Adhesives_Sealants

Weekly Intelligence Report

2026-06-27 | 39 articles | 12 countries

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This Week's Keyword

EV & AI Adhesives

Critical for next-gen electronics & circularity

39 articles Total Articles Analyzed	12 countries Source Countries/Regions	2016 patent year Key AI Encapsulant IP	2000°F rated EV Fire Safety Materials

All 39 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	Resonac AI Encapsulant	Corporate Strategy	●●●●○	●●●●●	●●●●●	●●●○○	●●●●○	Resonac's 2016 liquid encapsulant patent for 2.5D AI semiconductors gains immense value for HBM/GPU integration.
#02	TPO-Free UV-Cure Medical	New Product	●●●○○	●●●●○	●●●○○	●●○○○	●●●●●	New TPO-free, low-viscosity UV-cure adhesive "HLC-M-1004" enables primerless, flexible bonding for medical devices.
#03	JBC EV Thermal Mgmt	New Product	●●○○○	●●●●●	●●●●○	●●●○○	●●●●●	Precision die-cut thermal interface materials from JBC Converting enhance EV battery safety and lifespan by managing heat.
#04	H.B. Fuller Acquires AMS	Corporate Strategy	●○○○○	●●●●●	●●●●○	●●●○○	●●●●●	H.B. Fuller proposes £715M acquisition of Advanced Medical Solutions to boost medical adhesives portfolio.
#05	BOBST/Michelman Packaging	Collaboration	●●●○○	●●●○○	●●●●○	●●○○○	●●●●●	BOBST and Michelman expand collaboration on recyclable high-barrier packaging for EU PPWR compliance.
#06	FDTR Microscopy for TIMs	Research	●●●●●	●○○○○	●●●○○	●●●●●	●●●●●	Groundbreaking FDTR microscopy visualizes microscale thermal properties of TIMs, revealing heterogeneous heat conduction.
#07	EV Battery Adhesives	Market Overview	●○○○○	●●●●●	●●●●○	●●○○○	●●●●●	Diverse adhesive innovations are indispensable for enhancing EV battery performance, safety, and lifespan in new architectures.
#08	AI Materials Discovery Hub	Collaboration	●●●●○	●●○○○	●●●●○	●●○○○	●●●○○	ATLANT 3D, A*STAR IMRE, NAMIC establish AI-driven materials discovery hub in Singapore for advanced electronics.
#09	Sheen EV Thermal Mgmt	Corporate Report	●●○○○	●●●●○	●●●●○	●●●○○	●●●○○	Sheen Technology enhances EV range and safety via advanced thermal management, including PCMs and SiC additive manufacturing.
#10	WBG Sintered Ag Die-Attach	Research	●●●●○	●●○○○	●●●●○	●●●●●	●●●●○	Flexible epoxy and sintered silver micro-fillers advance low-temp sintering and reliability in WBG semiconductor packaging.
#11	TIM Dispensing Market	Market Overview	●○○○○	●●●●●	●●●○○	●●●○○	●●●●●	Market report projects significant growth for TIM dispensing systems, driven by EV power electronics and semiconductor miniaturization.
#12	tesa EV Adhesives Auto	New Product	●●●○○	●●●●○	●●●●○	●●○○○	●●●●●	tesa unveils automated adhesive solutions for EV battery assembly, enhancing bonding with plasma technology.

#	Article Title	Type	Tech Novelty	Market Proximity	Market Impact	Data Reliability	US/EU Relevance	Summary
#13	Electroninks Conductive Ink	Partnership	●●●○○	●●●●○	●●●○○	●●○○○	●●●●○	Electroninks partners with Japanese firms to bring metal-complex conductive ink to Japanese electronics market.
#14	Henkel Sustainable Packaging	New Product	●●●○○	●●●●○	●●●●○	●●○○○	●●●●●	Henkel expands paper coatings for sustainable packaging, offering water-based barrier and heat-seal solutions for EU PPWR.
#15	Thermo-Tec EV Fire Safety	New Product	●●○○○	●●●●●	●●●●○	●●●○○	●●●●●	Cool It Thermo-Tec offers 2000°F rated reflective foil and ceramic mats for EV battery thermal runaway containment.
#16	Boron Nitride for EV	New Material	●●●○○	●●●●○	●●●●○	●●●○○	●●●●●	Insulating Boron Nitride thermal material enhances EV battery and power module safety and performance with high thermal conductivity and dielectric strength.
#17	Loctite EV Repair Adhesives	New Product	●●●○○	●●●●○	●●●●○	●●○○○	●●●●●	Henkel's Loctite unveils new adhesive solutions for safe, sustainable EV repairs, extending vehicle lifespan.
#18	Henkel Auto Adhesives	New Product	●●●○○	●●●●○	●●●●○	●●●○○	●●●●●	Henkel launches LOCTITE MS 9650 for automotive displays and TEROSON EP 52 structural adhesive for EVs.
#19	DOE PV Encapsulants	Research	●●●●○	●●○○○	●●●●○	●●●○○	●●●●●	US DOE drives research on novel encapsulants and edge sealing to boost thin-film PV module durability and installation.
#20	Mesogen Epoxy Potting	Research	●●●●●	●○○○○	●●●○○	●●●●●	●●●●○	Novel mesogen-containing epoxy monomer enhances thermally conductive potting compounds, balancing thermal conductivity and reliability.
#21	EV Battery Impact Protect	Research	●●●●○	●●○○○	●●●●○	●●●●●	●●●●○	LGF/PP honeycomb composite with high-shear adhesive improves EV battery bottom plate impact protection.
#22	Synthomer Divests Acrylate	Corporate Strategy	●○○○○	●●●●●	●●●○○	●●●○○	●●●●●	Synthomer divests acrylate monomers business to Mutares to boost profitability and focus on specialty chemicals.
#23	Henkel NA Battery Center	Corporate Strategy	●●●○○	●●●●○	●●●●○	●●●○○	●●●●●	Henkel opens North American Battery Application Center to accelerate EV battery adhesive and sealant development.
#24	Photonics Adhesives Bottleneck	Analysis	●●●●○	●●○○○	●●●●●	●●●○○	●●●●●	On-chip photonics manufacturing is bottlenecked by adhesive/encapsulant stress resistance, requiring new low-stress materials.
#25	JBC Dielectric Barriers	New Product	●●○○○	●●●●●	●●●●○	●●●○○	●●●●●	JBC Technologies, a 3M™ converter, innovates custom die-cut dielectric barriers for EV battery and BESS applications.
#26	SCP Hydrogel Wound Healing	Research	●●●●●	●○○○○	●●●●○	●●●●●	●●●●●	Novel SCP nanomaterials and composite hydrogel revolutionize infected wound healing with dual photothermal/photodynamic therapy.
#27	Henkel Advanced Semi Pack	Corporate Report	●●●○○	●●●●○	●●●●●	●●●○○	●●●●●	Henkel delivers advanced semiconductor packaging materials to tackle thermal and mechanical challenges in 2.5D/3D packaging.
#28	Henkel LCM Solutions	Corporate Report	●●●○○	●●●●○	●●●●●	●●●○○	●●●●●	Henkel offers Liquid Compression Molding (LCM) solutions for wafer-level and panel-level packaging, enabling HBM.
#29	Penn State Biodeg. PSA	Research	●●●●○	●●○○○	●●●●○	●●●○○	●●●●●	Penn State funds biodegradable UV-curable PSA from polypeptides, an eco-friendly alternative for various industries.
#30	FRPs in Maritime	Market Overview	●●○○○	●●●●●	●●●○○	●●●●●	●●●○○	Fiber-Reinforced Polymers, especially epoxy/vinylester composites, are expanding in maritime for lightweight, high-strength structures.

