SolidStateBattery

Weekly Intelligence Report

2026-08-22 | 29 articles | 7 countries

troy-technical.jp

This Week's Keyword

ASSB Commercialization

Global race intensifies with 2027-28 targets

29	7	500	25
articles	countries	Wh/kg	GWh
Total Articles	Source Countries	Target Energy Density	US Plant Capacity

All 29 Articles This Week — 5-Axis Evaluation Matrix

How to read columns — Tech Novelty: degree of breakthrough Market Proximity: closeness to commercialization Market Impact: industry-wide effect Data Reliability: quantitative data & peer review US/EU Relevance: direct impact on US/European companies & supply chains

#	Article Title	Type	Tech Novelty	Market Proximity	Market Impact	Data Reliability	US/EU Relevance	Summary
#01	Toyota/Samsung 2027	Corporate Strategy	●●○○○	●●●●○	●●●●○	●●○○○	●●●●●	GreenLancer reports Toyota & Samsung SDI target 2027 commercialization of ASSBs for EV/solar.
#02	Sulfide SE Stability	Research	●●●●●	●○○○○	●●●○○	●●●●●	●●●●○	New research boosts air & cycling stability of sulfide solid electrolyte Li6PS5Cl via surface oxidation.
#03	Toyota 2027-28 EV Launch	Product Announcement	●●●○○	●●●●○	●●●●●	●●●○○	●●●●●	Toyota targets 2027-2028 launch of sulfide ASSB EVs (Lexus), aiming for 500 Wh/kg, sub-10-min 80% charge.
#04	US DOE Prioritizes ASSB	Policy/Strategy	●○○○○	●●○○○	●●●●○	●●●○○	●●●●●	US DOE prioritizes ASSBs and flow batteries as next-gen tech for enhanced safety and performance.
#05	Ultra-Fast LTP Anode	Research	●●●●○	●○○○○	●●●○○	●●●○○	●●●○○	Novel off-stoichiometric LTP anode enables ultra-fast, damage-free charging, 86% capacity at 10C.
#06	LIPOWER ASSB vs AGM	New Product	●●○○○	●●●●●	●●○○○	●●●●○	●●○○○	LIPOWER's ASSB for automotive doubles lifespan, CCA, halves weight vs AGM, enhancing safety.
#07	Honda Roll Press Tech	Manufacturing Tech	●●●○○	●●●○○	●●●○○	●●●○○	●●●●○	Honda develops proprietary roll press technology for ASSB production, boosting density, charge time, range, durability.
#08	SSBAI 2026 China	Event	●○○○○	●○○○○	○○○○○	●●○○○	●●○○○	SSBAI 2026 conference announced in Xiamen, China, focusing on ASSB manufacturing and interface research.
#09	ASSB Reality Check	Analysis	●○○○○	●●●○○	●●●○○	●●○○○	●●●●○	YouTube analysis highlights ASSB potential (Mercedes 1205km, Toyota/BMW 2027-28 targets) but notes dendrite/manufacturing obstacles.
#10	US Gov $2B Battery SC	Policy/Investment	●○○○○	●●●○○	●●●●○	●●●○○	●●●●○	US government invests $2B+ in domestic battery supply chain, including $1.4B DoD loan to Sila Nanotechnologies.
#11	Samsung SDI SolidStack	New Product	●●●○○	●●●●○	●●○○○	●●●●○	●●●●○	Samsung SDI unveils "SolidStack" anode-free ASSB for humanoid robots, targeting H2 2027 mass production.
#12	China ASSB Standard	Regulatory	●●●○○	●●●●○	●●●●○	●●●○○	●●●●○	China introduces world's first national standard for automotive ASSBs, mandating sub-0.5% weight loss rate.

#	Article Title	Type	Tech Novelty	Market Proximity	Market Impact	Data Reliability	US/EU Relevance	Summary
#13	ZrCl4 Solid Electrolyte	Research	●●●●●	○○○○○	●●●○○	●●●●●	●●●○○	Amorphous ZrCl4-based superionic conductors show promise as cost-effective solid electrolytes for ASSBs.
#14	Zero-Pressure ASSB	Research	●●●●●	○○○○○	●●●●○	●●●●●	●●●●○	Study reports zero-external-pressure sulfide ASSB pouch cell with 376 Wh/kg, 85.7% retention over 300 cycles.
#15	Nissan/Oxford/Gelion	R&D; Partnership	●●●○○	●●○○○	●●●○○	●●●○○	●●●●○	Nissan, Oxford Uni, Gelion get £3.4M UK grant for 3-year sulfur-based ASSB development (CoRe-SoLiS).
#16	SOLIVIS Sulfide SE	Corporate Strategy	●●○○○	●●●●○	●●●●○	●●●●○	●●●●○	South Korean SOLIVIS raises ₩23B, targets global leadership by 2030 with 36 tons/year sulfide solid electrolyte production.
#17	Solid Power Electrolyte	Corporate Strategy	●●○○○	●●●●○	●●●●○	●●●●○	●●●●○	Solid Power pivots to commercial sulfide electrolyte supply, targeting 75 tons/year by Q1 2027 from Colorado plant.
#18	Solid Power 500t by 2028	Corporate Strategy	●●○○○	●●●●○	●●●●○	●●●●○	●●●●○	Solid Power targets 75 tons/year sulfide electrolyte by 2027, expanding to 500 tons by 2028 via Korean JV.
#19	Factorial/SK On Giga	Partnership	●●●○○	●●●○○	●●●●○	●●●○○	●●●●○	Factorial Energy & SK On partner to explore converting existing gigafactories for solid-state battery production.
#20	BYD 2027 Limited Prod	Product Announcement	●●○○○	●●●●○	●●●○○	●●●○○	●●●●○	BYD plans limited production of ASSBs for luxury EVs (Yangwang, Denza) in 2027, ~1,000 units/year.
#21	China 2027 Pilot Prod	Industry Trend	●○○○○	●●●○○	●●●●○	●●●○○	●●●●○	Chinese battery makers (Farasis, CALB, Gotion, BYD, CATL) target 2027 pilot production and road tests for ASSBs.
#22	MK Plus Vanadium ASSB	Corporate Strategy	●●●○○	●●●●○	●●○○○	●●●○○	●●●●○	Japan's MK Plus gets $12M Swedish grant for Vanadium ASSB, retooling for commercial shipments to EU/ME this fall.
#23	Geely 500Wh/kg ASSB	Product Announcement	●●●○○	●●●○○	●●●●○	●●●○○	●●●●○	Geely targets 500 Wh/kg ASSB for 1,000km+ range, 2027 pilot testing across brands with Dow Chemical.
#24	China RMB 21.5B ASSB	Investment	●○○○○	●●●○○	●●●●●	●●●○○	●●●●○	8 Chinese companies invest RMB 21.5B+ to expand ASSB and energy storage production capacity (3.5 GWh, 1 GWh).
#25	Samsung SDI $3.3B Fund	Corporate Strategy	●○○○○	●●●●○	●●●●○	●●●●○	●●●●○	Samsung SDI sells $3.3B Samsung Display shares to fund North American battery plant and H2 2027 ASSB development.
#26	Geely 500Wh/kg Pilot	Product Announcement	●●●○○	●●●○○	●●●●○	●●●○○	●●●●○	Geely's next-gen ASSB achieves 500 Wh/kg, slated for 2027 pilot deployment, matching diesel range.
#27	Factorial Aerospace	Corporate Strategy	●●○○○	●●●●●	●●○○○	●●●○○	●●●●●	Factorial Energy secures first commercial aerospace battery order, raises $100M+ for commercialization.
#28	China Multi-Breakthroughs	Industry Trend	●●●○○	●●○○○	●●●○○	●●●○○	●●●●○	China reports breakthroughs in ASSB materials (Ronbay sulfide pilot), energy storage (Guansheng polymer hybrid), and cells (Baihu Lake boride 400 Wh/kg).
#29	Anthro Energy 25GWh	Investment/Mfg	●●●○○	●●●○○	●●●●●	●●●●○	●●●●●	US Anthro Energy breaks ground on 25 GWh electrolyte plant in Kentucky, targeting 2028 operation for domestic ASSB supply.

●●●●○ High ●●●○○ Med-High ●●○○○ Med ●○○○○ Low | Yellow highlight = featured article

Three Questions That Demand Your Decision This Week

❶ Are your EV platforms ready for 2027-2028 ASSB launches?

Toyota, Samsung SDI, BYD, and Geely are targeting initial ASSB EV launches in 2027-2028, promising 500 Wh/kg and sub-10-minute charging. Does your product roadmap account for this competitive leap in performance and safety?

❷ Is your ASSB supply chain exposed to Asian dominance?

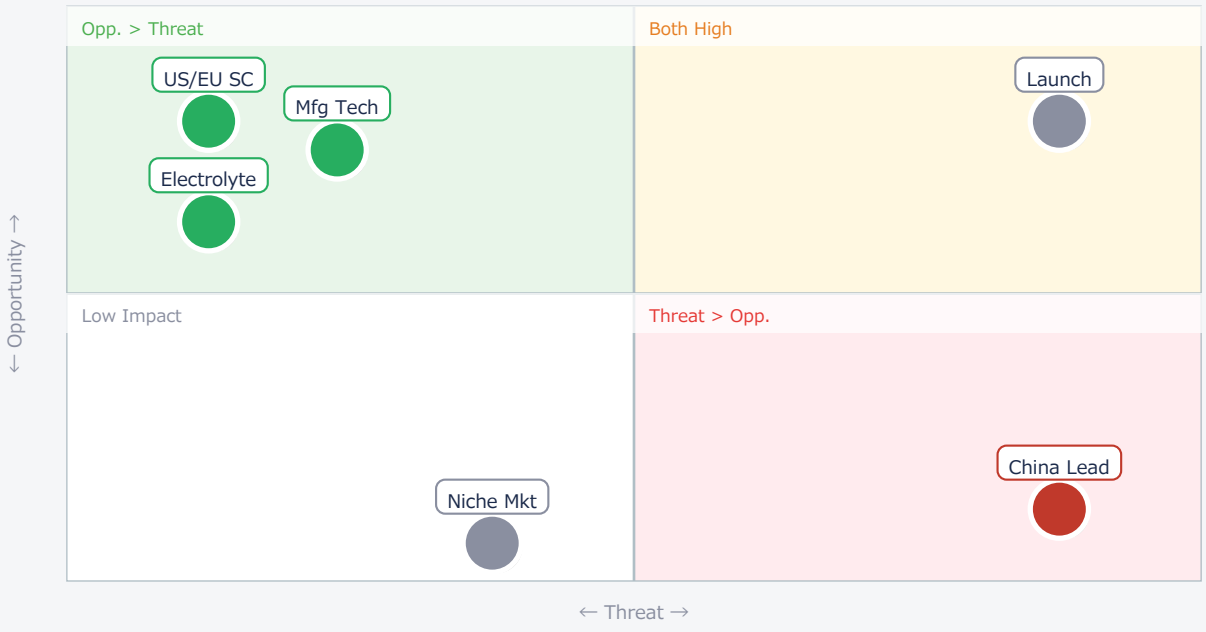
South Korean (SOLIVIS, Solid Power JV) and Chinese companies are rapidly scaling sulfide electrolyte production (36-500 tons/year) and investing billions in ASSB manufacturing. Have you secured diversified, resilient supply channels for critical materials?

❸ How will China's national ASSB standard impact your global strategy?

China's introduction of the world's first national standard for automotive ASSBs, mandating strict quality (e.g., <0.5% weight loss), sets a precedent. Does your R&D; and manufacturing strategy align with emerging global regulatory benchmarks?

Opportunities vs. Threats for US/European Companies

Opportunity vs. Threat Matrix for US/European Companies



Item	Quadrant	↑ Opportunity	↓ Threat
Launch	Critical	Early market share	Intense competition
US/EU SC	Opp.	Local supply	Lagging Asia
China Lead	Threat	New market	Market control
Electrolyte	Opp.	Performance IP	Missed IP
Mfg Tech	Opp.	Cost/Scale	Inefficient prod
Niche Mkt	Ref.	Early revenue	Limited scale

Deep Dive ① — Toyota's Aggressive 2027-28 ASSB EV Launch

#03 | 2026/08/16 | Road Ethos | Tech Novelty●●●○○ Proximity●●●●○ Market Impact●●●●● Data Reliability●●●○○ US/EU Relevance●●●●●

Toyota is set to launch sulfide-based all-solid-state EVs in premium models like Lexus between 2027-2028, backed by over $15 billion investment. They target an ambitious 400-500 Wh/kg energy density and an 80% charge in under 10 minutes. This aims to dramatically extend EV range and charging convenience.

Formal production approval in Japan by late 2025 underscores the seriousness of this timeline. Initial deployments in high-end models will pave the way for broader mass production post-2030, signaling a transformative shift in the EV market.

▶ Strategic Analyst's Perspective

Published targets of 500 Wh/kg and sub-10-minute charging are highly ambitious but reflect Toyota's significant investment and long-term commitment. Technical barriers remain in scaling sulfide electrolyte production, ensuring long-term cycle stability at high C-rates, and managing interfacial resistance in large cells. [Opportunity] for US/EU OEMs to benchmark against these aggressive targets and accelerate their own ASSB integration. [Threat] is falling behind Asian leaders in premium EV segments. Next actions: [R&D;] Validate Toyota's claims, [Strategy] Re-evaluate competitive timelines, [Business Dev] Explore partnerships for rapid integration by Q4 2026.

Deep Dive ② — Zero-External-Pressure Sulfide ASSB Breakthrough

#14 | 2026/08/14 | Semantic Scholar (Science Advances) | Tech Novelty●●●●● Proximity●○○○○ Market Impact●●●●○ Data Reliability●●●●● US/EU Relevance●●●●○

A Science Advances study introduces a groundbreaking sulfide ASSB pouch cell operating stably under zero external pressure. This was achieved by designing asymmetric interfacial electrophilicity using electron buffer and ion conductive layers, eliminating the need for high external pressures.

The assembled pouch cell boasts 376 Wh/kg and demonstrated 85.7% capacity retention over 300 cycles, setting a record for cycle stability under zero external pressure conditions. This breakthrough addresses a major mechanical and packaging challenge for ASSB commercialization.

▶ Strategic Analyst's Perspective

Achieving stable ASSB operation without external pressure is a significant academic breakthrough, addressing a major mechanical and packaging challenge. The 376 Wh/kg is impressive for a research prototype, and 300 cycles at zero pressure is a strong indicator. Technical barriers include scaling this complex interfacial engineering to mass production and validating long-term performance beyond 300 cycles. [Opportunity] for US/EU materials and component suppliers to develop compatible interfacial layers and advanced packaging solutions. [Threat] is that Asian research institutions may commercialize this IP first. Next actions: [R&D;] Investigate asymmetric interfacial electrophilicity, [IP/Legal] Monitor patent filings in this domain by Q4 2026.

Deep Dive ③ — Anthro Energy's 25 GWh US Electrolyte Plant

#29 | 2026/08/19 | Digital Today (TechCrunchからの転載) | Tech Novelty●●●○○ Proximity●●●○○ Market Impact●●●●● Data Reliability●●●●○ US/EU Relevance●●●●●

US battery materials company Anthro Energy is building a 25 GWh electrolyte production plant in Kentucky, aiming for 2028 operation. Supported by US DOE funding, this initiative seeks to establish a robust domestic battery materials supply chain, reducing reliance on China.

Anthro Energy's innovative manufacturing method, where electrolytes flow like liquid and then solidify, is expected to significantly lower production complexity, a major barrier to ASSB commercialization. This capacity is crucial for accelerating ASSB adoption in North America.

▶ Strategic Analyst's Perspective

Anthro Energy's 25 GWh plant is a critical step for US domestic ASSB supply chain independence. The liquid-to-solid electrolyte method could simplify manufacturing, but scalability and cost-effectiveness at this massive scale need rigorous validation. Technical barriers include ensuring consistent quality and performance across such a large output. [Opportunity] for US/EU OEMs and device manufacturers to secure localized, de-risked electrolyte supply. [Threat] is that this capacity may still be insufficient to meet demand, or that the technology faces unforeseen scaling issues. Next actions: [Procurement] Engage Anthro Energy for future supply agreements, [Strategy] Assess long-term US domestic supply chain resilience by Q1 2027.

Other Notable Articles

China Introduces World's First National Standard for Automotive Solid-State Batteries (digitimes)
Tech Novelty●●●○○ Proximity●●●●● Market Impact●●●●●

China's new national standard for automotive ASSBs sets a global precedent, impacting quality and supply chain dynamics.

