

Curated Research Articles

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- **Grain-Boundary Engineered Co-Crystal Electrolytes for Dendrite-Free High-Voltage Solid-State Li-Metal Batteries** — score: 1.000 The article presents a novel co-crystal solid-state electrolyte that enhances the cycling stability of high-voltage Li-metal batteries by improving interfacial contact and reducing dendrite formation, while also providing insights into lithium-ion transport mechanisms. Journal: *Wiley: Advanced Energy Materials: Table of Contents*
- **[ASAP] Tracking Interphase Growth at Alloy Anode Interfaces in Sulfide Solid-State Batteries** — score: 1.000 The article discusses the investigation of interphase growth at alloy anode interfaces in sulfide solid-state batteries, providing insights into their performance through advanced tracking techniques. Journal: *Journal of the American Chemical Society: Latest Articles (ACS Publications)*
- **State-of-Charge Dependent Aging Mechanism of Halide-Based Composite Cathodes for All-Solid-State Batteries** — score: 1.000 The study identifies a state-of-charge-dependent aging mechanism in halide-based all-solid-state batteries, revealing that optimal state-of-charge control and interface engineering can significantly enhance battery lifespan. Journal: *Wiley: Advanced Energy Materials: Table of Contents*
- **[ASAP] Tracing Lithophilic Sites: In Situ Nanovisualization of Their Migration and Degradation in All-Solid-State Lithium Batteries** — score: 1.000 The article discusses the in situ nanovisualization of lithophilic sites in all-solid-state lithium batteries, focusing on their migration and degradation behaviors. Journal: *Journal of the American Chemical Society: Latest Articles (ACS Publications)*
- **[ASAP] Atomic Resolution of Solid–Electrolyte Interphase Formation via Off-Lattice On-the-Fly Kinetic Monte Carlo** — score: 1.000 The article discusses the use of off-lattice on-the-fly kinetic Monte Carlo simulations to achieve atomic resolution in understanding the formation of solid-electrolyte interphases. Journal: *Journal of the American Chemical Society: Latest Articles (ACS Publications)*
- **Decoding Silicon-Driven Degradation: An Adaptive Fusion Framework for Robust Battery Electrode-level Diagnostics** — score: 0.900 The article presents an adaptive fusion framework aimed at improving diagnostics for battery electrodes, focusing on understanding and mitigating silicon-driven degradation in energy storage materials. Journal: *ScienceDirect Publication: Energy Storage Materials*
- **Sculpting 2D Nanosheet Architectures via Predictive Low-Field Magnetic Alignment** — score: 0.800 Li et al. develop a low-field magnetic alignment strategy to control the assembly of 2D nanosheets, overcoming van der Waals interaction challenges, and demonstrating this with high-performance vertically aligned MXene electrodes for energy storage applications. Journal: *Wiley: Advanced Energy Materials: Table of Contents*
- **Molecular-Level Design of Asphalt-Derived Hard Carbon with Enhanced Ion/Electron Transport for High-Rate Sodium-Ion Batteries** — score: 0.800 The article presents a novel method for enhancing asphalt-derived hard carbon for sodium-ion batteries by combining nitrogen modulation and controlled oxidative crosslinking, resulting in improved structural stability, rapid ion/electron transport, and high electrochemical performance, as demonstrated in cylindrical cells. Journal: *Wiley: Advanced Energy Materials: Table of Contents*
- **[ASAP] Online Mass Spectrometry Investigation of SEI Formation on Carbon Electrode Surfaces in Sodium-Ion Batteries: Oxygen and Additive Effects** — score: 0.800 The article explores the formation of the solid-electrolyte interphase (SEI) on carbon electrode surfaces in sodium-ion batteries through online mass spectrometry, focusing on the effects of oxygen and additives. Journal: *ACS Applied Energy Materials: Latest Articles (ACS Publications)*