#	Article Title	Type	Tech Novelty	Market Proximity	Market Impact	Data Reliability	US/EU Relevance	Summary
#31	Hoenle Underfill	New Product	●●●○○	●●●●○	●●●●○	●●●○○	●●●●●	Hoenle Adhesives launches Structalit® 8205, a high-reliability underfill for miniaturized, high-density electronic assemblies.
#32	Kerton Epoxy Adhesives	Market Overview	●○○○○	●●●●●	●●●○○	●●○○○	●●○○○	Zhengzhou Kerton Chemical highlights broad applications of epoxy adhesives for high performance and reliability across industries.
#33	WI DOT Approved Products	Regulatory	●○○○○	●●●●●	●●○○○	●●●○○	●●●●●	Wisconsin DOT releases Approved Products List for construction materials, ensuring quality for public infrastructure.
#34	Evonik Wind Blade Epoxy	New Material	●●●○○	●●●●○	●●●●○	●●●○○	●●●●●	Evonik's advanced crosslinkers enhance epoxy composites for lightweight, high-strength, fatigue-resistant wind turbine blades.
#35	CVD in Semiconductors	Overview	●○○○○	●●●●●	●●●●●	●○○○○	●●●●○	CVD is a critical thin-film deposition technology for high-quality materials in the semiconductor industry, enabling advanced manufacturing.
#36	Olin/Huntsman Merger	Corporate Strategy	●○○○○	●●●●●	●●●●○	●●●○○	●●●●●	Olin and Huntsman merge in a $12.5B deal, forming a North American chemical giant, signaling strategic M&A.;
#37	Dow/Univar Decarbia	Partnership	●●●○○	●●●●○	●●●●○	●●○○○	●●●●●	Dow and Univar Solutions partner to expand distribution of Decarbia™ low-carbon products with PCF certification.
#38	D-Glue Debondable Adhesive	New Technology	●●●●●	●●○○○	●●●●●	●●●○○	●●●●●	Geisys Ventures unveils patented D-Glue debondable adhesive, enabling product reusability for a circular economy.
#39	tesa EV Adhesives Auto	New Product	●●●○○	●●●●○	●●●●○	●●○○○	●●●●●	tesa unveils three automation-ready adhesive solutions for EV battery performance and reliability.

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

Three Questions That Demand Your Decision This Week

❶ Is your AI/HPC supply chain exposed to critical IP?

Resonac's 2016 patent for 2.5D AI encapsulants is now immensely strategic. With Henkel also pushing advanced packaging materials, US/EU semiconductor and AI OEMs must assess their material supplier IP landscape for 2.5D/3D packaging and photonics to avoid dependency or bottlenecks.

❷ Are you prepared for the circular economy mandate?

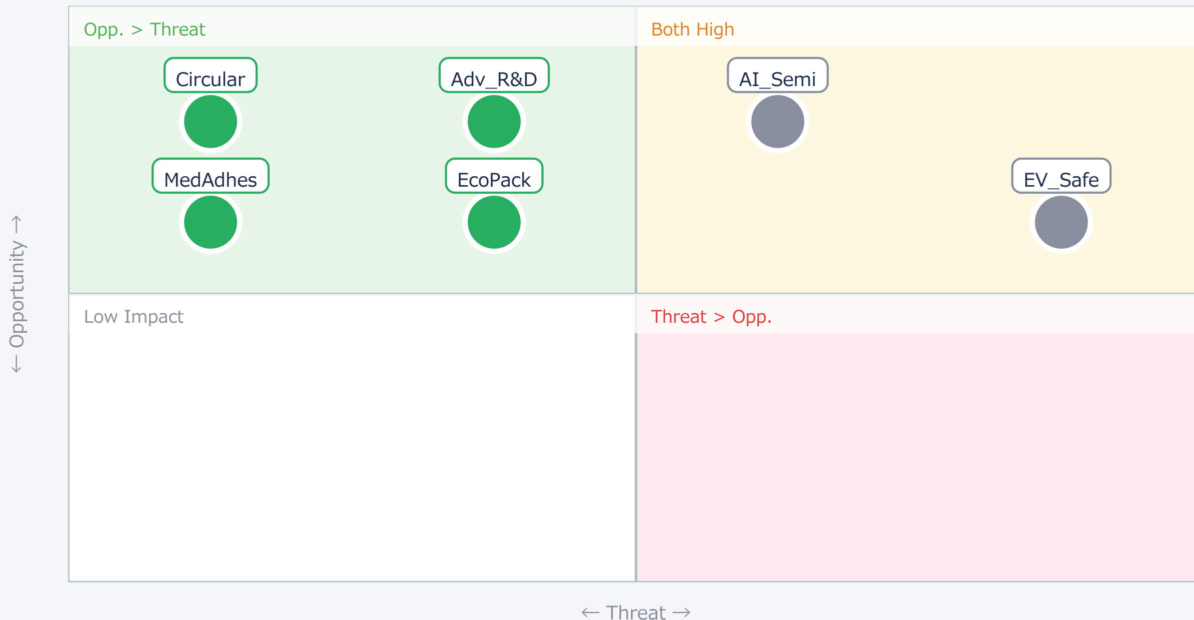
New debondable adhesives (D-Glue) and biodegradable PSAs (Penn State) are emerging to enable product repair and recycling. EU regulations (PPWR) are driving demand for sustainable packaging and materials. US/EU manufacturers must integrate these into product design now or face obsolescence.