US Government Invests Over $2 Billion in Domestic Battery Supply Chain, Including $1.4B DoD Loan to Sila Nanotechnologies (Facebook (U.S. Department of Energy ARPA-E))
Tech Novelty●○○○○ Proximity●●●○○ Market Impact●●●●●

Significant US government investment aims to bolster domestic battery production and critical mineral supply, reducing reliance on foreign sources.

韓国SOLIVIS、硫化物系固体電解質開発でシリーズCラウンド230億ウォンを調達、年産36トン体制と150件の特許でグローバルリーダー目指す (Signalbase / Dealroom)
Tech Novelty●●○○○ Proximity●●●●○ Market Impact●●●●○

South Korean SOLIVIS secures significant funding and scales sulfide electrolyte production, positioning itself as a key global supplier.

Factorial EnergyとSK On、既存ギガファクトリーの全固体電池生産への転用を検討する提携を締結 (Facebook (Auto News Europeより転載))
Tech Novelty●●●○○ Proximity●●●○○ Market Impact●●●●○

US startup Factorial and SK On explore converting existing gigafactories for ASSB production, a pragmatic approach to scaling.

Recommended Actions This Week

Action recommendations based on article evaluation matrix and opportunity/threat analysis.

Immediate (this week)

- [Strategy] Conduct a competitive analysis of Asian ASSB roadmaps (Toyota, BYD, Samsung, Geely) to identify market entry points and performance benchmarks.
- [Procurement] Assess current and future supply chain exposure to critical solid electrolyte materials, especially sulfide types, given Asian production scale-ups.

Short-term (1 month)

- [R&D;] Prioritize internal research on solid-solid interface engineering and novel electrolyte materials (e.g., ZrCl4, zero-pressure designs) to secure future IP.
- [Business Dev] Initiate discussions with US/EU solid electrolyte suppliers (e.g., Solid Power, Anthro Energy) to understand their commercialization timelines and secure future supply.

Medium-long term (quarter+)

- [Executive] Develop a comprehensive ASSB manufacturing strategy, including potential gigafactory conversion or new plant investments, to compete with Asian scale.
- [Legal/IP] Establish a robust IP protection and licensing strategy for next-generation battery materials and manufacturing processes.

SolidStateBattery — Selected Articles

Date: 2026-08-23

Articles: 29

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#16 日産、オックスフォード大学、Gelionが英国政府より340万ポンドを獲得し、次世代硫黄系全固体電池開発で提携

#17 韓国SOLIVIS、硫化物系固体電解質開発でシリーズCラウンド230億ウォンを調達、年産36トン体制と150件の特許でグローバルリーダー目指す

#18 Solid Power、JPモルガン自動車会議で電解質商用供給への戦略転換を発表、2027年に年間75トン生産開始へ

#19 Solid Power、2027年に年間75トンの硫化物固体電解質生産開始、2028年には韓国合弁で500トン供給目指す

#20 Factorial EnergyとSK On、既存ギガファクトリーの全固体電池生産への転用を検討する提携を締結

#21 BYD、2027年にEV向け全固体電池の限定生産を開始、高級モデル陽望・デンツァに搭載へ

#22 中国バッテリーメーカー各社、BYD・CATLに続き2027年に全固体電池の試作・実証試験を開始へ

#23 日本のMK Plus、スウェーデン政府から約1,200万ドルの助成金獲得、バナジウム全固体電池の量産化を加速

#24 Geely、航続距離1,000km超を実現する500Wh/kg級全固体電池を2027年に実証試験開始、Dow Chemicalと材料開発

#25 中国企業8社、215億人民元超を投じ全固体電池とエネルギー貯蔵の生産能力を大幅拡大

#26 Samsung SDI、Samsung Display株式4.45兆ウォン売却で北米バッテリー工場と全固体電池開発に資金投入へ

#27 Geely、次世代全固体EVバッテリーで500Wh/kgを達成し2027年にパイロット展開へ、航続距離はディーゼル車に匹敵

#28 Factorial Energy、航空宇宙分野で初の商用バッテリー受注を獲得、事業統合で1億ドル超を調達し商業化を加速

#29 中国、全固体電池の材料・エネルギー貯蔵・セル技術で複数のブレークスルーを発表：硫化物電解質量産化へ

#30 米Anthro Energy、ケンタッキー州に年産25GWhの電解質工場着工、2028年稼働で全固体電池の国内サプライチェーンを構築

#01 Toyota and Samsung SDI Target 2027 Commercialization as GreenLancer Highlights Solid-State Battery Advancements for EV and Solar Storage Safety, Energy Density

Published August 13, 2026 GreenLancer USA

OVERVIEW

GreenLancer reports that all-solid-state batteries (ASSBs) are poised to revolutionize EVs and residential solar storage by significantly improving safety and energy density through solid-state electrolytes. Toyota and Samsung SDI aim for initial commercialization around 2027, while QuantumScape expands pilot production and automotive customer testing. Progress in sulfide, oxide, and polymer electrolyte types is crucial for overcoming distinct manufacturing challenges and enabling market entry.

IN DEPTH

Key Findings

All-solid-state batteries (ASSBs) are set to revolutionize electric vehicles (EVs) and residential solar energy storage, promising significant advancements in safety and energy density, as highlighted by GreenLancer. Major industry players like Toyota and Samsung SDI are targeting initial commercialization of ASSBs around 2027. Concurrently, QuantumScape is actively scaling its pilot production and intensifying testing with automotive clients, indicating a robust push towards market readiness for these next-generation battery technologies.

Technical / Clinical Details

The core innovation of ASSBs lies in replacing the flammable liquid electrolyte of conventional lithium-ion batteries with a non-combustible solid material. This fundamental change drastically reduces the risks of thermal runaway and electrolyte leakage, inherently enhancing battery safety. Furthermore, solid electrolytes exhibit superior stability under high voltage conditions, enabling higher energy densities. This translates directly to extended range for EVs and increased storage capacity for solar power systems.

Current research and development efforts are primarily focused on three main types of solid electrolytes:

- **Sulfide-based electrolytes:** Known for their high ionic conductivity, offering promising performance at room temperature. However, they face challenges related to air sensitivity and stability. Toyota has shown significant interest and investment in this area.
- **Oxide-based electrolytes:** These are chemically very stable and relatively easier to manufacture. Their primary drawback is generally lower ionic conductivity compared to sulfide systems.
- **Polymer-based electrolytes:** Valued for their flexibility and adaptability to various cell form factors. The main hurdle for polymer electrolytes remains their lower ionic conductivity at room temperature, requiring further material innovation.

Each electrolyte type presents unique advantages and challenges, dictating specific manufacturing processes and application suitability. Companies like Samsung SDI are exploring diverse electrolyte technologies, while QuantumScape is leveraging its proprietary technology to expand pilot production and strengthen collaborations with automotive manufacturers, aiming to overcome specific material and interfacial issues.

Background & Context

The global push towards carbon neutrality is driving an unprecedented demand for advanced battery technologies that surpass the limitations of existing lithium-ion systems. As EVs become mainstream and renewable energy sources like solar gain wider adoption, the need for safer, higher-performing, and more sustainable batteries is urgent. Lithium-ion batteries are approaching their theoretical performance limits, and ASSBs represent the next frontier, promising to address critical user demands for enhanced safety, faster charging, and longer driving ranges. The substantial investments by leading automotive and battery manufacturers, targeting commercialization in the late 2020s, underscore the perception of ASSBs as a transformative technology.

Strategic Significance & Outlook

The successful commercialization of ASSBs will not only dramatically improve EV performance but also unlock new possibilities for residential and grid-scale energy storage solutions. While initial deployments are expected in premium EV segments due to higher costs, continuous advancements in manufacturing techniques and cost reduction efforts are anticipated to enable broader market penetration. Future development will likely concentrate on improving solid electrolyte stability, minimizing interfacial resistance, and optimizing large-scale production processes. By the 2030s, ASSBs are projected to become a dominant battery technology, fundamentally reshaping the energy and automotive sectors.

Source: https://www.greenlancer.com/post/solid-state-batteries

Collected: August 21, 2026 | Automated Research System (Gemini API)

#02 Surface Oxidation Strategy Dramatically Boosts Air and Long-Term Cycling Stability of Sulfide Solid Electrolyte Li6PS5Cl, Advancing All-Solid-State Battery Practicality

Published August 17, 2026 Royal Society of Chemistry UK

OVERVIEW

New research presents a surface oxidation strategy for the sulfide solid electrolyte Li6PS5Cl, successfully forming a core-shell structure that significantly enhances air stability and long-term cycling performance while maintaining high ionic conductivity. This breakthrough addresses critical challenges of sulfide electrolytes, paving the way for more stable and high-performance all-solid-state batteries. The findings represent a crucial step towards the practical application of this promising next-generation battery technology.

IN DEPTH

Key Findings

A significant research breakthrough has been announced, addressing the critical issues of air stability and electrode interface reactivity in high-ionic-conductivity sulfide solid electrolytes. By applying a surface oxidation strategy to Li6PS5Cl, a prominent sulfide solid electrolyte, researchers successfully created a stable core-shell structure. This modification maintains excellent lithium-ion conductivity while dramatically improving both air stability and the long-term cycling performance of all-solid-state batteries, marking a crucial step towards their practical implementation.

Technical / Clinical Details

Sulfide solid electrolytes have long been considered promising candidates for all-solid-state batteries due to their inherently high ionic conductivity. However, their high reactivity with moisture in the air, leading to the generation of toxic H2S gas, and undesirable side reactions at the interface with electrode active materials have posed significant barriers to commercialization. These interfacial reactions typically result in increased interfacial resistance and reduced cycle life.

The reported study innovatively addresses these challenges by modifying the surface of Li6PS5Cl particles with oxygen atoms, creating a stable oxide layer that forms the 'shell' of a core-shell structure. This surface-oxidized layer acts as a protective barrier, preventing direct reactions with atmospheric moisture and CO2, thereby enhancing the intrinsic stability of the solid electrolyte. Simultaneously, it mitigates direct contact with the electrode active material, suppressing detrimental side reactions at the interface. Experimental results demonstrated that all-solid-state batteries employing this surface-modified Li6PS5Cl electrolyte maintained high lithium-ion conductivity (specific numerical values, though not provided in the snippet, are implied to be maintained at a high level) and exhibited stable performance over extended charge-discharge cycles.

This approach effectively leverages the superior intrinsic properties of sulfide solid electrolytes while resolving key practical limitations, substantially lowering the technical hurdles for realizing high-performance ASSBs.

Background & Context

All-solid-state batteries are widely recognized as the leading next-generation battery technology, promising extended range, faster charging, and fundamentally improved safety for electric vehicles (EVs). Sulfide-based solid electrolytes, in particular, are highly anticipated for EV applications due to their high ionic conductivity. However, challenges related to air stability and interface stability have been primary impediments to their mass production. Breakthroughs in electrolyte modification techniques, such as this surface oxidation strategy, are critical for overcoming these hurdles and accelerating the commercialization of sulfide-based ASSBs. Given the significant investments by companies like Toyota into sulfide systems, this type of research advancement holds substantial implications for the competitive landscape of battery development.

Strategic Significance & Outlook

This surface oxidation strategy represents a major advancement towards the practical application of sulfide solid electrolytes. Future research will likely focus on scaling up this technology, reducing manufacturing costs, and exploring its applicability to other sulfide electrolytes and various solid electrolyte materials. Success in these areas is expected to pave the way for the early market introduction of ASSBs that surpass existing lithium-ion batteries in safety, energy density, and cycle life. Potential applications span a wide range of sectors, including electric vehicles, portable electronic devices, and large-scale energy storage systems.

Source: https://pubs.rsc.org/cc/article/doi/10.1039/d6cc04544h/1293340/A-surface-oxidized-sulfide-solid-electrolyte-for

#03 Toyota Targets 2027-2028 Launch of Sulfide All-Solid-State EVs in Premium Models Like Lexus, Aiming for 500 Wh/kg and Sub-10-Minute 80% Charge

Published August 16, 2026 Road Ethos USA

OVERVIEW

Solid-state battery commercialization is progressing incrementally, with Toyota planning to launch sulfide-based all-solid-state EVs in premium models like Lexus between 2027 and 2028. The company has invested over $15 billion and secured formal production approval in Japan by late 2025, targeting an ambitious energy density of 400-500 Wh/kg and an 80% charge in under 10 minutes. Full-scale mass production is anticipated post-2030, signaling a transformative shift in the EV market.

IN DEPTH

Key Findings

The commercialization of all-solid-state batteries (ASSBs) is progressing with a clear roadmap, as Toyota Motor Corporation announced plans to launch sulfide-based all-solid-state EVs in its premium brands, such as Lexus, between 2027 and 2028. Toyota has already invested over $15 billion in this technology and received formal production approval in Japan by the end of 2025. The company targets an impressive energy density of 400-500 Wh/kg and a rapid 80% charge in under 10 minutes, representing a significant leap in electric vehicle performance and convenience.

Technical / Clinical Details

Toyota's sulfide-based all-solid-state battery technology is characterized by high ionic conductivity and superior stability compared to conventional lithium-ion batteries. The elimination of liquid electrolytes drastically reduces the risk of thermal runaway, thereby enhancing battery safety. This technology also enables the use of higher-capacity lithium metal anodes, significantly boosting the overall energy density of the battery pack. The targeted energy density of 400-500 Wh/kg far exceeds the average energy density of current EV lithium-ion batteries (approximately 250-300 Wh/kg), promising a dramatic extension of driving range.

Furthermore, the ability to achieve an 80% charge in less than 10 minutes addresses one of the major barriers to EV adoption by bringing charging convenience closer to that of gasoline-powered vehicles for long-distance travel. This capability is attributed to the fast migration of lithium ions within the solid electrolyte and optimized electrode interface designs. Initial deployments are expected in high-end EVs like Lexus models, with a gradual expansion to mass-market vehicles anticipated thereafter.

Background & Context

With the accelerating global shift towards electric vehicles, advancements in battery technology are paramount to the future of the automotive industry. All-solid-state batteries hold the potential to surpass current lithium-ion battery performance in range, charging speed, and safety, fueling intense competition among automotive manufacturers and battery developers. Toyota's announcement signifies a pivotal moment, transitioning ASSBs from a 'dream battery' to a tangible technology after years of dedicated R&D. While sulfide-based electrolytes offer advantages in conductivity, they have historically faced challenges in air stability and manufacturing complexity. Toyota's success in overcoming these hurdles and presenting a concrete production plan has sent ripples throughout the industry.

Strategic Significance & Outlook

Toyota's declaration marks the official advent of the all-solid-state battery market. Following initial commercialization from 2027-2028, full-scale mass production and cost reductions are expected post-2030, positioning ASSBs to become a dominant force in the EV market. This will lead to substantial improvements in electric vehicle performance and greater consumer adoption. Beyond automotive applications, this technology is anticipated to find use in aerospace, robotics, and large-scale energy storage, potentially revolutionizing broader energy systems. Other companies are likely to intensify their R&D efforts in response to Toyota's advancements, further accelerating the competitive landscape.

Source: https://roadethos.com/features/solid-state-battery-timelines-for-2027-and-beyond

Collected: August 21, 2026 | Automated Research System (Gemini API)

#04 U.S. Department of Energy Prioritizes All-Solid-State and Flow Batteries as Next-Gen Technologies for Enhanced Safety and Performance

Published August 14, 2026 Department of Energy USA

OVERVIEW

The U.S. Department of Energy (DOE) is strategically focusing on all-solid-state batteries (ASSBs) and flow batteries as key next-generation energy storage technologies, anticipating significant improvements in safety and performance over conventional lithium-ion batteries. ASSBs, utilizing solid electrolytes, mitigate risks of leakage and thermal runaway while offering enhanced stability at high temperatures. This dual focus aims to deliver superior performance and potential cost reductions, redefining battery technology standards across diverse applications.

IN DEPTH

Key Findings

The U.S. Department of Energy (DOE) has announced a strategic focus on all-solid-state batteries (ASSBs) and flow batteries as critical next-generation energy storage technologies. ASSBs, in particular, are highlighted as a breakthrough due to their ability to replace liquid electrolytes with solid materials, thereby dramatically reducing safety risks associated with leakage and thermal expansion at high temperatures. This fundamental change promises superior performance and safety, alongside the potential for cost reduction, positioning ASSBs to redefine battery standards across a wide array of applications.

