

Work faster, think deeper and achieve more with *the research-grade AI workspace*

LeapSpace is a publisher-neutral AI tool that unites abstracts and full text with responsible AI in a single private and secure environment. It is designed to empower researchers and innovation leaders to:

- Move from insight to action with confidence
- Reclaim time for big ideas
- Cut through complexity to accelerate innovation



Unmatched content depth and breadth



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Advancing human progress together

“The response is very, very well structured... the ‘confidence level’ is something novel that I like a lot plus the links to the evidence and then even the ranking of the relevancy. I haven’t seen anything like that before”

Operations Head

A leading energy company

“It would take me maybe a working day and a half to do the basic research... this would help me do that part in an hour versus the one and a half days.”

R&D Materials Engineer

Global leader in automation

LeapSpace aims to close the trust gap, set new standards for transparency and empower critical thinking

Purpose-built for research

- Natural language queries
- Instant summaries with inline referencing
- Deep research mode uses Agentic AI to deliver in-depth exploration of topics
- Quickly review evidence using Reading Assistant and Compare Experiments
- Find collaborators with Author Search

Trust & transparency, every time

- LeapSpace always displays the steps it takes to answer your question
- Evidence-based Trust Cards display confidence levels and risk assessments to help researchers calibrate the strength of the evidence

Enterprise grade privacy and security

LeapSpace and all AI solutions from Elsevier follow these Responsible AI Principles: We use private, secure versions of large language models, consider real-world impacts, prevent unfair bias, explain our solutions, ensure human oversight, and respect privacy with strong data governance. Your prompts and documents are never used to train any large language models (LLMs) and everything you do in LeapSpace is private, secure and encrypted. By using Elsevier AI solutions, your firm benefits from our enhanced data privacy and enterprise-grade safeguards.

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resistance, unstable SEI layers, poor contact, and dendrite propagation. Research emphasizes **multi-layer interphases, coatings, artificial SEI, and grain-boundary/interface control** to stabilize long-term cycling [2](#) [16](#) [17](#) [18](#) [21](#) [22](#).

3. Advanced Electrodes and Composite Architectures
Studies explore **high-voltage cathodes, single-crystal NMC, sulfur cathodes, metal anodes, and Si/Si-Ge composites**, focusing on microstructural engineering for enhanced transport and durability [25](#) [26](#) [29](#) [30](#) [32](#) [33](#).

4. Ion Transport & Chemo-Mechanical Coupling
Understanding how ions move through solids—and how mechanical stresses couple to electrochemical reactions—is essential for dendrite suppression and longevity. Grain boundaries, stress-induced cracking, and deformation-driven delamination are major study targets [8](#) [33](#) [34](#) [35](#) [36](#) [37](#).

5. Manufacturability & Scalability
SSB commercialization depends on scalable processes: mixing, coating, pressure-assisted densification, and dry/wet processing. Moisture sensitivity (e.g., sulfides) and microstructure control are critical industrial challenges [37](#) [38](#) [39](#) [40](#) [42](#) [43](#).

6. Characterization, Simulation & AI-Driven Design
In-situ diagnostics, high-resolution imaging, and multi-scale modeling shed light on interfaces, microstructures, and failure modes. AI and machine learning increasingly assist in electrolyte and electrode optimization [43](#) [44](#) [46](#) [48](#) [49](#) [50](#).

Ask a follow-up question

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Identified claim
Understanding how ions move through solids—and how mechanical stresses couple to electrochemical reactions—is essential for dendrite suppression and longevity.

54 related documents

Support	54
Mixed	0
Contradict	0

5 key insights

- Large body of mechanistic and modeling studies converge on chemo-mechanical coupling importance [Show more](#)

54 support 0 mixed 0 contradict

Electrodeposition Stability Landscape for Solid-Solid Interfaces
Chatterjee, D. [7](#); Naik, K.G. [7](#); Vishnugopal, B.S. [7](#); Mukherjee, P.P. [7](#)
Advanced Science [7](#) • 2024

13 citations