❸ How will EV battery safety innovations impact your roadmap?

Advanced thermal management (BN, LGF/PP composites, high-temp foils) and automated adhesive solutions are critical for EV battery safety, performance, and manufacturing efficiency. US/EU automotive OEMs and battery suppliers must rapidly adopt or develop these to stay competitive and ensure consumer trust.

Opportunities vs. Threats for US/European Companies

Opportunity vs. Threat Matrix for US/European Companies



Item	Quadrant	↑ Opportunity	↓ Threat
● AI_Semi	Critical	Supply critical tech	IP/supply risk
● EV_Safe	Critical	New materials	Safety failures
● Circular	Opp.	New product lines	Lagging innovation
● EcoPack	Opp.	Regulatory sales	Non-compliance
● MedAdhes	Opp.	Market expansion	Acquisition risk
● Adv_R&D;	Opp.	Tech leadership	Competitor lead

Deep Dive ① — Resonac's AI Encapsulant Patent Soars

#01 | 2026/06/20 | YouTube (3-Min Semi with Tai) | Tech Novelty ●●●●○ Proximity ●●●●● Market Impact ●●●●● Data Reliability ●●●○○ US/EU Relevance ●●●●○

Resonac's 2016 patent for liquid encapsulants for 2.5D AI semiconductors has surged in strategic value due to the generative AI boom. This technology mitigates warping and mechanical stress in HBM and GPU integration, crucial for enhancing AI chip reliability and yield. Its foresight gives Resonac a significant competitive edge.

The liquid encapsulant uses advanced polymer chemistry to provide superior stress relief, accommodating differing CTEs in highly integrated 2.5D packages. This ensures stable operation for data centers and HPC, enabling mass production of robust AI semiconductors.

▶ Strategic Analyst's Perspective

Strategic Analyst's Perspective: [Opportunity] US/EU OEMs must assess their current 2.5D packaging material suppliers for AI chips. Resonac's early IP creates a potential supply chain dependency. [Threat] Lack of equivalent US/EU IP could lead to higher costs or limited access. Technical barriers include scaling production for extreme volumes and ensuring long-term reliability under evolving AI workloads. US/EU materials suppliers should immediately invest in competitive liquid encapsulant R&D;, focusing on novel polymer formulations and stress mitigation. Procurement teams must map current and future AI chip encapsulant needs and supplier IP landscapes by end of Q3 2026.

Deep Dive ② — D-Glue: Debondable Adhesives for Circularity

#38 | 2026/06/25 | Design World | Tech Novelty ●●●●● Proximity ●●○○○ Market Impact ●●●●● Data Reliability ●●●○○ US/EU Relevance ●●●●●

Geisys Ventures' patented D-Glue debondable adhesive enables product reprocessing, repair, and reuse, fostering a circular economy. This technology maintains strong adhesion under normal conditions but can be easily debonded via specific stimuli (heat, chemicals), simplifying manufacturing and disassembly.

D-Glue targets consumer electronics, textiles, apparel, and energy sectors, aiming to significantly reduce waste and improve resource efficiency. Its "on-demand" debonding capability eliminates destructive disassembly, preserving components and streamlining recycling.

▶ Strategic Analyst's Perspective

Strategic Analyst's Perspective: [Opportunity] This breakthrough offers US/EU OEMs a pathway to meet stringent circular economy regulations (e.g., EU's Right to Repair, PPWR) and consumer demand for sustainable products. It creates new revenue streams in repair, refurbishment, and component reuse. [Threat] Companies relying on traditional permanent adhesives risk obsolescence and regulatory non-compliance. Technical barriers include achieving broad material compatibility, precise debonding control across diverse product lifecycles, and cost-effective integration into existing manufacturing lines. US/EU product design and R&D; teams should immediately pilot D-Glue or similar debondable adhesive technologies in next-gen product designs. Strategy teams must evaluate new business models (e.g., product-as-a-service) enabled by this technology by Q4 2026.

Deep Dive ③ — Henkel's 2.5D/3D Packaging Solutions

#27 | Date unknown | Henkel Adhesives | Tech Novelty●●●○○ Proximity●●●●○ Market Impact●●●●● Data Reliability●●●○○ US/EU Relevance●●●●●

Henkel offers a diverse portfolio of advanced semiconductor packaging solutions, including lid/stiffener adhesives, EMI shielding, liquid compression molding (LCM), and underfills. These materials are crucial for addressing complex thermal, mechanical, performance, and reliability challenges in 2.5D and 3D packaging.

Henkel's solutions support the high performance and miniaturization needs of next-generation semiconductor devices, providing high bond strength, thermal stability, EMI protection, and stress mitigation for solder bumps, essential for AI accelerators and HPC.

> ▶ Strategic Analyst's Perspective
>
> Strategic Analyst's Perspective: [Opportunity] Henkel, a major EU supplier, provides critical materials for advanced 2.5D/3D semiconductor packaging, which is vital for US/EU AI and HPC development. This offers a stable supply of high-performance materials. [Threat] US/EU materials suppliers must rapidly innovate to compete with established players like Henkel, particularly in LCM and underfill technologies, to avoid reliance on non-US/EU IP. Technical barriers include achieving ultra-low CTE mismatch, higher thermal conductivity, and improved process compatibility for increasingly complex chip architectures. US/EU semiconductor packaging teams should evaluate Henkel's latest solutions and benchmark against competitors immediately. R&D; should focus on developing next-gen underfills and encapsulants for sub-5nm nodes by Q1 2027.

Other Notable Articles

FDTR Microscopy Visualizes Microscale Thermal Properties of TIMs (EurekAlert!)
TN●●●●● PM○○○○○ MI●●●○○ DR●●●●● UR●●●●●

Novel FDTR microscopy offers microscale visualization of TIM thermal properties, crucial for future high-performance electronics design.

New LGF/PP Honeycomb Composite and High-Shear Strength Adhesive Significantly Improve Lithium-Ion Battery Bottom Plate Impact Protection (MDPI)
TN●●●●○ PM●●○○○ MI●●●●○ DR●●●●● UR●●●●○

New LGF/PP honeycomb composite with high-shear adhesive significantly improves EV battery bottom plate impact protection.

U.S. Department of Energy Drives Research on Novel Encapsulants and Edge Sealing to Boost Thin-Film PV Module Durability (U.S. Department of Energy (DOE))
TN●●●●○ PM●●○○○ MI●●●●○ DR●●●○○ UR●●●●●

US DOE research on novel encapsulants and edge sealing aims to boost thin-film PV module durability and installation.