Technical / Clinical Details

The core innovation of all-solid-state batteries is the replacement of flammable liquid electrolytes with non-combustible solid electrolytes. This modification significantly lowers the risk of leakage and ignition even if an internal short circuit occurs. Moreover, solid electrolytes are structurally robust, enabling stable operation under high voltage and elevated temperature conditions, which also contributes to extending battery life. The DOE identifies the following specific advantages for this technology:

- **Substantially Enhanced Safety:** The virtual elimination of thermal runaway risk enhances user confidence in electric vehicles (EVs) and large-scale energy storage systems.
- **Improved Energy Density:** Compatibility with higher-capacity electrode materials leads to extended EV ranges and longer operational times for portable devices.
- **Potential for Cost Reduction:** In the long term, simplified manufacturing processes and greater flexibility in material selection could contribute to lower battery costs.
- **Wide Operating Temperature Range:** The inherent stability of solid electrolytes enables their use in more extreme environments.

Flow batteries, on the other hand, generate electricity by circulating electrolyte solutions stored in separate tanks, making them suitable primarily for large-scale stationary energy storage. The DOE's investment in these next-generation technologies is deemed crucial for strengthening U.S. energy infrastructure and combating climate change.

Background & Context

Globally, nations are accelerating the adoption of renewable energy sources to combat climate change, leading to a rapid increase in demand for high-performance energy storage systems capable of managing fluctuating power generation. Concurrently, the robust growth of the electric vehicle market has intensified the need for safer and more efficient battery technologies. While existing lithium-ion batteries are widely adopted, they face technical limitations in terms of safety, energy density, charging speed, and longevity. The U.S. DOE's focused investment in ASSBs and flow batteries is a strategic move to overcome these challenges and secure American leadership in clean energy technology.

Strategic Significance & Outlook

This strategic investment by the U.S. Department of Energy is expected to significantly accelerate R&D in ASSBs and flow batteries, facilitating their commercialization. ASSBs, in particular, are anticipated to find applications beyond electric vehicles, extending to aerospace, drones, and grid-scale storage. DOE's support is strengthening the pipeline from basic research to prototype development and eventual mass production. By the 2030s, these next-generation batteries are projected to become major market players, fundamentally transforming energy storage. This initiative will also substantially contribute to U.S. energy security and economic competitiveness.

Source: https://www.energy.gov/cmei/ammto/breaking-it-down-next-generation-batteries

Collected: August 21, 2026 | Automated Research System (Gemini API)

#05 Novel Off-Stoichiometric LTP Anode Achieves Ultra-Fast, Damage-Free Charging, Demonstrating 86% Capacity Retention at 10C and Over 250 Cycles for EV Bottleneck Resolution

Published August 14, 2026 Digital Journal International

OVERVIEW

New research unveils a groundbreaking method enabling ultra-fast charging without battery damage by engineering off-stoichiometric lithium titanium phosphate (LTP) anodes. This modified LTP anode successfully retains approximately 86% of its initial capacity at a high 10C charging rate and demonstrates durability beyond 250 cycles. This technology holds potential to resolve electric vehicle (EV) fast-charging bottlenecks and can be applied to all-solid-state battery systems, offering wide-ranging implications for energy storage.

IN DEPTH

Key Findings

Groundbreaking research has uncovered a novel method for achieving ultra-fast battery charging without compromising battery integrity, leveraging an "off-stoichiometric" design for lithium titanium phosphate (LTP) anodes. This innovative anode successfully maintained approximately 86% of its initial capacity even at an aggressive 10C charging rate and demonstrated exceptional durability exceeding 250 cycles. This represents a potent solution to one of the primary bottlenecks hindering electric vehicle (EV) adoption: charging time.

Technical / Clinical Details

Conventional high-performance batteries, especially lithium-ion cells, face significant challenges during fast charging, including lithium dendrite formation and electrode material degradation, which compromise safety and cycle life. The "off-stoichiometric" LTP anode developed in this study precisely controls the crystal structure and composition of LTP to optimize lithium ion insertion and extraction behavior. This enables rapid lithium ion transport while preserving the structural integrity of the anode material.

- **Fast Charging Performance:** A 10C charging rate means the battery can be fully charged in just six minutes. Even at this extremely high rate, the anode maintained a high charging efficiency of approximately 86% of its initial capacity, demonstrating practical energy delivery capability.
- **Cycle Stability:** Sustaining stable performance for over 250 charge-discharge cycles indicates the technology's long-term durability. Previous fast-charging technologies often led to significantly reduced cycle life, a challenge this new LTP anode effectively overcomes.
- **Broad Applicability:** This technology not only shortens EV charging times but also has potential applications in grid-scale energy storage systems and as an anode material for all-solid-state battery technology. In ASSBs, interface stability with the solid electrolyte is crucial, and this technology could contribute to suppressing dendrite formation.

Background & Context

The rapid growth of the electric vehicle market has fueled consumer demand for fast-charging capabilities comparable to gasoline refueling times. However, current lithium-ion batteries present a trade-off during fast charging, often sacrificing safety or longevity, which has become a significant bottleneck for EV adoption. Furthermore, the integration of large-scale renewable energy sources necessitates efficient and safe energy storage systems to manage their intermittency. The results of this research offer a promising solution to these pressing issues, potentially creating a substantial impact across the battery industry and related sectors.

Strategic Significance & Outlook

The discovery of this new LTP anode technology holds the potential to dramatically improve EV fast-charging performance and accelerate consumer transition to EVs. Future research will likely focus on further material optimization, ensuring scalability, and reducing manufacturing costs. Deeper research into its application in all-solid-state batteries is also expected, leading to safer and higher-performance next-generation batteries. If commercialized, this technology could establish new standards for fast charging and extended lifespan across various applications, including portable electronics, drones, and renewable energy grids, beyond just the EV market.

Source: https://www.digitaljournal.com/article/faster-charging-safer-batteries-new-research-could-help-overcome-an-electric-vehicle-bottleneck/

Collected: August 21, 2026 | Automated Research System (Gemini API)

#06 LIPOWER's All-Solid-State Automotive Battery Doubles Lifespan, CCA, Halves Weight Compared to AGM, Significantly Enhancing Safety

Published August 13, 2026 Lipower China

OVERVIEW

LIPOWER announces its new all-solid-state automotive battery offers significant advantages over traditional AGM batteries in safety, lifespan, cold-cranking performance, and weight. By eliminating liquid electrolytes, it reduces leakage and thermal runaway risks, reporting up to a 10-year lifespan (double AGM's 3-5 years). The battery also delivers 1,200-1,500 CCA, up to twice that of similarly sized AGM batteries, while weighing less than half, poised to redefine automotive battery standards.

IN DEPTH

Key Findings

LIPOWER has unveiled its new all-solid-state automotive battery, demonstrating overwhelming advantages over traditional Absorbed Glass Mat (AGM) lead-acid batteries in terms of safety, lifespan, cold-cranking performance, and weight. By completely eliminating liquid electrolytes, this all-solid-state battery fundamentally resolves key risks associated with AGM technology, such as thermal runaway and acid stratification. It achieves a reported lifespan of up to 10 years—more than double the typical 3-5 years for AGMs—and delivers cold-cranking amps (CCA) of 1,200-1,500, up to twice the performance of similarly sized AGM batteries, all while weighing less than half. This breakthrough is poised to redefine automotive battery standards.

Technical / Clinical Details

LIPOWER's all-solid-state automotive battery incorporates several innovative design features:

- **Safety:** Unlike AGM batteries that utilize liquid electrolytes, posing risks of leakage and acid stratification, the all-solid-state battery employs a solid electrolyte, completely eliminating these hazards. This significantly reduces the danger of thermal runaway during internal short circuits, thereby enhancing vehicle safety.
- **Lifespan:** While AGM batteries typically last 3 to 5 years, LIPOWER's solid-state battery is reported to achieve a lifespan of up to 10 years. This dramatically reduces replacement frequency and lowers the total cost of ownership for vehicle owners.
- **Cold Cranking Performance (CCA):** The CCA value indicates a battery's ability to start an engine in cold conditions. LIPOWER's all-solid-state battery boasts high CCA values of 1,200-1,500, which is approximately double that of comparable AGM batteries. This ensures superior engine starting performance even in extremely cold climates.
- **Weight Reduction:** The solid, electrolyte-free structure reduces the battery's weight to less than half that of an AGM battery. This weight reduction contributes to improved fuel efficiency (or energy efficiency for EVs), better handling performance, and reduced CO2 emissions.

These characteristics offer significant benefits, particularly for high-performance vehicles and electric vehicle (EV) applications. The solid electrolyte also ensures high interfacial stability with electrode materials, contributing to consistent long-term performance.

Background & Context

The automotive industry faces dual pressures from tightening fuel efficiency regulations and the accelerating transition to electric vehicles. Consequently, battery technology must deliver higher safety, reliability, and performance. While AGM batteries have gained widespread adoption as an evolution from conventional flooded lead-acid batteries, they have limitations in terms of lifespan, weight, and environmental impact. LIPOWER's all-solid-state battery addresses these challenges, offering automotive manufacturers new design flexibility and providing consumers with a superior driving experience as a next-generation automotive battery. Its high performance and weight reduction capabilities are particularly crucial for directly improving EV range and efficiency, making it a decisive differentiating factor in market competition.

Strategic Significance & Outlook

The introduction of LIPOWER's all-solid-state automotive battery signals a potential paradigm shift in the automotive battery market. Initial adoption is anticipated in premium segments and specialized vehicles where safety and performance are paramount. However, with reductions in manufacturing costs and the realization of economies of scale, broader penetration across a wider range of vehicle types is expected. This technology will not only extend battery design life and reduce vehicle lifecycle costs but also serve as a catalyst for further automotive electrification. Other battery manufacturers are likely to follow suit, intensifying the development race for solid-state automotive batteries.

Source: https://lipower.com/blogs/news/solid-state-battery-vs-agm-battery

Collected: August 21, 2026 | Automated Research System (Gemini API)

#07 Honda Establishes All-Solid-State Battery Production Line with Proprietary Roll Press Technology, Boosting Solid Electrolyte Density and Improving Charge Time, Range, and Durability

Published August 20, 2026 How-To Geek Japan

OVERVIEW

Honda has successfully developed a proprietary roll press technology for its all-solid-state battery demonstration production line, enhancing battery performance. This technique physically compresses battery cells to increase solid electrolyte layer density, improve electrode contact, and boost energy efficiency. This is expected to shorten charging times, extend driving range, and enhance battery durability, with Honda aiming for competitive manufacturing costs for mass production.

IN DEPTH

Key Findings

Honda has announced the successful development of its proprietary "roll press technology" within its all-solid-state battery (ASSB) demonstration production line, which became operational late last year. This innovative manufacturing process significantly improves energy efficiency by physically compressing battery cells, thereby increasing the density of the solid electrolyte layer and reducing contact resistance with the electrodes. This breakthrough is anticipated to address the crucial challenge of interfacial resistance in ASSBs, substantially contributing to shorter charging times, extended electric vehicle (EV) driving ranges, and enhanced overall battery pack durability. Honda projects that this technology will enable mass production at competitive manufacturing costs.

Technical / Clinical Details

All-solid-state batteries represent a next-generation battery technology that replaces liquid electrolytes with solid materials, promising improvements in safety and energy density. However, high interfacial resistance due to poor solid-solid contact has been a significant barrier to performance enhancement and mass production. Honda's newly developed roll press technology addresses this challenge through the following mechanisms:

- **Densification:** By precisely pressing the battery cells, the physical density of the solid electrolyte layer and electrode materials is increased. This optimizes the lithium-ion conduction paths within the solid electrolyte, improving overall ionic conductivity.
- **Improved Interfacial Contact:** Applying pressure fills microscopic gaps between the solid electrolyte and active electrode material, maximizing contact area. This effect leads to more efficient ion migration and a substantial reduction in interfacial resistance.
- **Enhanced Energy Efficiency:** The reduction in interfacial resistance minimizes energy loss during charge and discharge cycles, increasing the usable energy from the battery. This translates to a longer driving range for the same capacity.

- **Faster Charging Speeds:** Efficient ion movement suppresses heat generation during rapid charging, enhancing the battery's ability to accept a large charge in a shorter time.
- **Improved Durability:** Intimate interfacial contact reduces the risk of interfacial delamination caused by electrode expansion and contraction during charge-discharge cycles, thereby extending the battery's long-term stability and lifespan.

This technology is particularly crucial for maximizing the potential of ASSBs that utilize robust solid electrolytes, such as sulfide or oxide systems.

Background & Context

With the rapid growth of the electric vehicle (EV) market, battery performance in terms of range, charging speed, safety, and cost has become a decisive factor in competition. All-solid-state batteries are anticipated as a "game-changer" that can simultaneously address these challenges, leading to an intense development race among major players like Toyota, Samsung SDI, and QuantumScape. Honda's roll press technology accelerates the practical application of ASSBs through manufacturing process innovation, holding significant implications for establishing Japan's advantage in advanced manufacturing techniques. It provides a pathway to high-quality, low-cost mass production, which has been difficult with conventional methods.

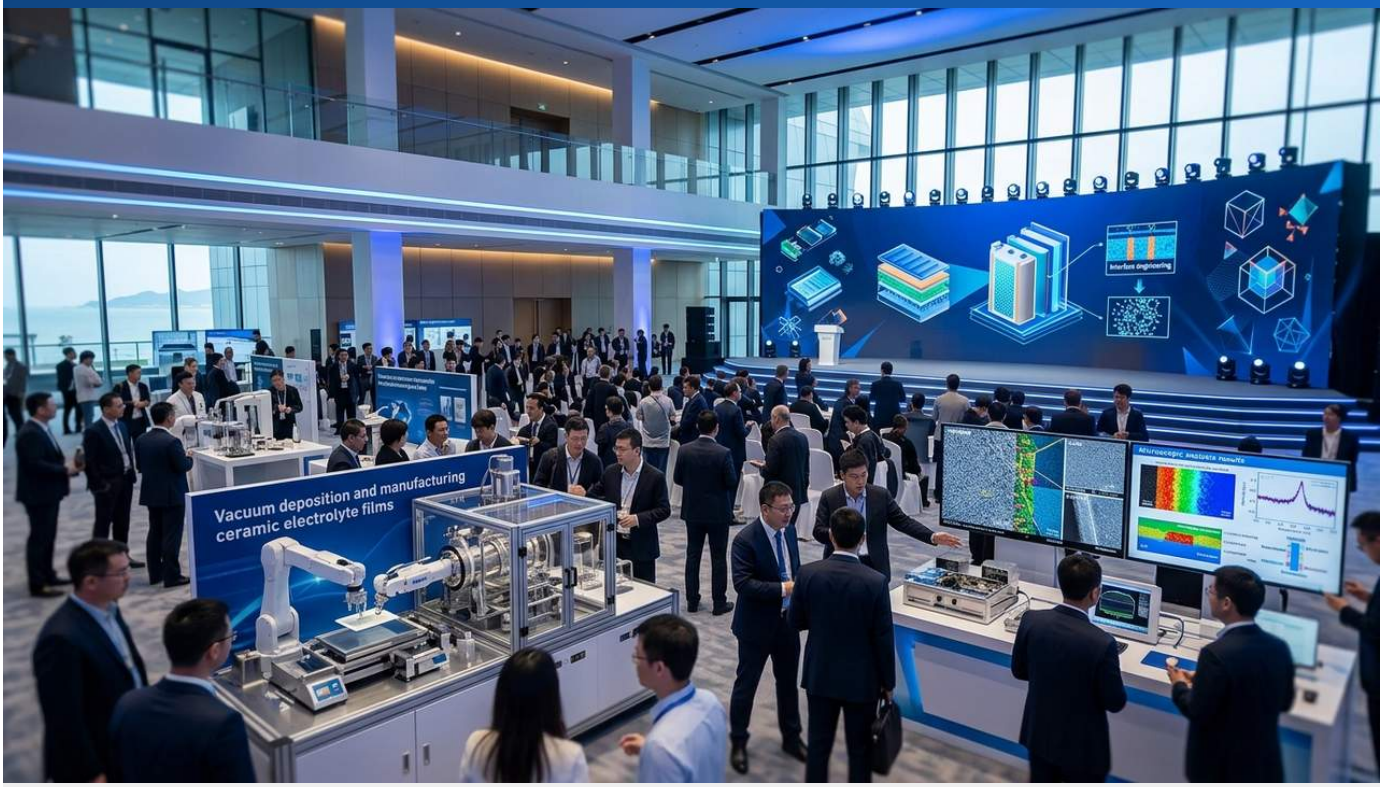
Strategic Significance & Outlook

Honda's roll press technology holds immense potential to significantly advance the mass production of all-solid-state batteries. The immediate focus will be on further optimization within the demonstration production line and transitioning to full-scale production. If this technology is established, Honda will gain a strong competitive edge in the electric vehicle market, enabling the introduction of higher-performance and more affordable EVs. Furthermore, this manufacturing breakthrough is expected to influence other battery manufacturers and related industries, accelerating the overall development of ASSB technology. Applications in aerospace, robotics, and even stationary energy storage are also envisioned, potentially revolutionizing entire energy solutions.

