: 0.400 The article discusses a novel chemical pre-lithiation method for aluminum foil anodes, creating a gradient Li-Al surface layer that enhances electrochemical performance and shows promise for high-capacity, copper-free lithium-ion batteries, demonstrating significant capacity retention and energy density in practical applications. Journal: *Wiley: Advanced Energy Materials: Table of Contents*
- **[ASAP] Entropy-Motivated Solvation Design for Low-Temperature Ether-Based Electrolyte of Sodium-Ion Batteries** — score: 0.400 The article discusses the design of low-temperature ether-based electrolytes for sodium-ion batteries, focusing on an entropy-motivated approach to enhance their performance. Journal: *ACS Energy Letters: Latest Articles (ACS Publications)*
- **[ASAP] Cation-Ordering-Driven Design of Superionic Lithium Halospinel** — score: 0.400 The article discusses a method for designing superionic lithium halospinel by leveraging cation ordering, aiming to enhance their ionic conductivity for applications in energy storage. Journal: *Journal of the American Chemical Society: Latest Articles (ACS Publications)*
- **[ASAP] Achieving Stable Zinc Anodes by In Situ Constructing an Artificial Interface Layer with ZnO/Cu Gradient Zinc Affinity** — score: 0.400 The article discusses a method for enhancing the stability of zinc anodes by creating an artificial interface layer using a gradient of zinc oxide and copper affinity, leading to improved performance in energy storage applications. Journal: *ACS Applied Energy Materials: Latest Articles (ACS Publications)*
- **Dilute electrolyte-heterostructure interlocking regulates the amorphization conversion of Te cathodes for durable aqueous batteries** — score: 0.300 This study introduces a strategy using a dilute electrolyte-heterostructure interlocking approach to facilitate and maintain the reversible conversion between Te and amorphous TeO<sub>2</sub> in Te cathodes, enhancing the durability of aqueous batteries. Journal: *RSC - Energy Environ. Sci. latest articles*
- **[ASAP] Emerging Multivalent Electrochromic Batteries: Dual-Function Energy Storage with Visual Intelligence** — score: 0.300 The article discusses the development of emerging multivalent electrochromic batteries that integrate energy storage with visual intelligence, offering dual functionalities for enhanced performance. Journal: *ACS Energy Letters: Latest Articles (ACS Publications)*
- **Laser Micro/Nano Fabrication of Electrochemical Filtering Capacitors: Multiscale Structural Engineering for High-Frequency Power Conditioning** — score: 0.300 The article discusses the advantages of laser micro/nano fabrication for improving the performance of electrochemical filtering capacitors, highlighting the need for enhanced structural engineering to achieve high-frequency response in compact electronic devices. Journal: *Wiley: Advanced Energy Materials: Table of Contents*
- **Evolution and Underlying Mechanisms of MgH<sub>2</sub> in Amine-Based Electrolytes for Magnesium Metal Batteries** — score: 0.300 The article discusses the evolution and mechanisms of MgH<sub>2</sub> in amine-based electrolytes for magnesium metal batteries, highlighting advancements in energy storage technologies. Journal: *ScienceDirect Publication: Energy Storage Materials*
- **[ASAP] Navigating the Catholyte Landscape in All-Solid-State Batteries** — score: 0.300 The article discusses the development and insights into catholyte materials for all-solid-state batteries, highlighting their significance in enhancing battery performance. Journal: *ACS Energy Letters: Latest Articles (ACS Publications)*