Flexible Epoxy and Sintered Silver Micro-fillers Advance Low-Temperature Sintering and Reliability in WBG Semiconductor Packaging (ResearchGate)
TN●●●●○ PM●●○○○ MI●●●●○ DR●●●●● UR●●●●○

Flexible epoxy and sintered silver micro-fillers advance low-temp sintering and reliability in WBG semiconductor packaging.

Evonik Enhances Composite Performance with Crosslinkers for Lightweight, High-Strength, and High-Fatigue Resistance Epoxy Systems in Wind Turbine Blades (Evonik)
TN●●●○○ PM●●●●○ MI●●●●○ DR●●●○○ UR●●●●●

Evonik's advanced crosslinkers enhance epoxy composites for lightweight, high-strength, fatigue-resistant wind turbine blades.

Recommended Actions This Week

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

Immediate (this week)

- [Procurement] Review current 2.5D/3D semiconductor packaging material suppliers (encapsulants, underfills) for AI/HPC chips, assessing IP and supply chain risks, especially for Resonac-like solutions.
- [R&D;] Initiate rapid prototyping or feasibility studies for debondable adhesive technologies (e.g., D-Glue) for next-generation consumer electronics or automotive components.

Short-term (1 month)

- [Strategy] Conduct a competitive analysis of US/EU vs. Asian suppliers in advanced EV battery thermal management and safety materials (e.g., BN, LGF/PP composites, high-temp foils).
- [R&D;] Engage with research institutions (e.g., Penn State, DOE-funded labs) on biodegradable adhesives and novel PV encapsulants to explore licensing or joint development opportunities.
- [Business Dev] Evaluate the market potential and regulatory compliance requirements (e.g., EU PPWR) for sustainable packaging coatings and low-carbon chemical products (e.g., Dow's Decarbia).

Medium-long term (quarter+)

- [Executive] Develop a comprehensive "Circular Economy Materials" strategy, integrating debondable/biodegradable adhesives into product roadmaps and exploring new service-based business models.
- [R&D;] Invest in advanced materials characterization tools like FDTR microscopy to accelerate internal development of high-performance TIMs and encapsulants for future electronics.
- [Legal/IP] Proactively identify and secure IP in critical emerging adhesive and sealant technologies for AI, EV, and sustainable packaging to maintain competitive advantage.

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Adhesives_Sealants — Selected Articles

Date: 2026-06-27

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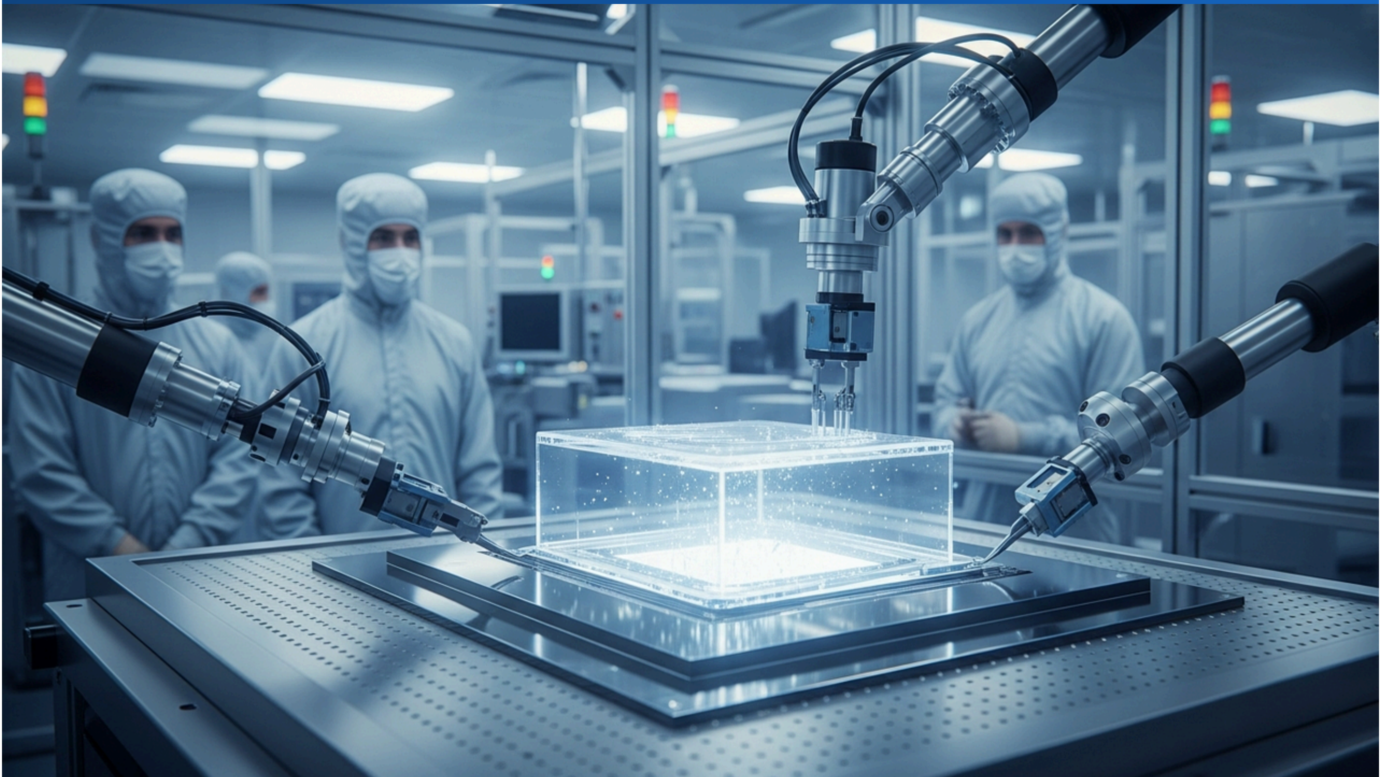
#01 Resonac's 2016 Liquid Encapsulant Patent for 2.5D AI Semiconductors Skyrockets in Strategic Value Amid Generative AI Boom

Published June 20, 2026 YouTube (3-Min Semi with Tai) Japan



OVERVIEW

Resonac's patent for liquid encapsulants, filed in 2016 for AI semiconductor applications, has dramatically increased in strategic importance with the current generative AI boom. This technology effectively mitigates warping and mechanical stress issues in 2.5D packaging during HBM and GPU integration, crucial for enhancing AI chip reliability. Developed before the AI surge, this foresight now grants Resonac a significant competitive advantage in the high-growth AI semiconductor market.