Source: https://www.howtogeek.com/inside-hondas-solid-state-battery-breakthrough/

#09 International Conference on Solid-State Batteries and Interfaces (SSBAI 2026) Announced in Xiamen, China, Focusing on Manufacturing Processes and Interface Research

Published August 21, 2026 SSBAI 2026 Conference Organizer China



OVERVIEW

The "SSBAI 2026" (International Conference on Solid-state Batteries, Interface...) has been announced for Xiamen, China. This international conference will focus on all-solid-state battery manufacturing processes and interface research, gathering cutting-edge knowledge and technological innovations in the field. Key discussions are expected to center on the interface stability challenges between solid electrolytes and electrodes, and the establishment of manufacturing technologies for mass production.

IN DEPTH

Key Findings

The International Conference on Solid-state Batteries, Interface... (SSBAI 2026) has been announced to take place in Xiamen, China. This conference will provide a vital platform for researchers and engineers worldwide to share the latest advancements and foster collaborations, specifically focusing on "manufacturing processes" and "interface research"—two critical areas for the progression of all-solid-state battery (SSB) technology. Key discussions are anticipated to delve into overcoming interface stability issues, a major hurdle for SSB commercialization, and establishing innovative manufacturing techniques essential for mass production.

Technical / Clinical Details

All-solid-state batteries offer superior safety, energy density, and longevity compared to conventional liquid electrolyte lithium-ion batteries, positioning them as next-generation battery technology. However, several technical challenges remain for their commercialization, and this conference will deeply explore two central themes:

- **Manufacturing Processes:** Mass production of ASSBs demands precise technologies distinct from conventional battery manufacturing. Developing new manufacturing equipment, materials, and processes is crucial for achieving high quality and yield in each stage, including thin-film formation of electrodes and solid electrolyte layers, multi-layer stacking, densification, and cell encapsulation. The conference will likely discuss dry electrode methods, roll-to-roll processes, and novel sintering techniques.
- **Interface Research:** The interface between the solid electrolyte and active electrode material is the most critical component determining ASSB performance. Key challenges in interface research include reducing interfacial resistance, suppressing side reactions at the interface, preventing lithium dendrite formation, and ensuring mechanical stability against volume changes during charge-discharge cycles. Understanding and controlling interface behavior at the atomic level, using phase-field simulations, machine learning, and advanced characterization techniques, will be vital for future development.

SSBAI 2026 is expected to feature presentations on the latest research findings, simulation models, experimental validations, and industrial approaches to address these challenges. Attendees will have the opportunity to interact with experts from diverse fields such as materials science, electrochemistry, and manufacturing engineering, exploring solutions from multiple perspectives.

Background & Context

With the explosive growth of the electric vehicle (EV) market and the large-scale integration of renewable energy, the global demand for high-performance and safe energy storage technologies is escalating. All-solid-state batteries are the most promising candidates to meet these needs, but high manufacturing costs and complex solid-solid interface issues continue to impede mass production. China leads the world in the EV and battery industries, and hosting an international conference in a major city like Xiamen signifies the country's emphasis on international cooperation and knowledge sharing to accelerate ASSB R&D and commercialization. Such conferences are indispensable for fostering technological breakthroughs and driving industry-wide progress.

Strategic Significance & Outlook

The organization of SSBAI 2026 is poised to significantly influence future advancements in all-solid-state battery manufacturing processes and interface research. Through the discussions and presentations at the conference, new guidelines for material design, optimization strategies for manufacturing processes, and innovative approaches to improve interface stability are expected to emerge. This will further clarify the path to ASSB mass production, accelerating the market introduction of higher-performance and more cost-effective all-solid-state batteries towards the 2030s. Ultimately, this is expected to enable broader EV adoption, the establishment of sustainable energy systems, and new applications across various advanced technology sectors.

Source: http://www.confsflow.com/ssbai/papers

#10 Solid-State Battery "Reality Check" on YouTube: Mercedes EQS Achieves 1205km, Toyota & BMW Target 2027-2028, But Dendrites and Manufacturing Defects Remain Major Obstacles

Published August 17, 2026 How Engineering Works (YouTube) USA

OVERVIEW

The YouTube channel "How Engineering Works" provided a "Hype vs. Reality" analysis of all-solid-state batteries, highlighting their potential for extended EV range, faster charging, and improved safety. Mercedes-Benz reported 1205km in an updated EQS in 2025, BMW is testing cells in i7 development vehicles, and Toyota aims for a 2027-2028 market launch, showcasing significant progress. However, challenges such as microscopic gaps, cell pressure variations, brittle materials, manufacturing defects, and lithium dendrite formation still pose risks of performance degradation and internal short circuits, presenting major hurdles to mass production.

IN DEPTH

Key Findings

The YouTube channel "How Engineering Works" released a video titled "Solid-State Batteries: Hype vs. Reality," acknowledging the potential of all-solid-state batteries (SSBs) to extend EV range, accelerate charging, and enhance safety, while simultaneously shedding light on the pragmatic challenges impeding their commercialization. Significant progress is evident, with Mercedes-Benz reporting an astonishing 1205km range in an updated EQS in 2025, BMW actively testing solid-state cells in i7 development vehicles, and Toyota targeting a 2027-2028 market launch. However, persistent issues such as microscopic gaps, cell pressure variations, material brittleness, manufacturing defects, and lithium dendrite formation continue to pose risks of performance degradation and internal short circuits, presenting formidable obstacles to mass production.

Technical / Clinical Details

All-solid-state battery technology fundamentally replaces the liquid electrolyte found in current lithium-ion batteries with an ion-conductive solid material, promising inherent safety improvements and higher energy densities. This is expected to dramatically boost EV performance. Specific corporate advancements include:

- **Mercedes-Benz:** Achieved a remarkable 1205km range on a single charge with an updated EQS in 2025, a concrete demonstration of SSB technology's range extension capabilities.
- **BMW:** Actively testing all-solid-state battery cells in its new i7 development vehicles, exploring their integration into next-generation EVs.
- **Toyota:** Targeting a market launch for all-solid-state EVs between 2027 and 2028, with development primarily focused on sulfide-based solid electrolytes.

However, several technical challenges stand in the way of commercial mass production:

- **Solid-Solid Interface Issues:** Microscopic gaps easily form between electrodes and solid electrolytes, leading to increased interfacial resistance and inhibited ion transport. Additionally, electrode volume changes during charge-discharge cycles can cause this interface to delaminate.

- **Cell Pressure Optimization:** Solid electrolytes require a certain degree of pressure to maintain good contact with electrodes, but excessive pressure can compromise the cell's mechanical stability.
- **Material Brittleness:** Many solid electrolyte materials are brittle and prone to cracking during manufacturing processes or battery operation, increasing the risk of manufacturing defects and internal short circuits.
- **Lithium Dendrite Formation:** Particularly when using lithium metal anodes, lithium can grow into needle-like structures (dendrites) during charging, potentially penetrating the solid electrolyte and causing internal short circuits. While solid electrolytes offer better dendrite suppression than liquid ones, complete prevention remains challenging.
- **Manufacturing Defects:** Large-scale, low-cost manufacturing techniques for precise solid multi-layered structures are not yet fully established, and even small manufacturing defects can significantly impact overall battery performance and safety.

Background & Context

The explosive growth of the electric vehicle (EV) market has created a strong demand for higher-performance and safer batteries. As lithium-ion batteries approach their performance limits, all-solid-state batteries are garnering significant anticipation as the next-generation "game-changer." Many automakers and battery developers are making massive investments, targeting commercialization in the late 2020s to early 2030s. This video clearly illustrates the gap between the "expectations" presented by media and companies and the "real-world challenges" that the actual technology faces.

Strategic Significance & Outlook

R&D efforts towards mass production of all-solid-state batteries will continue to accelerate. The focus will particularly be on optimizing solid-solid interfaces, completely suppressing dendrite formation, and establishing high-quality, low-cost manufacturing processes. Further innovation in materials science, manufacturing engineering, and simulation technologies is indispensable for overcoming the challenges highlighted in the video. Concrete market entry targets from major manufacturers provide strong incentives for technological development, but the extent to which these challenges can be overcome will determine whether all-solid-state batteries gain widespread adoption as a "real technology." Ultimately, if these issues are resolved, EV performance will dramatically improve, significantly boosting the transition to a clean energy society.

Source: https://m.youtube.com/watch?v=FUqhv0JjDg

Collected: August 21, 2026 | Automated Research System (Gemini API)

#11 US Government Invests Over $2 Billion in Domestic Battery Supply Chain, Including $1.4B DoD Loan to Sila Nanotechnologies

Published August 18, 2026 Facebook (U.S. Department of Energy ARPA-E) USA

OVERVIEW

On August 7, 2026, the U.S. government committed over $2 billion in new funding to bolster domestic battery and critical mineral production. This substantial investment includes a $1.4 billion Department of Defense loan to Sila Nanotechnologies, a developer of silicon-based battery technology. Additionally, startups like Ion Storage Systems (ISS) received a $20 million ARPA-E grant to accelerate the commercialization of their ceramic-based solid-state battery technology.

IN DEPTH

Key Findings

On August 7, 2026, the U.S. government announced a significant injection of over $2 billion in new funding aimed at strengthening the domestic supply chain for battery and critical mineral production. This substantial investment underscores a national strategy to enhance economic competitiveness and national security by accelerating the localization and advancement of next-generation battery technologies. A notable component is a $1.4 billion Department of Defense loan awarded to Sila Nanotechnologies, a leader in silicon battery development. Concurrently, solid-state battery startups such as Ion Storage Systems (ISS) secured a $20 million grant from the Advanced Research Projects Agency-Energy (ARPA-E) program to expedite the commercialization of their ceramic-based solid-state battery technology.

Technical / Clinical Details

- The $1.4 billion loan to Sila Nanotechnologies will primarily support the development and manufacturing of silicon anode batteries, which promise significantly higher energy densities. Silicon anodes have the potential to store approximately ten times more lithium ions than traditional graphite anodes, potentially leading to substantial increases in electric vehicle range. The DoD's involvement highlights the strategic importance of this technology for diverse applications, including military and defense sectors.
- Ion Storage Systems (ISS) is advancing ceramic-based solid-state battery technology. The $20 million ARPA-E grant is specifically earmarked to accelerate the transition of this innovative technology from prototype manufacturing to commercial-scale production. Ceramic solid electrolytes offer superior thermal stability and non-flammability, drastically enhancing battery safety while mitigating dendrite formation—a common issue in liquid-electrolyte lithium-ion batteries—thus contributing to longer cycle life.

Background & Context

The U.S. government has prioritized boosting domestic battery production capacity amidst the rapid expansion of electric vehicles (EVs) and renewable energy storage. Confronted by the current dominance of China in the global battery supply chain, the U.S. is strategically seeking to re-shore and reinforce its entire battery ecosystem—from critical mineral sourcing to cell manufacturing and recycling—driven by concerns over economic security. This over $2 billion investment is part of broader policy initiatives, including the Inflation Reduction Act (IRA) and the Bipartisan Infrastructure Law (BIL), intended to re-establish U.S. technological leadership through targeted investments in cutting-edge battery technologies.

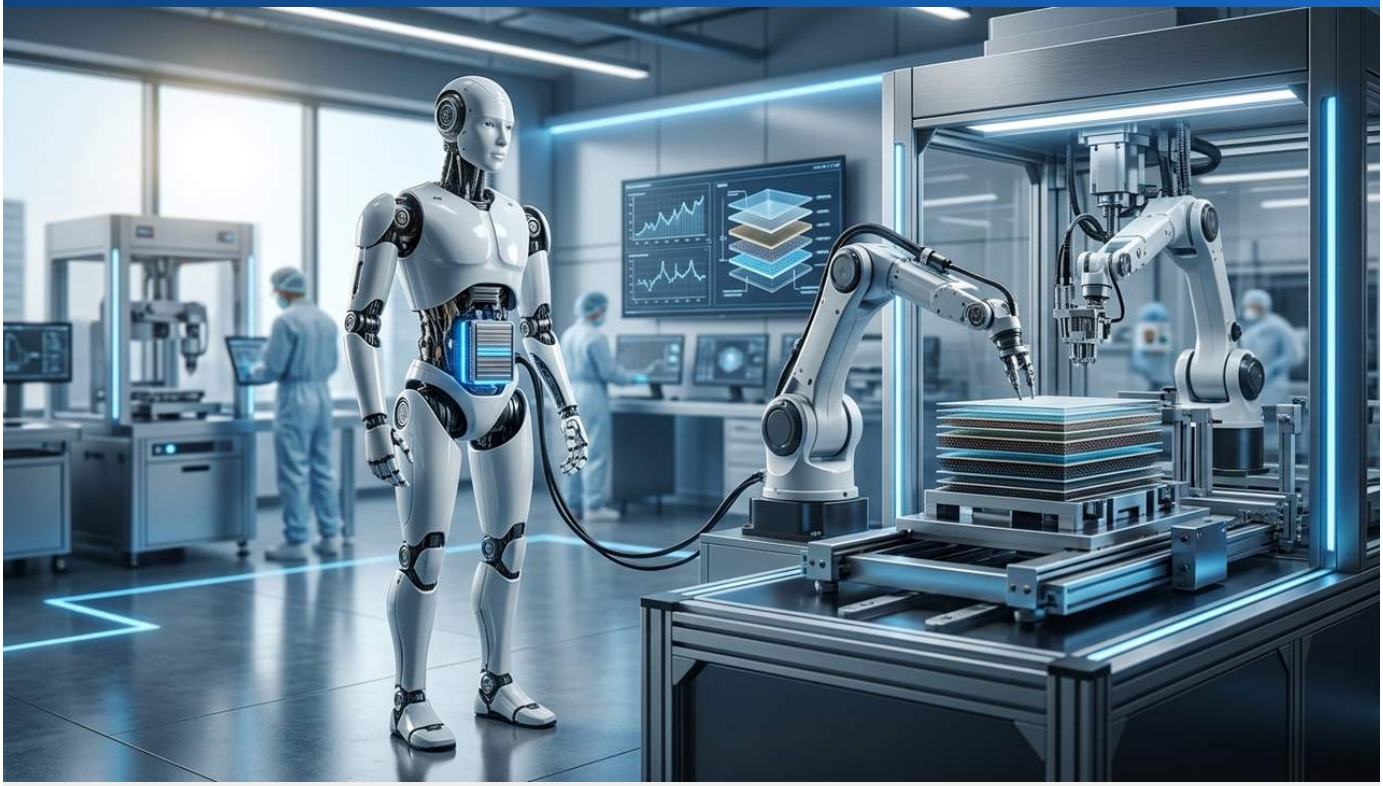
Strategic Significance & Outlook

This substantial government investment is expected to provide a significant impetus to the U.S. domestic battery industry, especially in the realm of next-generation technology development. With funding directed towards companies like Sila Nanotechnologies and ISS, the commercialization of silicon anode and ceramic solid-state battery technologies is set to accelerate, potentially bringing higher-performance and safer batteries to market within the next few years. This will contribute to enhanced EV performance, increased efficiency of renewable energy storage systems, and greater energy autonomy for military and defense applications. The nationalization of the U.S. battery supply chain is a crucial strategy to reduce geopolitical risks, foster new job creation and drive economic growth.

Source: https://www.facebook.com/61558126523622/posts/-us-government-commits-2-billion-to-domestic-battery-supply-chainon-august-7-202/122256377180270884/

#12 Samsung SDI Unveils "SolidStack" Anode-Free Solid-State Battery for Humanoid Robots, Targeting H2 2027 Mass Production

Published August 16, 2026 Samsung SDI | Facebook South Korea



OVERVIEW

Samsung SDI unveiled "SolidStack," a new pouch-type all-solid-state battery designed for physical AI applications like humanoid, mobile, and industrial robots, at InterBattery 2026. The company aims for mass production in the second half of 2027. SolidStack utilizes anode-free technology to significantly boost energy density while reducing battery size and weight, addressing critical power-to-weight demands for demanding robotic tasks.