- **Uncoupling Solvent Cointercalation on Graphite Anode in Lithium-ion Batteries** — score: 0.800 The study explores the detrimental effects of solvent cointercalation on graphite anodes in lithium-ion batteries and presents methods, such as using specific additives, to mitigate this issue and enhance electrochemical compatibility with functionalized electrolytes. Journal: *Wiley: Advanced Energy Materials: Table of Contents*
- **[ASAP] Operando HERFD-XAS of Bimetallic Perovskite Thin Film Interfaces** — score: 0.800 This article discusses the operando high-energy resolution fluorescence detection X-ray absorption spectroscopy (HERFD-XAS) applied to bimetallic perovskite thin film interfaces, revealing insights into their electronic and structural properties. Journal: *Journal of the American Chemical Society: Latest Articles (ACS Publications)*
- **Seeing the unseen: Real-time tracking of battery cycling-to-failure via surface strain** — score: 0.800 The study presents a strain-based method for real-time monitoring of lithium-ion battery failures, enabling early detection of degradation and enhancing safety through a novel failure-proximity index that utilizes machine learning. Journal: *Joule*
- **Protecting skins of Au-Cl can stabilize Au nanostructures** — score: 0.800 The article discusses how controlling the surface chemistry of gold nanoparticles through the formation of an Au-Cl adlayer enhances the stability of Au nanostructures during electrochemical cycling, aided by precision nanoparticle gaps for observation. Journal: *Nature Chemistry*
- **Tracking Localized Electron Density Evolution in Carbon Nanostructures During Electrochemical Processes via in situ Raman Spectroscopy** — score: 0.800 The article discusses the use of in situ Raman spectroscopy to monitor the changes in localized electron density within carbon nanostructures during electrochemical processes. Journal: *ScienceDirect Publication: Energy Storage Materials*
- **[ASAP] Fast Discharging Stabilizes Electrochemical Interfaces: Achieving Close-to-Unity Reversibility in “Dendrite-Forming” Battery Electrodes** — score: 0.600 The article discusses a method to enhance the stability of electrochemical interfaces in dendrite-forming battery electrodes by employing fast discharging techniques, leading to nearly perfect reversibility in their performance. Journal: *Journal of the American Chemical Society: Latest Articles (ACS Publications)*
- **Engineering Interfacial Immunity in High-Nickel Batteries with a Mediating Biodegradable Separator** — score: 0.500 The article presents a biodegradable PLA/PEG composite separator that enhances the cycle life of high-nickel batteries by immobilizing transition metal ions and promoting rapid environmental decomposition, achieving significant capacity retention over prolonged cycling. Journal: *Wiley: Advanced Energy Materials: Table of Contents*
- **Redirecting Iodine Reduction Pathways by Decoupling Adsorption Energies for Long-Life Zn-I₂ Batteries** — score: 0.400 This article discusses a method for improving the longevity of zinc-iodine batteries by altering iodine reduction pathways to mitigate capacity fading caused by polyiodide shuttling. Journal: *RSC - Energy Environ. Sci. latest articles*
- **[ASAP] Ultrafast Mass Spectrometry Imaging via Laser-Based Mass Spectrometry Microscopy** — score: 0.400 The article discusses advancements in ultrafast mass spectrometry imaging utilizing laser-based microscopy techniques, enhancing the capabilities of mass spectrometry for rapid and detailed analysis. Journal: *Journal of the American Chemical Society: Latest Articles (ACS Publications)*
- **Recent Advances in Ti-Based Anodes for Sodium-Ion Batteries** — score: 0.400 This review highlights recent advancements in titanium-based anode materials for sodium-ion batteries, focusing on their structural modifications, synthesis techniques, performance enhancements, and the challenges faced in their development. Journal: *Wiley: Advanced Energy Materials: Table of Contents*
- **High-Asymmetry Bipolar Membrane Electrode Assemblies Generate a Superconcentration of Cations and Hydroxide at a Catalyst Surface** — score: 0.400 The article discusses the development of high-asymmetry bipolar membrane electrode assemblies that enhance cation and