IN DEPTH

Resonac's AI Semiconductor Encapsulant Patent Gains Critical Importance

Resonac's patent for liquid encapsulants, originally filed in 2016 for AI semiconductor applications, is now recognized as possessing immense strategic value, particularly in the context of the burgeoning NVIDIA era and the generative AI boom. This patented technology effectively addresses critical challenges such as warping and mechanical stress that arise during the integration of High Bandwidth Memory (HBM) and GPUs onto a single interposer in 2.5D packaging. By mitigating these issues, the technology is indispensable for improving the manufacturing yield and long-term reliability of AI chips, ensuring stable operation for data centers and high-performance computing (HPC) applications.

Technical Details and Market Impact

The liquid encapsulant material is engineered with advanced polymer chemistry to provide superior stress relief, accommodating the differing coefficients of thermal expansion (CTE) among integrated components. This characteristic is particularly vital in highly integrated 2.5D packages for AI chips, where resistance to thermal cycling and external physical loads is paramount. Resonac's patented solution enables the mass production of more robust and reliable AI semiconductors. This technical superiority serves as a distinct differentiator against competitors, solidifying the company's position as a critical supplier in the global semiconductor materials market.

Background and Future Outlook

The foresight of Resonac is remarkable, as this patent was filed well before generative AI technologies became mainstream. The company had proactively identified future challenges in semiconductor packaging and invested in developing materials to overcome them. The current explosion in generative AI and the corresponding demand for AI semiconductors are now powerful drivers for the expansion of encapsulant materials based on this patented technology. Moving forward, Resonac is expected to further advance this core technology, extending its applications beyond AI to encompass autonomous driving, 5G/6G communications, IoT devices, and other vast sectors of advanced electronics, thereby continuing to spearhead global technological innovation.

Source: https://www.youtube.com/watch?v=HgWKCXHnYe8

Collected: June 26, 2026 | Automated Research System (Gemini API)

#02 TPO-Free, Low-Viscosity UV-Cure Adhesive "HLC-M-1004" Launched for Medical Devices, Enabling Primerless, Flexible Bonding

Published June 19, 2026   Assembly Magazine   USA

OVERVIEW

A new TPO-free UV-cure adhesive, "HLC-M-1004," has been introduced for medical device applications, offering low viscosity and strong adhesion to transparent or opaque substrates without a primer. This product boasts low outgassing, flexibility, and rapid curing, simplifying manufacturing processes and enhancing device reliability. The report also highlights advancements in other adhesive and sealant solutions for EV battery housings and automotive displays.

IN DEPTH

TPO-Free UV-Cure Adhesive "HLC-M-1004" Revolutionizes Medical Device Manufacturing

The medical device manufacturing industry is set to benefit from the introduction of "HLC-M-1004," an innovative, TPO (triphenylphosphine oxide)-free UV-curable adhesive. Specifically engineered to meet stringent medical device requirements, this new product features low viscosity, allowing for precise application. A key distinguishing characteristic is its ability to achieve high bond strength on both transparent and opaque substrates without the need for a primer, thereby simplifying manufacturing steps and improving overall productivity.

Essential Properties for Medical Devices and Expanding Applications

"HLC-M-1004" offers crucial properties for medical devices, including low outgassing characteristics that minimize the release of volatile organic compounds, reducing the risk of performance degradation in sensitive devices. Its post-cure flexibility helps to alleviate stress concentrations caused by thermal expansion differences between dissimilar materials, enhancing device durability. Furthermore, rapid UV curing significantly contributes to shorter cycle times in high-volume production lines. The advent of this adhesive is expected to increase design freedom for a wide range of medical devices, such as diagnostic instruments, catheters, and wearable health technologies, fostering the development of higher-performance and safer products.

Evolving Adhesive and Sealant Solutions Across Diverse Industries

Beyond "HLC-M-1004," the article also highlights advancements in adhesive and sealant technologies across other industrial sectors. For EV battery housings, the silicone sealant "Wevosil 23130" is noted for its high-temperature resistance and long-term reliability, contributing to thermal runaway prevention, waterproofing, and dust protection for batteries. In automotive displays, the high-performance adhesive "Loctite MS 9650" has emerged, designed to withstand harsh temperature and vibration conditions in vehicle environments while ensuring clear visibility and durability. These new product introductions underscore the continuous evolution of adhesive and sealant technologies to meet specific, demanding requirements in various industries.

Source: https://www.assemblymag.com/articles/100146-new-uv-cure-adhesives-do-not-contain-tpo

Collected: June 26, 2026 | Automated Research System (Gemini API)

#03 JBC Converting Enhances EV Battery Safety and Lifespan with Precision Die-Cut Thermal Management Materials

Published June 18, 2026 JBC Converting USA

OVERVIEW

JBC Converting reports that precision die-cut thermal interface pads and electrical insulation films are significantly improving EV battery safety and lifespan through advanced thermal management. These materials eliminate air gaps, effectively dissipate heat from hotspots like busbars and connectors, and prevent thermal transfer between cells. This approach reduces thermal runaway risks, enhancing both consumer safety and overall vehicle reliability.

IN DEPTH

Die-Cut Thermal Management Materials Dramatically Enhance EV Battery Safety and Lifespan

JBC Converting has reported that precisely die-cut thermal interface pads and electrical insulation films play a crucial role in the thermal management of electric vehicle (EV) systems. These high-performance materials are significantly contributing to the dramatic improvement of EV battery safety and lifespan. Specifically, they work by eliminating air gaps within battery packs and efficiently dissipating heat from critical hotspots such as busbars and connectors, thereby minimizing performance degradation and safety risks associated with overheating.

Technical Details and Contribution to Thermal Runaway Prevention

The die-cut thermal interface pads optimize contact between battery cells and the cooling system, maximizing heat transfer pathways. This ensures uniform heat distribution throughout the battery pack, suppressing the formation of localized hotspots. Simultaneously, the electrical insulation films prevent unintended electrical conduction between battery cells while maintaining thermal conductivity, effectively halting the propagation of thermal runaway. A Q&A session with a 3M materials expert within the article underscores that custom-converted thermal management materials contribute not only to vehicle safety but also significantly to enhancing the end-consumer experience, highlighting the importance of material selection and precision fabrication.

Growth of the EV Market and Future of Thermal Management Solutions

With the rapid expansion of the electric vehicle market, demands for battery performance, safety, and durability are continuously increasing. Advanced thermal management solutions are indispensable to meet these escalating requirements. Die-cut thermal management materials, such as those offered by JBC Converting, address these needs through customization, precise fitment, and optimized thermal conductivity. The future outlook anticipates further innovation in developing thinner, more flexible materials with even higher thermal conductivity, along with advancements in precision fabrication techniques, to keep pace with evolving battery technologies and diversified vehicle designs. These advancements will enable extended EV range, reduced charging times, and enhanced safety.