IN DEPTH

Key Findings

At InterBattery 2026, Samsung SDI unveiled "SolidStack," a novel pouch-type all-solid-state battery specifically engineered for physical AI applications, including humanoid, mobile, and industrial robots. The company has set an ambitious target for mass production in the latter half of 2027. SolidStack's groundbreaking feature is its adoption of anode-free technology, which dramatically increases energy density while simultaneously reducing the battery's overall size and weight. This innovation is poised to meet the stringent power requirements of robots that demand lightweight designs combined with sufficient power for movement and other high-performance tasks.

Technical / Clinical Details

- "SolidStack" represents the culmination of Samsung SDI's extensive research and development in solid-state battery technology, optimized to meet the rigorous demands of physical AI devices. Its pouch form factor offers flexibility for integration into various robot designs, which is crucial for custom applications.
- The anode-free technology eliminates the need for traditional anode materials, such as graphite or silicon. Instead, it directly uses lithium metal as the negative electrode, maximizing the proportion of active materials within the cell. This approach drastically elevates the overall energy density of the battery, enabling high-capacity power within limited spatial constraints, thereby extending robot operational times and facilitating more complex functionalities.
- The enhanced energy density directly contributes to reducing the robot's weight, which in turn lessens the load on joint actuators and improves mobility efficiency. For autonomous robots performing intricate tasks, a combination of high power output and extended operational duration is indispensable, and SolidStack is designed to be a pivotal solution for these requirements.

Background & Context

The market for physical AI applications, encompassing humanoid robots, is experiencing rapid growth, driving an increasing demand for higher-performance and safer battery solutions. These robots require power sources that are compact, lightweight, and offer both high energy density and reliability to execute human-like movements and precise tasks. Conventional liquid-electrolyte lithium-ion batteries face limitations in both energy density and safety, with risks such as dendrite formation leading to short circuits and thermal runaway. Solid-state batteries, by employing non-flammable solid electrolytes, significantly mitigate these risks, making them a highly anticipated technology for safe robotic operations.

Strategic Significance & Outlook

Samsung SDI's target for SolidStack mass production in late 2027 signifies a major leap in the commercialization of solid-state battery technology. Its initial deployment in the niche yet high-value robotics market is a strategic move to establish the technology's reliability and performance. Success in this sector could accelerate the subsequent expansion of solid-state batteries into larger applications, such as the electric vehicle market. The introduction of SolidStack is expected to considerably boost the practical implementation and proliferation of humanoid robots, potentially catalyzing a new era for physical AI technologies. This development will likely spur competitors to accelerate their own robot-focused solid-state battery developments, intensifying market competition.

Source: https://www.facebook.com/TechnologyInnovation1/photos/samsung-sdi-has-unveiled-a-new-all-solid-state-battery-designed-for-physical-ai-/1367400298879946/

Collected: August 21, 2026 | Automated Research System (Gemini API)

#13 China Introduces World's First National Standard for Automotive Solid-State Batteries, Mandating Sub-0.5% Weight Loss Rate

Published August 21, 2026 digitimes China

OVERVIEW

China has introduced the world's first national standard for automotive solid-state batteries, setting a strict weight loss rate of less than 0.5% under specific vacuum drying conditions. This rigorous criterion is speculated to be challenging for many of China's over 320 battery manufacturers. The standard aims to standardize terminology, harmonize technical requirements, and facilitate supply chain alignment for solid-state battery development and production.

IN DEPTH

Key Findings

China has officially introduced the world's inaugural national standard specifically for automotive solid-state batteries (ASSBs). This pioneering new standard mandates a stringent weight loss rate of less than 0.5% under specified vacuum drying conditions, a requirement so demanding that market observers speculate many of China's more than 320 existing battery manufacturers may struggle to meet it initially. The primary objectives of this standard are to clarify terminology within the solid-state battery sector, harmonize technical requirements across the industry, and foster better alignment throughout the entire supply chain.

Technical / Clinical Details

- The "weight loss rate below 0.5% under specific vacuum drying conditions" stipulated by the new national standard signifies an exceptionally high demand for precise moisture control during the manufacturing process and for the intrinsic stability of the solid electrolyte. Solid-state batteries are critically sensitive to moisture; even trace amounts can lead to degradation of the solid electrolyte and subsequent performance loss. Therefore, this criterion is paramount for ensuring the quality and reliability of ASSBs.
- By clarifying terminology, the standard is expected to facilitate smoother communication among diverse manufacturers and research institutions, thereby synchronizing technological development efforts. Harmonizing technical requirements is also indispensable for enhancing compatibility and efficiency across the entire supply chain, from component suppliers to finished vehicle manufacturers.
- Currently, many Chinese battery manufacturers specialize in liquid-electrolyte lithium-ion batteries. It is widely believed that a significant portion of these companies are still in the developmental stages concerning the advanced manufacturing techniques required for solid-state batteries, particularly in moisture management and solid-solid interface formation. While this new standard aims to accelerate technological innovation, it will also impose pressure on some manufacturers, necessitating substantial new investments in R&D and production capabilities.

Background & Context

As the world's largest EV market and battery producer, China is aggressively pursuing leadership in solid-state battery technology, which promises dramatic improvements in EV safety, range, and charging speed. The introduction of the first national standard globally unequivocally signals China's intent to lead in setting global standards for solid-state batteries. This initiative aims to not only bolster quality control within its domestic market but also to enhance China's influence in future international standardization efforts for this critical technology.

Strategic Significance & Outlook

The implementation of China's national standard for automotive solid-state batteries is likely to instigate a significant restructuring within the domestic battery industry. Manufacturers unable to meet the stringent criteria may be forced to make substantial investments in technological upgrades or potentially exit the market. Conversely, companies that successfully comply with the standard will gain a distinct competitive advantage, both domestically and internationally. This standard is expected to accelerate the commercialization of solid-state batteries, elevate the overall technological sophistication of the supply chain, and ultimately deliver safer and higher-performing electric vehicles to consumers. Globally, this move by China could also trigger a new phase of standardization competition in the battery market.

Source: https://www.digitimes.com/news/a20260821PD205/solid-state-battery-market-automotive-industrial-testing.html

#14 Amorphous ZrCl4-Based Superionic Conductors Demonstrate Promise as Cost-Effective Solid Electrolytes for All-Solid-State Batteries

Published Published August 14, 2026 ACS Energy Letters International研究

OVERVIEW

New research published in ACS Energy Letters introduces cost-effective amorphous ZrCl4-based electrolytes as highly promising solid electrolytes for all-solid-state batteries (ASSBs). These materials leverage a highly disordered amorphous structure to achieve superfast ion transport, demonstrating exceptional rate performance by retaining 81.1% capacity after 5000 cycles at 2 C and robust cycling stability of 61% after 2000 cycles under 20 MPa stack pressure, alongside a high Coulombic efficiency of 99.75%. This innovation marks a significant step towards the commercialization of safer, higher-energy-density batteries.

IN DEPTH

Background

The commercialization of all-solid-state batteries (ASSBs) critically depends on the development of solid electrolytes (SEs) that offer a combination of high ionic conductivity, excellent chemical and electrochemical stability, and cost-effectiveness. Traditional research in solid electrolytes has primarily focused on sulfide and oxide systems. However, each presents inherent challenges: sulfides often suffer from moisture sensitivity, while oxides typically exhibit lower ionic conductivity or higher interfacial resistance. The amorphous ZrCl4-based halide solid electrolyte proposed in this study emerges as a novel and compelling solution, with halide-based systems holding particular promise for achieving both high ionic conductivity and oxidative stability, positioning them at the forefront of next-generation solid electrolyte research.

Key Findings

In a significant advancement for the commercialization of all-solid-state batteries (ASSBs), a study published in ACS Energy Letters has identified a new class of cost-effective amorphous ZrCl4-based electrolytes as highly promising solid electrolytes capable of superfast ion transport. This innovative material employs a design strategy that generates a highly disordered amorphous structure, which is key to its exceptional rate performance and long-term cycling stability. Specifically, the material demonstrated outstanding durability by retaining 81.1% of its initial capacity after an impressive 5000 cycles at a high discharge rate of 2 C. Furthermore, it maintained 61% of its initial capacity after 2000 cycles under a practical stack pressure of 20 MPa, showcasing high reliability with an average Coulombic efficiency of 99.75%.

Technical Details

- The core technology of this research centers on zirconium (Zr)-based electrolytes, specifically ZrCl4, within the emerging halide solid electrolyte class. This material is engineered through a unique synthetic pathway to possess a highly disordered amorphous structure, which stands in contrast to conventional crystalline solid electrolytes. This amorphous character is crucial as it provides numerous pathways for lithium-ion migration, facilitating faster ion transport with significantly lower activation energy compared to more highly ordered crystalline structures.

- The performance data underscore its potential:
  - **Rate Performance:** The electrolyte maintained 81.1% of its initial capacity after 5000 cycles at a high discharge rate of 2 C. A 2 C rate signifies a full discharge in two hours, indicating its robust capability for rapid charging and high-power applications, which are essential for electric vehicles and portable electronics.
  - **Cycling Stability:** Under a stack pressure of 20 MPa, a condition typically applied in commercial pouch cells to ensure good contact and suppress dendrite formation, the material retained 61% of its initial capacity after 2000 cycles. This stability under relevant mechanical stress is a critical benchmark for real-world applicability and longevity.
  - **Coulombic Efficiency:** An exceptionally high average Coulombic efficiency of 99.75% was achieved. This metric signifies minimal energy loss during repeated charge-discharge cycles, highlighting excellent battery efficiency and overall durability over extended operation.
- A significant advantage of these electrolytes is their cost-effectiveness. The use of relatively inexpensive and abundant elements for ZrCl4 offers a substantial benefit for large-scale production, presenting a competitive edge over other solid electrolytes that often rely on more costly or rare materials.

Strategic Significance & Outlook

The superior performance and inherent cost-effectiveness demonstrated by this amorphous ZrCl4-based solid electrolyte represent a significant acceleration in the development pathway for solid-state battery breakthroughs. If this technology can be further developed to ensure robust reproducibility and seamless integration at manufacturing scales, it holds the potential to pave the way for safer, higher-performing batteries that transcend the current limitations of conventional lithium-ion chemistries. Applications requiring paramount safety and extended cycle life, such as electric vehicles (EVs), grid-scale energy storage systems, and aerospace, are particularly well-suited for this technology. Ongoing research focused on optimizing this novel material and its integration into complete solid-state cells is expected to bring the widespread commercialization of ASSBs closer to reality, marking a new era in energy storage solutions.

#15 Science Advances Reports Zero-External-Pressure Sulfide All-Solid-State Pouch Cell with 376 Wh/kg and 85.7% Capacity Retention Over 300 Cycles

Published Published August 14, 2026 Semantic Scholar (Science Advances) International研究

OVERVIEW

A groundbreaking study in Science Advances introduces a sulfide solid electrolyte (SSE)-based all-solid-state lithium metal battery (ASSLB) pouch cell that operates stably under zero external pressure. This was achieved by designing asymmetric interfacial electrophilicity using electron buffer and ion conductive layers, eliminating the need for high external pressure to maintain interfacial contact. The assembled cell boasts approximately 376 Wh/kg and demonstrated an impressive 85.7% capacity retention over 300 cycles, setting a new global benchmark for cycle stability under zero-pressure conditions.

IN DEPTH

Background

All-solid-state batteries are widely anticipated as the next-generation solution to overcome the inherent fire risks and energy density limitations of current lithium-ion batteries. Sulfide-based all-solid-state lithium metal batteries (ASSLBs), in particular, have garnered significant attention for their high ionic conductivity and potential for room-temperature operation. However, a major barrier to their practical implementation has been the persistent need for expensive and complex external pressure systems, often exceeding 20 MPa, to ensure adequate solid-solid interfacial contact. Eliminating this pressure dependency has been a long-standing research goal, directly impacting cost reduction, packaging simplification, and overall energy density enhancement for ASSLBs. The results of this study directly address this critical bottleneck, significantly advancing the commercialization prospects of solid-state batteries.

Key Findings

A seminal study published in Science Advances has successfully overcome a long-standing challenge in the practical application of all-solid-state lithium metal batteries (ASSLBs): the dependency on external pressure. This research presents the development of a high-performance sulfide solid electrolyte (SSE)-based pouch cell that operates stably under entirely zero external pressure. This remarkable achievement was made possible through an innovative approach involving the design of asymmetric interfacial electrophilicity, incorporating both an electron buffer layer and an ion conductive layer. The resulting pouch cell exhibits a high energy density of approximately 376 Wh/kg and demonstrated an impressive 85.7% capacity retention over 300 cycles, establishing a new global record for cycle stability under zero external pressure conditions.

Technical Details

- Sulfide solid electrolytes have long been considered promising candidates for ASSLBs due to their high ionic conductivity and favorable mechanical deformability. However, practical pouch cells have historically required high external pressures to maintain adequate solid-solid interfacial contact, complicating battery pack design and inherently reducing overall energy density.

- The key technological breakthrough in this study is the strategic placement of an "electron buffer layer" and an "ion conductive layer" between the lithium metal anode and the solid electrolyte, creating an asymmetric interfacial electrophilicity:
    - **Electron Buffer Layer:** This layer, specifically engineered with low electronic conductivity, suppresses direct electron transfer between the lithium metal and the solid electrolyte. This critical function mitigates the risk of parasitic side reactions and prevents lithium dendrite growth, which are common failure modes in ASSLBs.
    - **Ion Conductive Layer:** This layer is designed to facilitate highly efficient lithium-ion transport, thereby minimizing interfacial resistance and promoting rapid charge transfer across the interface.

  This sophisticated dual-layer design enables the formation of robust interfacial contact and stable ion transport paths, critically achieving stable operation even without any applied external pressure.
- The performance metrics achieved by this pouch cell are highly compelling and set new benchmarks:
    - **Energy Density:** The assembled pouch cell demonstrated a high gravimetric energy density of approximately 376 Wh/kg. This figure is highly competitive and indicates its strong potential to significantly extend the driving range of electric vehicles and enable more compact designs for other applications.
    - **Cycle Stability:** Under complete zero external pressure, the cell maintained an impressive 85.7% of its initial capacity after more than 300 cycles. This represents a remarkable achievement for long-term durability in the absence of pressure, a feat previously difficult to realize with conventional solid-state battery technologies.
    - **Room-Temperature Operation:** The demonstration of stable cycling performance at room temperature simplifies thermal management systems, enabling practical application across a wider range of environmental conditions without the need for complex heating or cooling infrastructure.

Strategic Significance & Outlook

The development of high-performance sulfide all-solid-state pouch cells capable of operating under zero external pressure marks a critical breakthrough towards the practical implementation and widespread adoption of all-solid-state batteries. If this innovative technology can be successfully scaled for mass production, it promises to provide significantly greater design flexibility for electric vehicles, enabling lighter and more cost-effective battery packs, and ultimately accelerating the global adoption of electric transportation. Beyond EVs, this technology holds significant implications for other applications demanding lightweight and high energy density, such as advanced drones, portable electronics, and medical devices. Future research will focus on further optimizing this novel interfacial design strategy and validating its suitability for large-scale manufacturing processes, bringing the future of mainstream all-solid-state batteries closer to reality and potentially revolutionizing the energy storage landscape.

Source: https://www.semanticscholar.org/paper/Constructing-zero-external-pressure-sulfide-pouch-Liu-Wang/fe44db9cb0384b442743c89c5be03d8416ddd3bd

Collected: August 21, 2026 | Automated Research System (Gemini API)

#16 日産、オックスフォード大学、Gelionが英国政府より340万ポンドを獲得し、次世代硫黄系全固体電池開発で提携

Published Published August 13, 2026 Industry News UK

OVERVIEW

Nissan, Oxford University, and Gelion have formed a 3-year strategic partnership, "CoRe-SoLiS," backed by a £3.4 million Innovate UK grant, to accelerate the development of next-generation sulfur-based solid-state batteries for electric vehicles. Kicking off in June 2026, the project leverages Gelion's Nano-Encapsulated Sulfur (NES™) technology to develop solid-state electrolyte systems that reduce reliance on critical minerals. This collaboration aims to bolster UK manufacturing capabilities and pave the way for future commercialization with a "plug-and-play" solution for existing production lines.