hydroxide concentrations at the catalyst surface, promoting efficient electrochemical CO reduction reactions at high alkaline pH levels. Journal: *RSC - Energy Environ. Sci. latest articles*

- **[ASAP] Partial Desolvation Causes Lithium Structural Transport in Liquid and Gel Polymer Electrolytes** — score: 0.400 The article investigates how partial desolvation influences lithium ion transport in both liquid and gel polymer electrolytes. Journal: *Journal of the American Chemical Society: Latest Articles (ACS Publications)*
- **LiBxOy/LiF-rich Cathode Electrolyte Interphase Enables High-Temperature/Voltage Lithium Metal Batteries by Anion-enriched Solvation** — score: 0.400 The article discusses a lithium metal battery utilizing a LiBxOy/LiF-rich cathode electrolyte interphase that enhances performance at high temperatures and voltages through anion-enriched solvation. Journal: *ScienceDirect Publication: Energy Storage Materials*
- **[ASAP] Coupling Effect between Zn²⁺ Solvation Structure Modulation and Electrochemical Reversibility Enabled by Glucose Additive** — score: 0.400 The article discusses how the addition of glucose modifies the solvation structure of Zn²⁺, enhancing electrochemical reversibility in energy applications. Journal: *ACS Applied Energy Materials: Latest Articles (ACS Publications)*
- **A Robust Molecular-Bridged Hybrid Interphase for Dendrite-Free and Durable Lithium Metal Batteries** — score: 0.400 This study introduces a molecular-bridged hybrid solid electrolyte interphase (SEI) that enhances the stability and performance of lithium metal batteries by preventing interphase delamination and enabling dense lithium deposition, resulting in improved cycling and capacity retention even under high areal capacities. Journal: *Wiley: Advanced Energy Materials: Table of Contents*
- **Stable Ordered Zinc Electrodeposition Enabled by a Zn²⁺-rich Interface within Matched Nucleation and Growth Kinetics** — score: 0.400 The article discusses a method for stable zinc electrodeposition through a Zn²⁺-rich interface that optimizes nucleation and growth kinetics, enhancing energy storage performance. Journal: *ScienceDirect Publication: Energy Storage Materials*
- **Deciphering the ion-interface coupling bilayer crystal plane/interphase framework for energetic Zn ion capacitors** — score: 0.400 The article explores the ion-interface coupling mechanism in bilayer crystal planes and interphases to enhance the performance of energetic zinc ion capacitors. Journal: *ScienceDirect Publication: Energy Storage Materials*
- **[ASAP] Understanding and Mitigating Lithium Metal Anode Failure in All-Solid-State Batteries with Inorganic Solid Electrolytes** — score: 0.400 The article investigates the challenges of lithium metal anode failure in all-solid-state batteries utilizing inorganic solid electrolytes and proposes strategies for mitigating these issues. Journal: *ACS Energy Letters: Latest Articles (ACS Publications)*
- **[ASAP] Sn Hollow Spheres as a Promising Anode for High-Performance Sodium-Ion Storage Devices** — score: 0.300 The article discusses the potential of tin (Sn) hollow spheres as an effective anode material for enhancing the performance of sodium-ion storage devices. Journal: *Energy & Fuels: Latest Articles (ACS Publications)*
- **[ASAP] Starch-Based Hard Carbon Microspheres: Insights from Precursor Structure to Closed Pore Formation for Sodium Storage** — score: 0.300 The article explores the relationship between the structure of starch-based hard carbon microsphere precursors and their ability to form closed pores, highlighting their potential for sodium storage applications. Journal: *ACS Applied Energy Materials: Latest Articles (ACS Publications)*
- **[ASAP] Chloride-Based Solid Electrolytes from Crystal Structure to Electrochemical Performance** — score: 0.300 The article discusses the relationship between crystal structure and electrochemical performance in chloride-based solid electrolytes, highlighting their potential applications in energy storage systems. Journal: *ACS Energy Letters: Latest Articles (ACS Publications)*