Source: https://www.jbc-tech.com/applications/thermal-management/

Collected: June 26, 2026 | Automated Research System (Gemini API)

#04 H.B. Fuller Proposes £715 Million Acquisition of Advanced Medical Solutions to Strengthen Medical Adhesives Market Position

Published June 25, 2026   Business Wire   USA

OVERVIEW

H.B. Fuller has announced a cash offer of £715 million (approximately $942.9 million) to acquire Advanced Medical Solutions Group plc (AMS), aiming to bolster its portfolio in the medical adhesives market. This strategic move expands H.B. Fuller's capabilities in tissue adhesives, tapes, dressings, and formulated biosurgical products, establishing its presence in this high-growth sector. AMS's innovative platform, strong product pipeline, R&D capabilities, and global commercial footprint are expected to significantly contribute to H.B. Fuller's growth strategy.

IN DEPTH

H.B. Fuller Proposes £715 Million Acquisition of Advanced Medical Solutions to Enhance Medical Market Presence

Global adhesive giant H.B. Fuller has announced a cash offer of £715 million (approximately $942.9 million) to acquire Advanced Medical Solutions Group plc (AMS). This significant acquisition marks a strategic move for H.B. Fuller to substantially strengthen its business portfolio in the medical adhesives market and establish leadership in this high-growth sector. AMS is highly regarded as a differentiated formulated product company with an innovation-driven platform, a robust product pipeline, strong research and development capabilities, and an established global commercial footprint.

Strategic Rationale and Portfolio Expansion of the Acquisition

Through this acquisition, H.B. Fuller will gain AMS's broad portfolio, which includes tissue adhesives, medical tapes, advanced wound dressings, and formulated biosurgical products. This will dramatically expand H.B. Fuller's product and technological offerings in the medical field. In particular, biocompatible adhesives and biosurgical products play crucial roles in hemostasis during surgery, tissue closure, and accelerating wound healing, areas where demand is projected to continue increasing. AMS's strong R&D pipeline and existing product range will accelerate H.B. Fuller's innovation capabilities, enabling the development of new solutions to meet a wider array of patient needs.

Industry Impact and Future Outlook

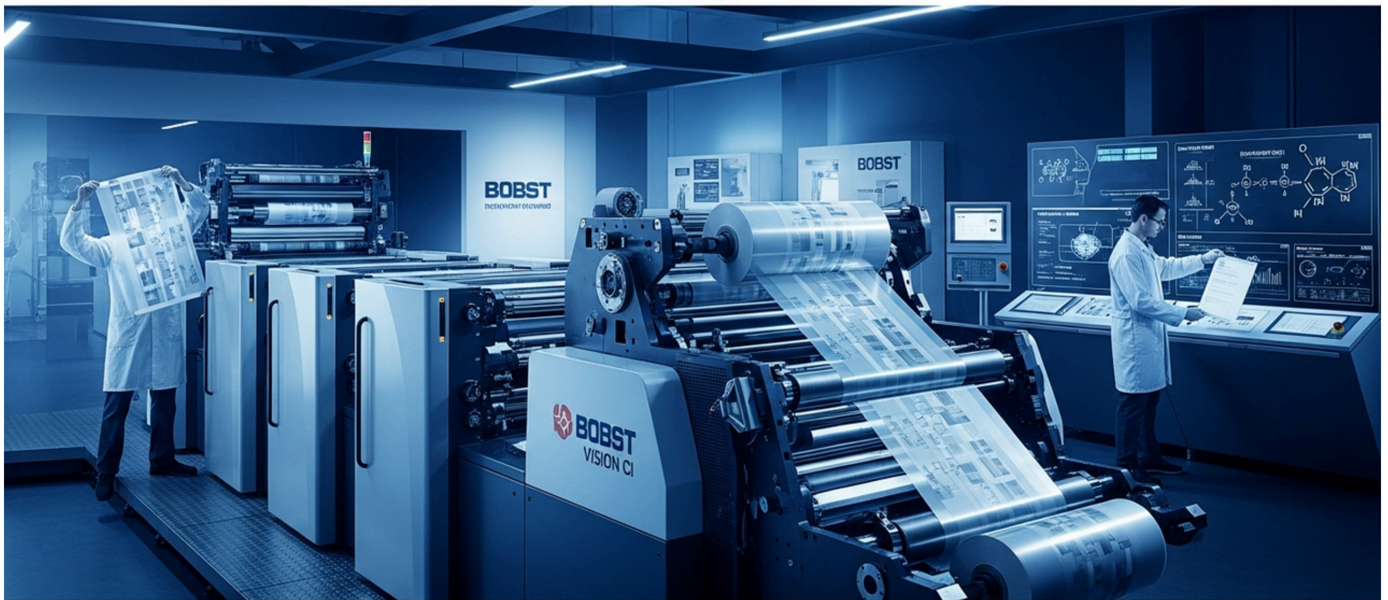
This acquisition is expected to significantly impact the competitive landscape within the medical adhesives and related products market. By integrating AMS's expertise and market access, H.B. Fuller will solidify its position as a global medical supplier, reaching a broader customer base. Medical device manufacturers and surgeons, in particular, will benefit from access to more integrated, high-performance adhesive and sealing solutions, which are anticipated to contribute to improved surgical outcomes and enhanced patient recovery. Through this acquisition, H.B. Fuller aims to drive sustained growth and innovation, playing an indispensable role in advancing medical technology.

Source: https://www.businesswire.com/news/home/20260624693120/en/H.B.-Fuller-Announces-Offer-to-Acquire-Advanced-Medical-Solutions

Collected: June 26, 2026 | Automated Research System (Gemini API)

#05 BOBST and Michelman Expand Collaboration on Regulation-Ready, Recyclable High-Barrier Packaging Solutions for EU PPWR Compliance

Published June 24, 2026   WhatTheyThink   Switzerland／USA



OVERVIEW

BOBST and Michelman have expanded their collaboration to develop recyclable high-barrier packaging solutions compliant with new Packaging and Packaging Waste Regulations (PPWR). The partnership focuses on mono-material flexible packaging, fiber/paper-based packaging, and compostable/bio-based structures. Key developments include protective coatings for inorganic transparent barrier technologies like AlOx and SiOx, alongside ultra-thin film lamination techniques to accelerate the shift towards sustainable packaging.