IN DEPTH

Background

Solid-state batteries are heralded as a transformative next-generation battery technology, offering superior energy density, enhanced safety, and improved durability compared to conventional lithium-ion batteries. For EVs, this translates to extended driving ranges and significantly faster charging times, driving intense global competition among automotive manufacturers and battery developers. The UK government's strategic investment in battery technology, exemplified by the CoRe-SoLiS project, underscores its commitment to fostering domestic innovation and strengthening its manufacturing base. Nissan, for instance, is already considering its Sunderland EV production plant as a future hub for solid-state battery manufacturing, making this R&D critical for its long-term strategy.

Key Findings

Nissan, the University of Oxford, and Australian battery technology firm Gelion have launched the “CoRe-SoLiS” project, a three-year strategic collaboration to accelerate the development of next-generation sulfur-based solid-state batteries for electric vehicles (EVs). Supported by a £3.4 million Innovate UK grant, this initiative is set to commence in June 2026. A primary objective is to significantly reduce reliance on critical minerals in battery manufacturing, bolstering the UK's battery ecosystem and enhancing its global competitiveness.

At the core of CoRe-SoLiS is the integration of Gelion's proprietary Nano-Encapsulated Sulfur (NES™) technology into solid-state battery systems. NES™ aims to replace expensive and supply-chain-vulnerable critical minerals like cobalt and nickel, typically found in existing lithium-ion battery cathodes. This substitution is projected to lead to substantial cost reductions and enhance the sustainability of battery production. Furthermore, Gelion’s technology is engineered as a “plug-and-play” solution, facilitating its integration into existing battery manufacturing lines. This approach directly addresses a significant commercialization hurdle by ensuring manufacturing process compatibility, thus streamlining the transition to advanced solid-state battery production.

Over the next three years, the project will focus on demonstrating and optimizing these sulfur-based solid-state batteries. Successful outcomes are anticipated to pave the way for commercialization in the EV market by the late 2020s to early 2030s, potentially positioning the UK as a key supplier of next-generation battery technology. This reduction in critical mineral dependency also promises enhanced supply chain stability and mitigated geopolitical risks. For researchers, breakthroughs in addressing the cycle stability and volume change challenges inherent in sulfur-based electrolytes are expected. For engineers, the “plug-and-play” design philosophy offers a critical blueprint for future production technologies, demonstrating how innovation can be integrated into existing industrial frameworks to accelerate market adoption.

Source: https://cop31tr.com/nissan-oxford-and-gelion-partner-to-develop-next-generation-solid-state-ev-batteries/

Collected: August 21, 2026 | Automated Research System (Gemini API)

#17 韓国SOLIVIS、硫化物系固体電解質開発でシリーズCラウンド230億ウォンを調達、年産36トン体制と150件の特許でグローバルリーダー目指す

Published Published August 13, 2026 Signalbase / Dealroom South Korea

OVERVIEW

South Korean advanced materials firm SOLIVIS has secured ₩23 billion (approximately $16 million USD) in Series C funding, bringing its total to ₩65.2 billion. Specializing in proprietary sulfide-based solid electrolytes, protected by 150 patents, the company has initiated mass production at an annual capacity of 36 tonnes. This investment will accelerate R&D and scale production, positioning SOLIVIS to achieve global leadership in next-generation energy storage by 2030, bolstered by significant South Korean government support.

IN DEPTH

Background

Solid-state batteries are widely recognized as a game-changer for future mobility and energy storage, promising extended EV ranges, faster charging times, and drastically reduced fire risks. This has fueled a global race in development. The South Korean government has designated the battery industry as a strategic national priority, offering substantial support. SOLIVIS, for instance, has been selected for the Ministry of SMEs and Startups' 2026 "Super Gap Global Deep Techs" and "Unicorn Bridge" support programs, accelerating its growth under national strategic backing. This latest funding round is crucial for Korea to secure a leading position in the global battery materials sector.

Key Findings

South Korean solid-state battery materials developer SOLIVIS has successfully closed a Series C funding round, securing ₩23 billion (approximately $16 million USD) from Openwater Investment and Seulgi Asset Management. This latest infusion brings their cumulative funding to ₩65.2 billion (about $48 million USD). The company, holding over 150 patents for its proprietary sulfide-based solid electrolytes, has already established an annual mass production capacity of 36 tonnes. The capital will be strategically deployed to expand R&D and production capabilities, aiming to position SOLIVIS as a global leader in next-generation energy storage by 2030.

Technical Deep Dive

SOLIVIS's sulfide-based solid electrolytes are distinguished by their high ionic conductivity and excellent stability, offering significant potential to enhance both safety and energy density compared to conventional lithium-ion batteries. Sulfide electrolytes are particularly promising for EV and large-scale energy storage applications due to their anticipated high room-temperature ionic conductivity. Since its founding in 2020, SOLIVIS has intensely pursued R&D in this field, culminating in a robust patent portfolio exceeding 150 filings. Their established annual production capacity of 36 tonnes addresses a critical bottleneck in solid-state battery commercialization: the reliable supply of high-quality electrolyte materials.

Strategic Outlook

With the newly acquired capital, SOLIVIS plans to intensify its R&D efforts for sulfide-based solid electrolytes and further augment its production facilities to maximize mass-production competitiveness. The company is actively pursuing its goal of achieving global leadership by 2030, which will likely involve strengthening collaborations with domestic and international battery manufacturers. For researchers and engineers, SOLIVIS's demonstrated high performance and mass production capability for sulfide electrolytes could serve as a new benchmark for solid-state battery practicalization. For investors, SOLIVIS stands out as a promising investment in the next-generation battery market, driven by its technological advantages, government support, and clear production roadmap.

Source: https://www.trysignalbase.com/news/funding/solivis-raises-16m-series-c-for-solid-electrolytes

Collected: August 21, 2026 | Automated Research System (Gemini API)

#18 Solid Power、JPモルガン自動車会議で電解質商用供給への戦略転換を発表、2027年に年間75トン生産開始へ

Published Published August 13, 2026 Investing.com USA

OVERVIEW

At the J.P. Morgan Automotive Conference, Solid Power announced a strategic shift from research partnerships to commercial supply of solid electrolytes. The company is constructing a continuous-flow manufacturing line in Colorado, aiming to begin production of 75 metric tons of sulfide solid electrolyte annually by Q1 2027. Electrolyte supply is projected to become the primary revenue source within 1-2 years, with partnerships with BMW, SK On, and Samsung SDI continuing.

IN DEPTH

Background

All-solid-state batteries are garnering significant anticipation, particularly within the automotive industry, as a next-generation battery technology offering superior energy density, enhanced safety, and extended lifespan over conventional lithium-ion batteries. However, challenges in stable material supply, manufacturing process establishment, and cost reduction have historically impeded commercialization. While large-scale introduction of solid-state batteries into the market is generally expected around 2029-2030, ensuring material readiness is paramount in the preceding phase.

Key Findings

At the J.P. Morgan Automotive Conference on August 13, 2026, Solid Power announced a strategic pivot from its research and development partnership-centric business model to a focus on commercial supply of sulfide solid electrolytes for all-solid-state batteries. This shift represents a critical step toward resolving material supply bottlenecks for solid-state battery mass production and establishing Solid Power's primary revenue stream.

Solid Power specializes in the development and manufacturing of sulfide-based solid electrolytes, boasting proprietary technology that combines high ionic conductivity with excellent stability. The new continuous-flow manufacturing line, currently under construction in Colorado, is anticipated to significantly enhance production efficiency and cost competitiveness compared to existing batch processes. The company plans to initiate production of 75 metric tons of sulfide solid electrolyte annually by the first quarter of 2027, aiming to ensure a stable supply to key automotive and battery partners, including BMW, SK On, and Samsung SDI. Reliable electrolyte supply is an indispensable factor for accelerating the practical application of solid-state batteries in electric vehicles.

Solid Power projects electrolyte supply to become its primary revenue driver within the next 1-2 years and is also pursuing a joint venture with a Korean conglomerate to ship up to 500 metric tons of electrolyte by 2028, dramatically scaling its global supply capabilities. Solid Power's strategic pivot directly addresses the critical material supply challenge, and its successful establishment as a key electrolyte supplier could profoundly influence the overall timeline for solid-state battery adoption across the industry. For researchers, a stable supply of high-quality sulfide solid electrolytes will accelerate the development of more practical solid-state battery cells. For engineers, Solid Power's continuous-flow manufacturing technology may influence future battery production process standardization. Investors will find the company's position in this bottleneck material industry to be a key indicator for long-term growth.

Source: https://www.investing.com/news/transcripts/solid-power-at-jp-morgan-automotive-conference-scaleup-and-shift-93CH-4858372

Collected: August 21, 2026 | Automated Research System (Gemini API)

#19 Solid Power、2027年に年間75トンの硫化物固体電解質生産開始、2028年には韓国合弁で500トン供給目指す

Published Published August 17, 2026 MarketBeat USA

OVERVIEW

Solid Power is aggressively scaling up its production of sulfide solid electrolytes for all-solid-state batteries, targeting 75 metric tons annually from its Colorado facility by Q1 2027. The company further aims to expand this capacity to 500 metric tons by 2028 through a planned joint venture with a Korean conglomerate, addressing a critical material supply bottleneck for partners like BMW, SK On, and Samsung SDI and paving the way for mass production of next-generation batteries.

IN DEPTH

Background

All-solid-state batteries (ASSBs) are garnering substantial attention across the automotive and energy storage industries as a transformative next-generation technology. They promise significant improvements over conventional lithium-ion batteries, offering superior energy density, enhanced safety, and extended longevity. Despite their profound potential, a major impediment to their widespread commercialization has been the challenge of manufacturing and ensuring a stable supply of high-performance solid electrolyte materials. Solid Power's strategic initiative directly confronts this critical material supply bottleneck. By establishing itself as an early and prominent electrolyte supplier, the company is poised to significantly accelerate the market adoption of solid-state batteries. With numerous automakers targeting the integration of ASSBs into their vehicle lineups by the late 2020s, the scalable supply capacity of key material manufacturers like Solid Power will be paramount to realizing this ambition.

Key Findings

Solid Power has reaffirmed its capital-efficient strategy to expedite the commercial availability of sulfide solid electrolytes for all-solid-state batteries. The company targets an initial annual production of 75 metric tons from its proprietary continuous-flow manufacturing line in Colorado by Q1 2027. This state-of-the-art process is engineered to deliver substantial reductions in production costs and enhance quality consistency compared to traditional batch methods, leveraging the electrolyte's inherent high ionic conductivity, excellent thermal stability, and manufacturing flexibility. This capacity is projected to expand significantly, aiming for up to 500 metric tons per year by 2028, facilitated by a planned joint venture with a major Korean conglomerate, which will also broaden its geographical supply network to cater to the crucial Asian market. This aggressive scale-up marks a definitive transition from the R&D phase to commercialization and is vital for securing a reliable supply chain for key automotive and battery partners, including BMW, SK On, and Samsung SDI, thereby addressing a critical bottleneck in the mass production ecosystem for next-generation solid-state batteries. This strategic ramp-up is expected to contribute directly to both the cost reduction and performance improvement of ASSBs, ultimately enabling extended electric vehicle driving ranges and mitigating the burden on charging infrastructure. For researchers and engineers, this stabilized material supply will be invaluable, allowing them to accelerate the development of more advanced cell designs and battery pack configurations. The company's pivotal role in the burgeoning solid-state battery value chain is thus significantly reinforced.

Source: https://www.marketbeat.com/instant-alerts/solid-power-eyes-2027-electrolyte-output-korea-jv-to-scale-solid-state-batteries-2026-08-17/

Collected: August 21, 2026 | Automated Research System (Gemini API)

#20 Factorial EnergyとSK On、既存ギガファクトリーの全固体電池生産への転用を検討する提携を締結

Published Published August 15, 2026　Facebook (Auto News Europeより転載)　USA / South Korea

OVERVIEW

U.S. startup Factorial Energy and South Korean battery giant SK On have forged a partnership to investigate the feasibility of converting existing lithium-ion gigafactories for solid-state battery production. This strategic collaboration aims to accelerate the commercialization of solid-state battery technology, aligning with South Korea's ambitious national investment of ₩20 trillion ($15.1 billion USD) in advanced battery technologies by 2030. The initiative marks a significant step towards mass producing solid-state batteries, promising extended EV range, faster charging, and enhanced longevity.

IN DEPTH

Background

Solid-state batteries are anticipated as a "game-changer" that will dramatically extend EV driving ranges, reduce charging times, and mitigate risks of leakage and thermal runaway, thereby accelerating EV adoption. However, significant challenges such as manufacturing complexity and high costs still hinder their mass production. The Factorial Energy-SK On partnership tackles these challenges with a pragmatic approach: leveraging existing infrastructure. South Korea's massive investment reflects its ambition to strengthen the international competitiveness of its domestic battery industry, and this collaboration is a crucial strategic move toward achieving that goal.

Key Findings

U.S. solid-state battery startup Factorial Energy and South Korean battery major SK On have forged a strategic partnership to explore the feasibility of adapting existing lithium-ion gigafactories for solid-state battery production. This collaboration aims to significantly accelerate the commercialization of solid-state battery technology, aligning perfectly with South Korea's national initiative to invest ₩20 trillion (approximately $15.1 billion USD) in advanced battery technologies by 2030. This joint effort is expected to pave the way for rapid mass production of next-generation batteries, driving transformation in the EV market.

Technical Details

Factorial Energy develops solid-state batteries based on its proprietary FEBS™ (Factorial Electrolyte System) technology, offering high energy density, fast-charging capabilities, and enhanced safety. This technology replaces traditional liquid electrolytes with solid counterparts, thereby improving battery safety and performance. The partnership with SK On will focus on addressing the technical and engineering challenges associated with optimizing existing lithium-ion battery production lines for solid-state battery manufacturing. Key areas of investigation include the solid electrolyte production process, interface stability with electrodes, and establishing quality control systems for large-scale production. Utilizing existing facilities allows for reduced new capital investment while shortening the time to commercialization.

Strategic Significance & Outlook

Through this partnership, Factorial Energy gains a strong foothold to scale up solid-state battery production and improve cost efficiency by leveraging SK On's gigafactory scale and manufacturing expertise. SK On, in turn, will enhance its next-generation battery technology portfolio and solidify its leadership in the EV market. For researchers and engineers, this collaboration offers an invaluable opportunity to gain concrete technical insights into adapting existing liquid battery manufacturing processes for solid-state battery production. Investors will keenly observe this partnership as a potential catalyst for accelerating the widespread market introduction of solid-state batteries and driving revenue growth for the involved companies.

Source: https://www.facebook.com/autonewseurope/posts/us-startup-factorial-and-south-korean-battery-giant-sk-on-have-signed-an-agreeme/1745525450484398/

Collected: August 21, 2026 | Automated Research System (Gemini API)

#21 BYD、2027年にEV向け全固体電池の限定生産を開始、高級モデル陽望・デンツァに搭載へ

Published Published August 16, 2026 Intelligent Living China

OVERVIEW

Chinese automotive giant BYD has announced plans to commence limited production of solid-state batteries for its electric vehicles in 2027, with an initial focus on high-end brands like Yangwang and Denza. This early move, targeting approximately 1,000 vehicles annually, positions BYD among the first to bring this next-generation battery technology to market, ahead of broader mass adoption expected post-2030.

IN DEPTH

Background & Context

The global race for solid-state battery development is intensifying, with major Chinese battery manufacturers like BYD and CATL targeting pilot production around 2027. Other Chinese automakers such as SAIC, Changan, and Chery similarly aim for commercial launches in 2027, though initial production volumes are expected to be low. This reflects the complexity, cost, and time required to establish reliability for solid-state battery manufacturing processes. With most manufacturers projecting mass-market adoption of solid-state batteries only after 2030, BYD's 2027 launch places it among the earlier adopters in the industry.

Key Developments

Chinese automotive giant BYD has announced plans to commence limited production of solid-state batteries for electric vehicles (EVs) in 2027. Initial projections estimate approximately 1,000 units in the first year, primarily intended for BYD's luxury EV brands, Yangwang and Denza. This move signals BYD's ambition to be an early adopter of next-generation battery technology and marks a significant milestone toward the initial practical application of solid-state batteries.