- **[ASAP] Primary Particle Thickness of Mn-Based Hydroxide Precursors: Impact on Li-Rich Mn-Based Cathode Structure and Electrochemical Performance** — score: 0.300 The article examines how the thickness of Mn-based hydroxide precursors influences the structural integrity and electrochemical performance of Li-rich Mn-based cathodes. Journal: *ACS Applied Energy Materials: Latest Articles (ACS Publications)*
- **[ASAP] Trimethyl Glycine Additive Realizes a High-Performance Water-Based Zinc-Ion Battery through Double-Effect Regulation** — score: 0.300 The article discusses how trimethyl glycine can enhance the performance of water-based zinc-ion batteries through a dual regulatory mechanism. Journal: *Energy & Fuels: Latest Articles (ACS Publications)*
- **[ASAP] HF Etching-Enabled In Situ Growth of a Robust NiFe Prussian Blue Analogue Derivative as an Integrated Electrode for an Efficient Oxygen Evolution Reaction** — score: 0.300 The article discusses the development of a robust NiFe Prussian Blue analogue derivative integrated as an electrode, leveraging HF etching for in situ growth to enhance efficiency in the oxygen evolution reaction. Journal: *Energy & Fuels: Latest Articles (ACS Publications)*
- **Enhancing Performance of Photoanodes With a Dual-Redox Mediator for Photoelectrocatalytic Water Splitting** — score: 0.300 The study presents a BiVO<sub>4</sub>-based photoanode enhanced by Fe<sub>2</sub>TiO<sub>4</sub> as a dual-redox mediator, achieving a solar-to-hydrogen efficiency of 4.7% by improving charge separation and transfer through modified quasi-Fermi levels. Journal: *Wiley: Advanced Energy Materials: Table of Contents*
- **Dual-Metal Synergy in Fe-Co-based Conjugated Polymer as a Trifunctional Electrocatalyst for Durable Zinc-Air Battery and Self-Sustained Hydrogen Production** — score: 0.300 This article presents a Fe-Co-based conjugated polymer that acts as a trifunctional electrocatalyst, enhancing the durability and performance of zinc-air batteries and enabling self-sustained hydrogen production through dual-metal synergy. Journal: *ScienceDirect Publication: Energy Storage Materials*
- **A Universal Direct Upcycling Route Based on Framework-to-Layered Structural Conversion for Sustainable Sodium Oxide Cathodes** — score: 0.300 The article presents a sustainable method for upcycling sodium oxide cathodes by converting framework structures into layered forms, promoting advancements in energy storage materials. Journal: *ScienceDirect Publication: Energy Storage Materials*
- **Laser-Driven Upcycling of Spent Graphite into Interlayer-Expanded Carbon Nanocages for Fast and Stable K<sup>+</sup>/Li<sup>+</sup> Storage** — score: 0.300 The article discusses a method for converting spent graphite into interlayer-expanded carbon nanocages using laser technology, enhancing potassium and lithium storage performance. Journal: *ScienceDirect Publication: Energy Storage Materials*
- **Insights into the coupled thermal behavior of silicon/graphite composite anodes in high energy density lithium-ion battery** — score: 0.300 The article explores the thermal behavior of silicon/graphite composite anodes in high energy density lithium-ion batteries, providing insights into their performance and stability. Journal: *ScienceDirect Publication: Energy Storage Materials*
- **Tri-functional molecular motif-engineered polymer electrolytes for high-voltage lithium metal batteries** — score: 0.200 The article discusses the design of tri-functional molecular motif-engineered polymer electrolytes aimed at enhancing the performance of high-voltage lithium metal batteries. Journal: *ScienceDirect Publication: Energy Storage Materials*
- **Competitive Coordination Enables Aqueous Four-Electron Zinc-Iodine Batteries over 60,000 Cycles** — score: 0.200 The article discusses how competitive coordination enhances the performance of aqueous four-electron zinc-iodine batteries, enabling them to sustain over 60,000 charge-discharge cycles. Journal: *ScienceDirect Publication: Energy Storage Materials*
- **Bamboo-Inspired Multilayer Composites Exhibit Record-High Energy Storage at High Temperatures** — score: 0.200 The article discusses the development of bamboo-inspired multilayer composites that achieve record-high energy storage capabilities at elevated temperatures, showcasing

advancements in energy storage materials. Journal: *ScienceDirect Publication: Energy Storage Materials*

- [ASAP] **Platinum–Ruthenium Alloys Are Not Bifunctional CO Electro-Oxidation Catalysts: A Kinetic Analysis** — score: 0.200 The study reveals that platinum–ruthenium alloys do not function as effective bifunctional catalysts for CO electro-oxidation, based on detailed kinetic analysis. Journal: *ACS Energy Letters: Latest Articles (ACS Publications)*
- [ASAP] **Synthesis of Highly Crystalline -Formamidineum Lead Triiodide Halide Perovskite Powder via Stoichiometric Control** — score: 0.200 The article discusses the effective synthesis of highly crystalline -formamidineum lead triiodide halide perovskite powder through precise stoichiometric control, potentially enhancing its applications in energy materials. Journal: *ACS Applied Energy Materials: Latest Articles (ACS Publications)*