IN DEPTH

BOBST and Michelman Strengthen Collaboration for EU-Compliant Recyclable High-Barrier Packaging

BOBST, a global leader in packaging machinery, and Michelman, a specialty chemicals manufacturer, have announced an expanded collaboration to develop innovative recyclable high-barrier packaging solutions. These solutions are designed to comply with the stringent requirements of the new Packaging and Packaging Waste Regulations (PPWR). This partnership aims to accelerate the industry-wide transition towards sustainable packaging materials, marking a significant step towards achieving a circular economy.

Technical Approach and Key Development Areas

The collaboration between the two companies primarily focuses on three key areas:

- **Mono-material Flexible Packaging:** This involves developing flexible packaging made from a single material, a departure from traditional packaging that often uses multiple plastic layers. This approach significantly simplifies the recycling process.
- **Fiber/Paper-based Packaging:** The initiative aims to reduce plastic usage by enhancing packaging solutions based on recyclable paper and fiber substrates.
- **Compostable and Bio-based Structures:** A focus on developing environmentally friendly, biodegradable materials and packaging derived from renewable resources.

Particular emphasis is placed on developing protective coatings for inorganic transparent barrier technologies, such as AlOx (aluminum oxide) and SiOx (silicon oxide). These coatings are required to provide excellent barrier properties against oxygen and water vapor while not compromising recyclability. Furthermore, the development of ultra-thin film lamination technology is underway, combining reduced material usage with high performance.

Industry Impact and Future Outlook

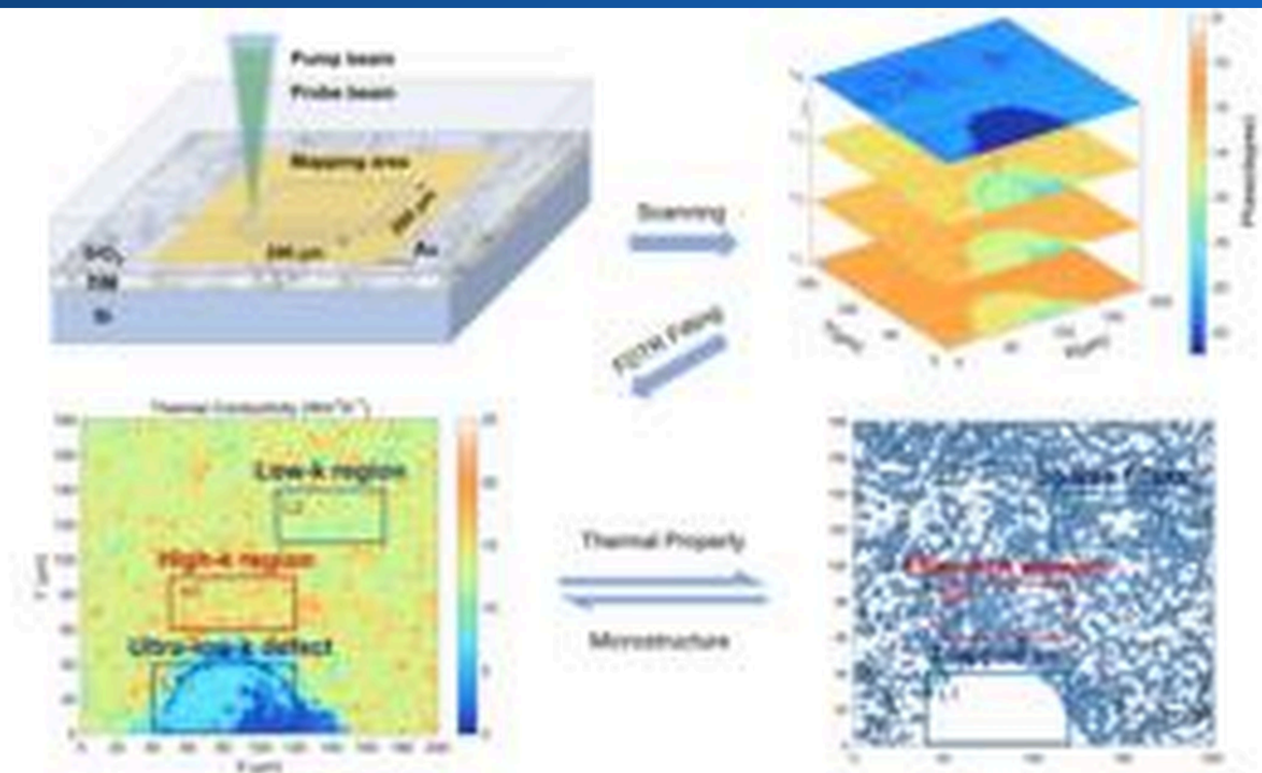
The EU's PPWR aims to reduce packaging waste and increase recycling rates, demanding significant transformation across the entire packaging industry. The collaboration between BOBST and Michelman offers concrete solutions to address these regulatory challenges, helping packaging manufacturers meet their environmental targets. This will lead to enhanced sustainability throughout the supply chain and enable companies to respond to growing consumer environmental awareness. Moving forward, both companies will accelerate their joint market introductions, laying the technological foundation for more businesses to transition to recyclable and eco-friendly packaging. This represents a crucial movement shaping the future of the packaging industry.

Source: https://whattheythink.com/news/130752-bobst-michelman-expanding-collaboration-new-regulation-ready-recyclable-solutions/

Collected: June 26, 2026 | Automated Research System (Gemini API)

#06 FDTR Microscopy Visualizes Microscale Thermal Properties of TIMs, Unveiling Heterogeneous Heat Conduction

Published June 25, 2026 EurekAlert! USA



OVERVIEW

Researchers have developed a groundbreaking frequency-domain thermoreflectance (FDTR) microscopy method to visualize thermal conductivity and interfacial heat transfer in thermal interface materials (TIMs) at the microscale. This novel FDTR platform enables spatially resolved mapping of local thermal properties within sandwich-configured TIM structures, particularly revealing heterogeneities in heat conduction in particle-filled thermal greases. This advancement will accelerate the design and optimization of TIMs crucial for enhancing the reliability of high-performance electronic devices.

Groundbreaking FDTR Microscopy Visualizes Microscale Thermal Properties of Thermal Interface Materials

Researchers have developed a groundbreaking technique using frequency-domain thermoreflectance (FDTR) microscopy to meticulously visualize the thermal conductivity and interfacial heat transfer within thermal interface materials (TIMs) at the micron scale. This new FDTR microscopy platform enables spatially resolved mapping of localized thermal properties within sandwich-configured TIM structures. This capability allows for a detailed elucidation of heat conduction heterogeneities within TIMs, especially in particle-filled thermal greases, which were previously undetectable with macroscopic measurements.