Technical Details and Challenges

The solid-state batteries BYD plans to introduce are expected to offer higher energy density, superior safety, and extended lifespan compared to conventional liquid-electrolyte lithium-ion batteries. While initial production will be limited, it represents a crucial step for the company to validate this innovative technology in real-world vehicles and accumulate data and experience for eventual mass production. Deployment in premium models is a common strategy for introducing high-cost, cutting-edge battery technologies, as performance validation in high-value EVs can pave the way for broader adoption. BYD has also secured six new patents for dual-electrolyte cathode architectures, emphasizing its focus on technological advancement.

Strategic Significance & Outlook

BYD's commencement of limited production in 2027 represents clear progress toward the practical application of solid-state battery technology. Data gathered from initial deployments in premium models will be invaluable for future technological improvements and cost reductions, potentially leading to broader integration across BYD's EV lineup. For researchers, real-world vehicle data will aid in validating new materials and designs. For engineers, resolving challenges in limited production will inform pathways to full-scale manufacturing. For investors, BYD's early leadership in adopting next-generation battery technology stands out as a critical component of its long-term growth strategy.

Source: https://www.intelligentliving.co/byd-solid-state-battery-production-2027/

Collected: August 21, 2026 | Automated Research System (Gemini API)

#22 中国バッテリーメーカー各社、BYD・CATLに続き2027年に全固体電池の試作・実証試験を開始へ

Published Published August 20, 2026 Car News China China

OVERVIEW

Several prominent Chinese battery manufacturers, including Farasis Energy, CALB, and Gotion High-Tech, are set to join industry leaders BYD and CATL in commencing solid-state battery pilot production and real-world road tests by 2027. This concerted push is underpinned by significant technological advancements, such as BYD securing six new patents for dual-electrolyte cathode architectures and CATL targeting Technology Readiness Level (TRL) 7 or 8 for pilot-scale manufacturing. The aggressive timeline extends even to consumer electronics, with Dreame Technology planning small-scale solid-state battery deliveries in 2026 and full commercial production by 2027.

IN DEPTH

Background

The Chinese government has designated the new energy vehicle (NEV) industry as a national strategic priority, positioning solid-state batteries as a cornerstone technology for future advancements. This directive has spurred significant R&D and investment across the domestic supply chain. While conventional liquid-electrolyte lithium-ion batteries currently dominate the electric vehicle (EV) market, solid-state counterparts are widely anticipated to become the standard for next-generation EVs. Their inherent advantages, including extended range, faster charging capabilities, and significantly reduced fire risk, drive this technological transition. The synchronized target year of 2027 for pilot production and road testing across multiple major Chinese firms suggests a critical inflection point, indicating that the technology has achieved a substantial level of maturity and foreshadowing an intensified competitive landscape.

Key Findings

A new phase in China's solid-state battery development is underway, with leading manufacturers Farasis Energy, CALB, and Gotion High-Tech announcing plans to initiate pilot production and real-world road tests in 2027. This aligns with similar ambitious commitments from industry titans BYD and CATL, solidifying 2027 as a pivotal year for practical implementation. These next-generation batteries are engineered to overcome the safety and energy density limitations of existing lithium-ion chemistries, with a particular focus on high ionic conductivity sulfide-based electrolytes.

Key technological advancements include BYD's acquisition of six new patents for dual-electrolyte cathode architectures, designed to enhance interface stability with solid electrolytes and optimize battery performance and lifespan. Concurrently, CATL aims to achieve a Technology Readiness Level (TRL) of 7 or 8 by 2027. TRL 7, representing system-level demonstration in an operational environment, and TRL 8, indicating a qualified actual system, are critical benchmarks for enabling small-scale pilot production and demonstrating robust system integration capabilities.

Beyond automotive applications, Dreame Technology, a prominent robotic vacuum manufacturer, is pursuing an aggressive timeline, planning small-scale solid-state battery deliveries in 2026 and transitioning to full commercial production in 2027. This signals the potential for rapid deployment across various consumer electronics sectors.

The collective commencement of pilot production and road testing from 2027 marks a crucial inflection point, transitioning solid-state battery technology from the laboratory to practical, real-world application. This will be instrumental in accumulating vital vehicle data, accelerating technological refinements, and addressing challenges associated with mass production. The strategic advancements, highlighted by BYD's patented innovations and CATL's TRL targets, underscore China's concerted effort to establish international leadership in solid-state battery development. This intensified competition is anticipated to drive rapid technological innovation, creating new research avenues for scientists, providing indispensable insights for engineers to scale manufacturing, and promising significant returns for investors in companies that achieve early commercialization.

Source: https://carnewschina.com/2026/08/20/chinas-battery-makers-target-2027-solid-state-cell-trial-production-alongside-byd-catl-geely/

Collected: August 21, 2026 | Automated Research System (Gemini API)

#23 日本のMK Plus、スウェーデン政府から約1,200万ドルの助成金獲得、バナジウム全固体電池の量産化を加速

Published Published August 13, 2026　Pluang / Newsfile Corp.　スウェーデン

OVERVIEW

Japanese battery innovator MK Plus has secured approximately $12 million from the Swedish Energy Agency to fast-track industrial-scale production of its vanadium solid-state battery technology. The funding supports the retooling of its Swedish manufacturing facility, with commercial shipments to customers in Europe and the Middle East slated to begin this fall. Operating under its "Vanadis Energy" brand, MK Plus aims to meet the escalating global demand for safe, long-life energy storage solutions.

IN DEPTH

Background

With the accelerating global adoption of renewable energy, there is a surging demand for safe and highly efficient large-scale energy storage systems to stabilize power grids and manage peak loads. Europe, in particular, is actively investing in battery storage technologies, driven by ambitions to increase renewable energy penetration and enhance energy security. Solid-state batteries, due to their superior performance and safety, are considered a transformative solution for this large-scale storage market. The Swedish government's grant aligns with a clear strategy to support domestic technological innovation and boost its competitiveness in the global clean energy market. MK Plus's technology fits this strategic need, with its commercialization potentially contributing to Europe's energy transition.

Key Findings

Japan's MK Plus, with a 5% stake held by Phenom Resources, has secured a significant grant of approximately $12 million from the Swedish Energy Agency. This crucial funding will be directed towards accelerating the industrial-scale production of its Vanadium Solid-State Battery technology at its manufacturing facility located in Sweden. The facility is currently undergoing retooling to commence commercial deliveries to customers in Europe and the Middle East this fall. Through its "Vanadis Energy" brand, MK Plus is proactively expanding its commercial reach to meet the escalating demand for safe and long-life energy storage solutions.

Technical Details

The Vanadium Solid-State Battery developed by MK Plus is characterized by its high energy density and exceptional safety. Compared to conventional liquid-electrolyte lithium-ion batteries, it exhibits a significantly lower risk of thermal runaway and operates stably across a wider temperature range. Furthermore, by primarily utilizing vanadium, the technology reduces dependence on critical rare metals like cobalt, thereby contributing to the development of a more sustainable supply chain. The Swedish manufacturing facility incorporates cutting-edge production techniques, focusing on optimizing the solid electrolyte formation process and enhancing interface stability with electrodes, aiming to achieve both quality and cost efficiency in mass production. This makes it particularly suitable for large-scale energy storage applications such as grid stabilization and renewable energy integration.

Outlook and Strategic Impact

This grant acquisition and manufacturing facility retooling signify a major step for MK Plus towards the mass production of its Vanadium Solid-State Batteries. The planned commencement of commercial shipments to Europe and the Middle East this fall will be a crucial milestone, indicating that the company's technology is moving into practical application. For researchers, real-world data on the long-life and safety characteristics of vanadium-based solid-state batteries could lead to further advancements in materials science. For engineers, the insights gained from industrial-scale production processes and quality control will contribute to the standardization of future battery manufacturing technologies. Investors are closely watching how MK Plus's technology and market deployment will impact the enormous growth opportunities within the large-scale energy storage market.

Source: https://pluang.com/en/news-feed/phenom-laporkan-kemajuan-komersialisasi-pabrik-baterai-baru-di-swedia

Collected: August 21, 2026 | Automated Research System (Gemini API)

#24 Geely、航続距離1,000km超を実現する500Wh/kg級全固体電池を2027年に実証試験開始、Dow Chemicalと材料開発

Published Published August 19, 2026 Carscoops China

OVERVIEW

Geely has announced plans to begin pilot testing a novel solid-state battery in 2027 across its diverse portfolio of EV brands, including Zeekr and Volvo. This groundbreaking battery boasts an energy density of up to 500 Wh/kg and an extraordinary 621,000-mile (1 million km) lifespan, promising to extend electric vehicle ranges beyond 621 miles (1,000 km). Collaborating with Dow Chemical on advanced adhesive solutions, Geely aims to ensure robust durability and reliability across varying temperature conditions.

IN DEPTH

Background

Solid-state batteries are widely regarded as a "game-changer" for accelerating electric vehicle (EV) adoption, sparking fierce competition among global automotive manufacturers and battery developers. Key factors enhancing EV attractiveness to consumers include extended range, faster charging times, and significantly reduced fire risk. Geely's recent announcement highlights the increasing global leadership of Chinese companies in the development of cutting-edge solid-state battery technology. Introducing such high-cost solid-state battery technology first in premium brands is a strategic and rational approach, designed to rapidly establish technical reliability by meeting stringent performance demands.

Key Findings

Chinese automotive conglomerate Geely has unveiled a groundbreaking next-generation solid-state battery, boasting an impressive energy density of up to 500 Wh/kg and an extraordinary lifespan of 621,000 miles (approximately 1 million kilometers). This innovative battery is scheduled to commence pilot testing in 2027 across Geely's diverse portfolio of electric vehicle (EV) brands, which includes Zeekr, Lynk & Co, Volvo, Polestar, Lotus, and Smart. The technology has the potential to extend EV ranges beyond 621 miles (1,000 km) on a single charge, delivering performance comparable to or even surpassing that of traditional diesel vehicles. Furthermore, in a strategic materials development partnership, Dow Chemical is contributing stable adhesive solutions engineered for wide temperature ranges, thereby significantly bolstering the battery's overall durability and reliability.

Technical Details

Geely's novel solid-state battery dramatically enhances safety and energy density by completely eliminating the need for liquid electrolytes, thereby surpassing the performance benchmarks of existing lithium-ion battery technologies. The targeted 500 Wh/kg energy density is particularly significant as it facilitates both lighter weight and higher capacity in EVs, affording greater design flexibility for seamless vehicle integration. The projected million-kilometer lifespan will substantially reduce battery replacement frequency, consequently lowering the total lifecycle cost of electric vehicles. The collaboration with Dow Chemical is centered on developing crucial adhesive technology vital for stabilizing the interface between the solid electrolyte and electrodes, a critical factor for maintaining optimal battery performance across diverse environmental conditions. Real-world validation tests, which commenced in 2026, represent a pivotal phase in rigorously verifying the battery's reliability and performance under actual driving scenarios.

Strategic Significance and Outlook

The scheduled commencement of pilot testing in 2027 marks a critical inflection point for Geely's solid-state battery technology, signaling its progression towards practical, real-world implementation. Data gleaned from these actual driving tests will be indispensable for further battery optimization and refining manufacturing processes for eventual mass production. Should this high-energy-density, long-life solid-state battery be successfully integrated across a broad spectrum of EV models under the Geely conglomerate, the company's competitive standing is expected to skyrocket, with significant ripple effects across the entire EV market. For researchers, achieving the 500 Wh/kg benchmark establishes a challenging new target, while for engineers, the material collaboration with Dow Chemical provides crucial insights into the design principles of next-generation battery materials. Investors, in turn, will closely monitor the long-term market value generation propelled by Geely's technological innovation.

Source: https://www.carscoops.com/2026/08/geely-solid-state-batteries/

Collected: August 21, 2026 | Automated Research System (Gemini API)

#25 中国企業8社、215億人民元超を投じ全固体電池とエネルギー貯蔵の生産能力を大幅拡大

Published Published August 19, 2026 Energytrend China

OVERVIEW

Eight prominent Chinese companies, including GoodWe and Tuoyi Guneng, are making massive investments exceeding $2.9 billion USD (RMB 21.5 billion) to dramatically expand their production capacities for solid-state batteries and advanced energy storage systems. Zhejiang Angaote Electric Technology is establishing a 3.5 GWh solid-state battery R&D and manufacturing base within five years, while Chunli New Energy's 1 GWh all-solid-state energy storage battery line is entering trial production. These initiatives, alongside a new prismatic solid-state battery project in Suzhou, underscore China's accelerated drive towards large-scale industrialization and global leadership in next-generation battery technology.

IN DEPTH

Background

China is vigorously pursuing the development of new energy vehicles (NEVs) and renewable energy as a national strategy, sparing no investment in foundational battery technologies, especially solid-state batteries. Solid-state batteries are considered indispensable for extending EV ranges, reducing charging infrastructure strain, and ensuring stable operation of large-scale ESS due to their superior safety, energy density, and longer lifespan compared to existing lithium-ion batteries. The synergy of strong government support and proactive private sector investment is enabling China to build a comprehensive supply chain, from materials to finished products, aiming to establish a dominant position in the global battery market. The recent announcements clearly demonstrate the tangible progress of this strategic deployment.

Key Findings

At least eight Chinese companies, including GoodWe, Tuoyi Guneng, Zhejiang Angaote Electric Technology, and Chunli New Energy, have announced massive investments totaling over RMB 21.5 billion (approximately $2.9 billion USD) to significantly expand their production capacities for solid-state batteries and energy storage systems. Notably, Zhejiang Angaote Electric Technology is constructing a solid-state battery headquarters and R&D manufacturing base, aiming for an annual capacity of 3.5 GWh within five years. Chunli New Energy has reported that its all-solid-state energy storage battery project, featuring a 1 GWh mass production line, is entering the trial production phase, underscoring the rapid industrialization and large-scale deployment of solid-state batteries across China.

These investments are primarily focused on solid-state battery materials, cell manufacturing, and integration into large-scale energy storage systems (ESS). Zhejiang Angaote Electric Technology's 3.5 GWh annual capacity target aims to develop and produce high-energy-density, safe solid-state batteries for both EV and stationary energy storage markets. Chunli New Energy's 1 GWh mass production line is specifically tailored for ESS applications, providing battery solutions for grid stabilization and renewable energy integration. The advanced prismatic all-solid-state battery industrialization project signed in Suzhou, Jiangsu, represents a critical step towards mass production of standardized, high-performance batteries, indicating China's ambition to enhance its international competitiveness across diverse solid-state battery technologies.

The massive investment exceeding RMB 21.5 billion and the ambitious production capacity expansion plans by multiple companies are clear signs that China aims to become a global leader in the commercialization and large-scale deployment of solid-state batteries. In the coming years, these investments are expected to materialize into concrete production capacities, supplying innovative solid-state battery products to the EV and ESS markets. For researchers, these investments will create new R&D opportunities, accelerating advancements in materials science and manufacturing technologies. For engineers, resolving specific challenges and accumulating mass production know-how for solid-state battery manufacturing at multi-GWh scale will be crucial. Investors will observe that China's potent national strategy and private sector dynamism are creating a synergistic effect, driving rapid growth in the solid-state battery market, and will likely increase their interest in related companies.

Source: https://www.energytrend.com/news/20260819-51979.html

Collected: August 21, 2026 | Automated Research System (Gemini API)

#26 Samsung SDI、Samsung Display株式4.45兆ウォン売却で北米バッテリー工場と全固体電池開発に資金投入へ

Published Published August 21, 2026 BigGo Finance South Korea

OVERVIEW

Samsung SDI has announced the sale of approximately 33% of its Samsung Display stake for ₩4.45 trillion (about $3.3 billion USD) to fund future growth initiatives. This significant capital infusion is primarily earmarked for bolstering battery manufacturing capabilities in North America, specifically for the Synergy Cells plant in Indiana acquired from General Motors. Concurrently, the company maintains its ambitious target for mass production of all-solid-state batteries by H2 2027 and plans to launch LFP-based energy storage system (ESS) battery production in Q4 2026.

IN DEPTH

Key Findings

Samsung SDI announced the sale of approximately 33% of its stake in Samsung Display for ₩4.45 trillion (approximately $3.3 billion USD) to fuel its future growth strategy. This substantial capital infusion is primarily earmarked for strengthening battery manufacturing capabilities in North America, with a specific focus on supporting the Synergy Cells battery plant in New Carlisle, Indiana, which Samsung SDI recently acquired from General Motors. Concurrently, Samsung SDI reiterated its target of mass-producing all-solid-state batteries in the second half of 2027 and plans to commence production of LFP (lithium iron phosphate)-based energy storage system (ESS) batteries in Q4 2026.