- **[ASAP] Light-Induced NH₄⁺ Deprotonation Drives NH₄⁺/H⁺ Hybrid Storage Toward**

- Near-Theoretical Capacity in NH₄V₄O₁₀ Electrodes** — score: 0.300 The article discusses how light-induced deprotonation of NH₄⁺ enhances NH₄⁺/H⁺ hybrid storage in NH₄V₄O₁₀ electrodes, achieving near-theoretical capacity. Journal: *Journal of the American Chemical Society: Latest Articles (ACS Publications)*
- **Helical Counter-Directional Migration-Induced Solvation Sheath Constructing Reinforced Electrode-Electrolyte Interphases for Ultra-Stable Anode-Free Lithium Metal Batteries** — score: 0.300 The article discusses a novel approach to enhance the stability of anode-free lithium metal batteries by developing reinforced electrode-electrolyte interphases using helical counter-directional migration-induced solvation sheaths. Journal: *RSC - Energy Environ. Sci. latest articles*
 - **[ASAP] Cyano-Enriched Auxiliary Salts Mitigating Corrosion-Induced Crosstalk in Sulfonimide Salt Electrolytes toward Long-Life High-Safety Lithium Metal Batteries** — score: 0.300 The article discusses the use of cyano-enriched auxiliary salts to reduce corrosion-related issues in sulfonimide salt electrolytes, enhancing the longevity and safety of lithium metal batteries. Journal: *ACS Energy Letters: Latest Articles (ACS Publications)*
 - **High Efficiency Aqueous Zn-Iodine Batteries with Six-Electron Redox Enabled by Halogen-Additive-Free Electrolyte Engineering** — score: 0.300 The article discusses the development of high-efficiency aqueous Zn-iodine batteries utilizing an innovative halogen-additive-free electrolyte engineering approach, enabling six-electron redox processes. Journal: *ScienceDirect Publication: Energy Storage Materials*
 - **[ASAP] From Stability Strategies to Practical Implementation: Recent Progress and Prospects on Ultrathin Lithium Metal Anodes** — score: 0.300 The article reviews recent advancements in the development and practical implementation of ultrathin lithium metal anodes, focusing on stability strategies. Journal: *ACS Energy Letters: Latest Articles (ACS Publications)*
 - **Molecularly Engineered Electroactive Lignin Binder for Highly Reversible and Ultrafast Sodium-Ion Storage in Hard Carbon Anodes** — score: 0.300 The article presents a molecularly engineered electroactive lignin binder designed to enhance the reversibility and speed of sodium-ion storage in hard carbon anodes. Journal: *ScienceDirect Publication: Energy Storage Materials*
 - **Dendrite-less Aluminum Anodes Enabled with In-situ Gallium Alloying for Molten Salt Aluminum Batteries** — score: 0.300 The article discusses the development of dendrite-less aluminum anodes for molten salt aluminum batteries, achieved through in-situ gallium alloying, aiming to enhance battery performance. Journal: *ScienceDirect Publication: Energy Storage Materials*
 - **Stress-Induced Challenges in Sodium-Ion Battery Layered Oxide Cathodes: Damage Mechanisms and Mitigation Approaches** — score: 0.300 The article explores stress-induced damage mechanisms in sodium-ion battery layered oxide cathodes and presents potential strategies for mitigating these challenges. Journal: *ScienceDirect Publication: Energy Storage Materials*
 - **Polymer Electrolyte-Mediated Interfacial Chemistry for High-Performance Lithium-Ion Batteries** — score: 0.300 The article discusses advancements in polymer electrolyte-mediated interfacial chemistry aimed at enhancing the performance of lithium-ion batteries, highlighting its significance for energy storage technologies. Journal: *ScienceDirect Publication: Energy Storage Materials*
 - **[ASAP] Poly(lithium borate ester) Binder for Fast Charging Lithium-Ion Battery Enabled by Functionalized Solid Electrolyte Interphase** — score: 0.300 The article discusses a new poly(lithium borate ester) binder that enhances the performance of lithium-ion batteries, enabling faster charging through the development of a functionalized solid electrolyte interphase. Journal: *ACS Applied Energy Materials: Latest Articles (ACS Publications)*