Background

The global battery market is experiencing rapid growth driven by the proliferation of electric vehicles and the expansion of renewable energy. The North American market, in particular, is gaining strategic importance due to incentives like the U.S. Inflation Reduction Act (IRA). Samsung SDI's recent capital raise and investment are integral moves to enhance its competitiveness in this vast market and establish regional production systems.

Samsung SDI is intensely focused on developing all-solid-state battery technology to establish leadership in next-generation batteries. The H2 2027 mass production target suggests significant progress in the company's sulfide-based solid electrolyte and high-capacity cathode/anode material development. All-solid-state batteries are anticipated as a "game-changer," offering superior safety, energy density, and lifespan compared to existing lithium-ion batteries. Major battery manufacturers are engaged in fierce R&D competition, targeting mass production between the late 2020s and 2030s, making Samsung SDI's H2 2027 target an ambitious plan aiming for relatively early mass production within the industry.

Investment in the North American plant will not only substantially increase EV battery supply capacity but also strengthen regional supply chains and diversify geopolitical risks. Furthermore, the initiation of LFP-based ESS battery production in Q4 2026 addresses market demand for cost-effective power storage solutions. These strategies collectively bolster Samsung SDI's diversified technology portfolio across both the EV and stationary energy storage markets.

The funds generated from the Samsung Display stake sale will provide Samsung SDI with a powerful impetus to establish its presence in the North American market and accelerate the commercialization of its all-solid-state battery technology. This investment is expected to equip the Synergy Cells plant with state-of-the-art production facilities, dramatically increasing EV battery supply capacity. Researchers and engineers will focus on resolving technical challenges for all-solid-state battery mass production and establishing efficient manufacturing processes for LFP-based ESS batteries. For investors, Samsung SDI's acquisition of the North American market growth engine and its leading position in next-generation battery technology are seen as strategic moves that will contribute to long-term corporate value enhancement.

Source: https://finance.biggo.com/news/d3e0bdf4-0e7d-4fb9-8f2c-733c8b784ae4

Collected: August 21, 2026 | Automated Research System (Gemini API)

#27 Geely、次世代全固体EVバッテリーで500Wh/kgを達成し2027年にパイロット展開へ、航続距離はディーゼル車に匹敵

Published Published August 20, 2026 Electrek China

OVERVIEW

Chinese automaker Geely has announced a significant breakthrough in EV battery technology, achieving an impressive gravimetric energy density of 500 Wh/kg with its next-generation solid-state batteries. Set for pilot deployment across Geely-owned brands by 2027, this advancement promises to extend electric vehicle ranges to levels comparable with traditional diesel cars. The company's collaboration with Dow Chemical has also yielded a crucial adhesive maintaining stable battery performance across diverse temperature ranges, with real-world validation tests already underway since 2026.

IN DEPTH

Background

Solid-state batteries are widely recognized as a transformative technology poised to accelerate the electric vehicle (EV) market's expansion, fueling intense competition among global automakers and battery manufacturers. Key consumer demands for EVs, such as extended driving range and reduced charging times, are precisely what solid-state battery technology is expected to address. Geely's recent announcement underscores the Chinese automotive industry's burgeoning global leadership, extending beyond mere EV production volumes to encompass foundational battery technology. The strategic emphasis on early pilot deployment is designed to rapidly gather empirical data, thereby expediting the technological maturity of these advanced battery systems.

Key Findings

Chinese automotive giant Geely has announced a significant breakthrough in its next-generation solid-state EV battery technology, achieving a remarkable gravimetric energy density of up to 500 Wh/kg. Following comprehensive real-world validation tests, which commenced in 2026, this high-density battery is scheduled for pilot deployment across several Geely-owned brands in 2027. This advancement is poised to dramatically extend the driving range of electric vehicles (EVs), potentially rivaling or even exceeding that of conventional diesel-powered vehicles. Furthermore, in a strategic material development collaboration, Geely has partnered with Dow Chemical to successfully engineer a specialized adhesive designed to ensure stable battery performance across a wide operational temperature spectrum.

Technical Details

Geely's innovative solid-state battery fundamentally addresses critical safety concerns, such as electrolyte leakage and fire risks, inherent in conventional lithium-ion batteries by substituting liquid electrolytes with solid counterparts. Concurrently, this design achieves a dramatic increase in energy density. The reported 500 Wh/kg energy density translates directly into lighter and more compact battery packs, which not only reduces the overall curb weight of EVs but also offers greater design flexibility for vehicle manufacturers. The strategic collaboration with Dow Chemical was instrumental in developing an advanced adhesive specifically engineered to minimize interfacial resistance between the solid electrolyte and electrodes. This adhesive is crucial for enhancing the battery's overall stability and longevity across a diverse range of operating temperatures. The ongoing validation tests, initiated in 2026, represent a critical phase aimed at rigorously verifying the battery's performance, durability, and safety under authentic real-world driving conditions.

Strategic Significance and Outlook

The planned pilot deployment in 2027 marks Geely's solid-state battery technology entering its crucial final phase preceding widespread practical application. The empirical feedback collected during this stage will be invaluable for iterative battery optimization, refining manufacturing processes, and ultimately shaping the mass production strategy. Should this technology be integrated across Geely's extensive electric vehicle portfolio, it stands to significantly bolster the company's competitive edge and potentially catalyze a substantial transformation within the broader EV market. For materials scientists and battery researchers, the tangible achievement of 500 Wh/kg establishes a new, ambitious benchmark for future cell design and advanced materials development. For engineering teams, the collaborative material development with Dow Chemical provides critical insights for the practical realization and integration of next-generation battery solutions. Investors, naturally, will be closely monitoring the long-term market value and disruptive potential stemming from Geely's technological innovation.

Source: https://electrek.co/2026/08/20/geely-500-wh-kg-solid-state-battery-2027-pilot/

Collected: August 21, 2026 | Automated Research System (Gemini API)

#28 Factorial Energy、航空宇宙分野で初の商用バッテリー受注を獲得、事業統合で1億ドル超を調達し商業化を加速

Published Published August 17, 2026 Shanghai Metals Market (SMM) USA

OVERVIEW

Factorial Energy achieved a significant milestone, securing its first commercial aerospace battery order in Q2 2026 and subsequently completing a business combination in June 2026, which raised over $100 million for commercialization. Concurrently, the U.S. solid-state battery startup forged a strategic partnership with Tulip Tech to accelerate the deployment of solid-state batteries for drones, solidifying its global leadership and marking a critical transition from research and development to market implementation.

IN DEPTH

Background

Solid-state batteries are rapidly emerging as a critical next-generation energy source, garnering significant attention for their potential across a wide array of applications beyond electric vehicles (EVs), including aerospace, drones, and medical devices. Especially in the aerospace and drone sectors, where paramount concerns include safety, energy density, and weight, the adoption of advanced solid-state battery technology is deemed essential for future innovation. Factorial Energy's recent funding and business combination are strategically designed to overcome the inherent challenges of solid-state battery commercialization, particularly in scaling manufacturing capabilities and enhancing cost efficiency. In an increasingly competitive global landscape, securing early commercial contracts and establishing robust strategic partnerships are decisive factors in achieving and sustaining market leadership.

Key Findings

U.S. solid-state battery startup Factorial Energy announced a pivotal achievement, having secured its first commercial battery order within the aerospace sector during Q2 2026. This landmark agreement was closely followed by the completion of a business combination in June 2026, successfully raising over $100 million in funding to accelerate the company's commercialization efforts. Furthermore, Factorial Energy has established a strategic partnership with Tulip Tech aimed at accelerating the deployment of its solid-state battery technology specifically for drone applications, thereby reinforcing its position as a global leader in the field. This series of events represents a critical inflection point, signifying Factorial Energy's decisive transition from advanced research and development into practical, large-scale market implementation.

Technical Details

Factorial Energy's solid-state battery technology is engineered around its proprietary FEBS™ (Factorial Electrolyte System). This innovative system is designed to deliver significantly higher energy density, superior safety characteristics, and stable operational performance across a wide temperature range compared to conventional lithium-ion batteries. The initial commercial order in the aerospace sector serves as a powerful validation, demonstrating that Factorial Energy's batteries meet the stringent performance and reliability requirements demanded by mission-critical applications. The partnership with Tulip Tech is specifically focused on optimizing the design and seamless integration of these solid-state batteries for the drone market, where high power output, extended endurance, and lightweight solutions are paramount. This technological advancement is anticipated to enable dramatically longer flight durations and higher payload missions, contributing significantly to the next evolution of the drone industry.

Strategic Significance & Outlook

This trifecta of a groundbreaking commercial order, substantial funding, and a strategic partnership holds immense significance for Factorial Energy, fundamentally establishing its position as a key innovator and player in the burgeoning solid-state battery market. Success in the highly demanding aerospace sector is expected to serve as a powerful precedent, accelerating the company's expansion into other high-value, performance-critical markets. For researchers and engineers, innovative electrolyte systems like FEBS™ offer new frontiers in next-generation battery design and application, potentially inspiring novel solutions across various industries. Investors will likely view Factorial Energy's early commercial achievements and strategic market expansion partnerships as crucial indicators of its long-term growth potential and disruptive impact in the energy storage landscape.

Source: https://news.metal.com/en/newscontent/104063145-solid-state-battery-factorial-energy-secured-its-first-commercial-battery-orders-in-q2-and-completed-a-business-combinat

Collected: August 21, 2026 | Automated Research System (Gemini API)

#29 中国、全固体電池の材料・エネルギー貯蔵・セル技術で複数のブレークスルーを発表：硫化物電解質量産化へ

Published Published August 18, 2026 Shanghai Metals Market (SMM) China

OVERVIEW

Between August 13-14, 2026, China reported three significant advancements across the solid-state battery landscape. Ronbay Technology's 10-tonne sulfide solid electrolyte pilot line received environmental approval, signaling progress towards scaled material production, while Guansheng Dongchi partnered with CNNC Haihui for deploying polymer hybrid solid-liquid batteries in energy storage. Additionally, Baihu Lake Laboratory achieved an impressive 400 Wh/kg with boride-based solid-state batteries, targeting high-value applications in the low-altitude economy and robotics.

IN DEPTH

Background

China has strategically positioned all-solid-state battery technology as indispensable for its national energy security and the development of new energy industries. Both government and private sectors are making massive investments and driving extensive R&D efforts. As a next-generation alternative to existing lithium-ion batteries, solid-state batteries offer advantages in superior safety, energy density, and extended lifespan, making them promising for a wide range of applications, including electric vehicles (EVs), renewable energy integration, smart grids, and aerial drones. These multiple breakthroughs demonstrate China's comprehensive technological progress across the entire solid-state battery value chain and its increasing international competitiveness.

Key Findings

Between August 13-14, 2026, China reported significant advancements across three major fronts in solid-state battery technology: materials, energy storage, and cell breakthroughs. Ronbay Technology announced the environmental assessment approval for its 10-tonne-per-year sulfide solid electrolyte pilot line, marking a substantial step towards scaled material production. Concurrently, Guansheng Dongchi partnered with CNNC Haihui to initiate the deployment of polymer hybrid solid-liquid batteries for energy storage systems (ESS). Furthermore, the Baihu Lake Laboratory revealed a breakthrough, achieving an impressive 400 Wh/kg in boride-based solid-state batteries, targeting applications in the low-altitude economy and robotics sectors.

Technical Details

- **Ronbay Technology:** The passing of the environmental assessment for its 10-tonne sulfide solid electrolyte pilot line signifies that the manufacturing process for sulfide-based solid electrolytes has met environmental regulations and is ready for transition to full-scale mass production. Sulfide electrolytes are anticipated to offer high ionic conductivity, critical for enhancing solid-state battery performance.

- **Guansheng Dongchi and CNNC Haihui:** Their collaboration on polymer hybrid solid-liquid batteries represents an intermediate technology between all-solid-state and liquid-electrolyte lithium-ion batteries. These batteries offer enhanced safety and flexibility, promising rapid deployment in the energy storage sector, where cycle life and cost efficiency are paramount.
- **Baihu Lake Laboratory:** Achieving 400 Wh/kg energy density with boride-based solid-state batteries is a significant accomplishment in the exploration and optimization of new material systems. This breakthrough has the potential to revolutionize high-value applications in the low-altitude economy, such as drones and air traffic, as well as robotics, which demand compact yet high-power solutions.

Strategic Significance and Outlook

These developments clearly indicate China's aggressive stance towards the commercialization and large-scale deployment of solid-state batteries. Ronbay Technology’s sulfide electrolyte pilot line will contribute to stabilizing the material supply for EV solid-state battery mass production. The partnership between Guansheng Dongchi and CNNC Haihui will accelerate the market introduction of diverse energy storage solutions. And the achievements from Baihu Lake Laboratory could prompt early adoption of solid-state batteries in specific high-value applications. Researchers, engineers, and investors will continue to monitor how these technological advancements will shape and expand the future solid-state battery market.

Source: https://news.metal.com/en/newscontent/104064483-solid-state-battery-three-fronts-material-foundation-energy-storage-expansion-and-cell-breakthroughs

Collected: August 21, 2026 | Automated Research System (Gemini API)

#30 米Anthro Energy、ケンタッキー州に年産25GWhの電解質工場着工、2028年稼働で全固体電池の国内サプライチェーンを構築

Published Published August 19, 2026　Digital Today (TechCrunchからの転載)　USA

OVERVIEW

U.S. battery materials company Anthro Energy has begun construction of an electrolyte production plant in Louisville, Kentucky, targeting 25 GWh annual capacity and 2028 operation. Supported by the U.S. Department of Energy, this facility aims to establish a domestic battery materials supply chain independent of China. Its innovative liquid-to-solid electrolyte manufacturing process is expected to significantly reduce commercialization barriers for all-solid-state batteries.

IN DEPTH

Background

All-solid-state batteries are widely regarded as a game-changer for next-generation electric vehicles (EVs) and stationary power storage systems, promising superior safety, longer lifespan, and higher energy density than current lithium-ion batteries. However, material costs, manufacturing complexity, and supply chain establishment remain significant challenges to their commercialization. The U.S. government, through initiatives like the Inflation Reduction Act (IRA), is aggressively promoting the establishment of a domestic battery supply chain as a national strategy, aiming to reduce dependence on China and enhance economic security. Anthro Energy's plant construction aligns directly with this national strategy, contributing to the self-sufficiency and leadership of the U.S. solid-state battery industry.

Key Findings

Anthro Energy, a U.S. battery materials company, has broken ground on a substantial electrolyte production plant in Louisville, Kentucky. This new facility, boasting an impressive annual production capacity of 25 GWh and slated for operations in 2028, receives critical funding and tax credits from the U.S. Department of Energy. Its primary objective is to establish a robust domestic battery materials supply chain, strategically reducing reliance on foreign entities, particularly China.

The facility will leverage Anthro Energy's innovative manufacturing method, which transitions electrolytes from a liquid to a solid state. This proprietary process is designed to resolve safety issues associated with existing liquid electrolytes while delivering the high energy density and stability characteristic of all-solid-state batteries. This approach is expected to significantly lower the production complexity, a major barrier to the widespread commercialization of solid-state batteries.

With an annual production capacity equivalent to powering several hundred thousand electric vehicles, the plant is indispensable for accelerating the adoption of solid-state batteries in the North American market. Crucially, the company's manufacturing method exhibits high compatibility with established battery production techniques, such as roll-to-roll processes, which should facilitate a smoother, more cost-effective transition to large-scale manufacturing while ensuring uniform electrolyte layer quality and consistency.

This strategic investment in Louisville solidifies Anthro Energy's role as a key player in the nascent solid-state battery materials market. Upon commencing operations, the plant is expected to supply materials not only to the North American market but also to global solid-state battery manufacturers, fostering broader industry development. For the scientific and engineering communities, the liquid-to-solid electrolyte manufacturing process opens new avenues for research and optimization, influencing the standardization of future battery technologies. Investors are also poised to closely monitor Anthro Energy's growth, backed by strong U.S. government support and its pivotal role in fortifying a domestic battery supply chain.

Source: https://www.digitaltoday.co.kr/en/view/94328/anthro-energy-breaks-ground-on-us-battery-materials-plant-to-pave-way-for-all-solid-state-batteries

Collected: August 21, 2026 | Automated Research System (Gemini API)