 - **Interface and Structural Modulation Stabilization Strategies for Layered Transition Metal Oxide Cathodes in Sodium-Ion Batteries** — score: 0.300 The article discusses strategies for stabilizing the interface and structure of layered transition metal oxide cathodes in sodium-ion batteries,

aimed at improving their performance and longevity. Journal: *ScienceDirect Publication: Energy Storage Materials*

- **Sulfur as Dual-Functional Reactive Oxygen Scavenger and Li₂SO₄-Rich CEI Builder for Long-Life Lithium-Rich Cathodes** — score: 0.300 The article discusses the role of sulfur as a dual-functional agent that acts as a reactive oxygen scavenger and a builder for a Li₂SO₄-rich cathode-electrolyte interphase, enhancing the longevity of lithium-rich cathodes in energy storage applications. Journal: *ScienceDirect Publication: Energy Storage Materials*
- **Crosslinking-enhanced Ratio of Coupling Ions to Achieve Efficient Sodium Transport in Eutectic Cellulose Gel Electrolytes** — score: 0.300 The article discusses the use of crosslinking to improve the ratio of coupling ions in eutectic cellulose gel electrolytes, enhancing sodium transport for energy storage applications. Journal: *ScienceDirect Publication: Energy Storage Materials*
- **[ASAP] Revisiting the Structural Limitations of Layered Oxide Cathodes for Reversible Lithium-Ion Storage** — score: 0.300 The article revisits the structural limitations of layered oxide cathodes in lithium-ion batteries, highlighting their impact on reversible lithium storage capacity. Journal: *ACS Energy Letters: Latest Articles (ACS Publications)*
- **Dual-Pathway Chloride Suppression Enables Stable Industrial-Scale Anion Exchange Membrane Seawater Electrolysis** — score: 0.200 The article introduces a dual-pathway strategy to enhance seawater electrolysis by using SO_x — species to suppress chloride ion interference, resulting in improved catalytic performance, stability, and lower hydrogen production costs. Journal: *Wiley: Advanced Energy Materials: Table of Contents*
- **Dual-Channel -Donation/ -Backdonation-Driven -p-p- Coupling in Calcium Dual-Atom Catalysts Enables Accelerated ORR** — score: 0.200 The study presents a dual-atom catalyst using calcium that enhances oxygen reduction reaction (ORR) activity through efficient -donation/ -backdonation interactions, showcasing superior performance and stability compared to single-atom counterparts. Journal: *Wiley: Advanced Energy Materials: Table of Contents*
- **Pre-Leached Sacrificial Heterojunction Enables Sustaining Industrial-Grade Water Electrolysis** — score: 0.200 The study presents a MoO₂/Ni₂S₃ catalyst with a pre-leached sacrificial component that enhances the stability and activity of water electrolysis for industrial-scale hydrogen production, achieving low energy consumption and impressive operational longevity. Journal: *Wiley: Advanced Energy Materials: Table of Contents*
- **Atomic-Scale Ru Skin Propels Alkaline Hydrogen Fuel Cells** — score: 0.200 The article presents a core-shell Co@Ru nanoplate catalyst that enhances the efficiency and stability of alkaline hydrogen fuel cells by optimizing the adsorption/desorption balance of reactive species, achieving high power density and long-term operation. Journal: *Wiley: Advanced Energy Materials: Table of Contents*
- **Ternary synergy in ZnBr₂/H₂O enables ambient cellulose dissolution and closed-loop hydrogel electrolytes for sustainable supercapacitors** — score: 0.200 The article discusses the development of a ternary system using ZnBr₂ and water for dissolving cellulose at ambient conditions, enabling the creation of closed-loop hydrogel electrolytes for sustainable supercapacitors. Journal: *ScienceDirect Publication: Energy Storage Materials*
- **Metal Ion Complexation Mediated Synthesis of Na₄Fe₃(PO₄)₂P₂O₇/C Hollow Microspheres: Insights into Structural Evolution for High-Performance Sodium Storage** — score: 0.200 The article discusses the synthesis of Na₄Fe₃(PO₄)₂P₂O₇/C hollow microspheres through metal ion complexation, highlighting their structural evolution and potential for high-performance sodium storage applications. Journal: *ScienceDirect Publication: Energy Storage Materials*