Technical Details and Applications in TIM Design

The FDTR microscopy method operates on the principle of irradiating a material surface with laser pulses and subsequently measuring the high-temporal-resolution changes in reflectivity caused by temperature variations. This technique combines micron-order spatial resolution with nanosecond-order temporal resolution, allowing for direct observation of how subtle internal structures and defects in materials affect thermal conduction. This development makes it possible to identify localized thermal conduction barriers and thermal bridges within TIMs, directly contributing to the design and optimization of TIMs, which are critical for high-performance electronic devices.

Contribution to Solving Thermal Issues in Electronics and Future Outlook

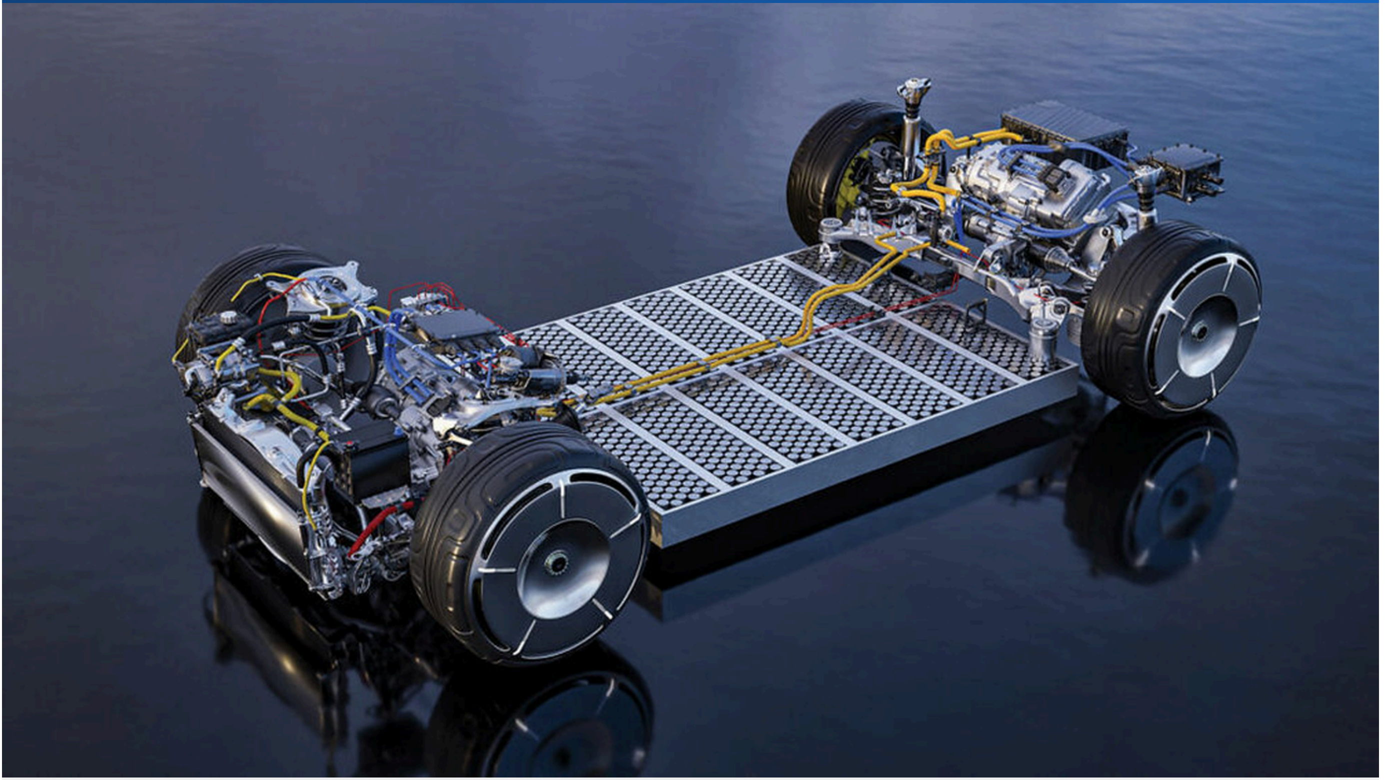
For high-performance electronic devices such as CPUs, GPUs, and AI accelerators, efficiently dissipating generated heat to the exterior is essential for stable operation and extended lifespan. TIMs are widely used as materials that facilitate heat transfer between heat sources and heat sinks, but their performance is significantly influenced by the material's microstructure and interfacial properties. The new FDTR microscopy serves as a powerful tool for deeply understanding the thermal conduction mechanisms within TIMs, thereby accelerating the development of TIMs with superior thermal conductivity. In the future, this technology is expected to contribute to material innovation in a wide range of fields where thermal management is crucial, including next-generation semiconductor packaging, EV batteries, and LED lighting, thereby dramatically improving device performance and reliability.

Source: https://www.eurekalert.org/news-releases/1133178

Collected: June 26, 2026 | Automated Research System (Gemini API)

#07 Diverse Adhesive Innovations Drive Performance and Safety Advancements in EV Batteries

Published June 25, 2026 adhesives.org USA



OVERVIEW

A wide array of adhesives, from structural bonds to thermal interface materials and fire-retardant coatings, are indispensable for electric vehicle (EV) batteries, boosting their performance, safety, and lifespan. These materials are critical for cell-to-module bonding, high-voltage insulation, efficient heat transfer, and ensuring safety during thermal events. Next-generation architectures like cell-to-pack and cell-to-chassis demand composite adhesive solutions that simultaneously offer structural integrity, thermal conductivity, and electrical insulation.

IN DEPTH

Diverse Adhesives Fundamentally Transform EV Battery Performance and Safety

In the evolution and widespread adoption of electric vehicles (EVs), a diverse range of adhesives plays an indispensable role in enhancing battery performance, safety, and lifespan. From structural adhesives, thermally conductive adhesives, thermal gap fillers, and thermal interface materials to sealants, gasket materials, potting and encapsulating compounds, dielectric, conductive, and even fire-retardant coatings, a wide spectrum of adhesive and sealant solutions are strategically deployed in various parts of battery systems. These materials make critical contributions to robust bonding of battery cells and modules, reliable insulation of high-voltage components, efficient heat transfer, and crucially, improving safety during thermal events.

New Battery Architectures Demand Multi-functional Adhesive Solutions

EV battery design is rapidly transitioning towards more highly integrated architectures, such as 'Cell-to-Pack (CtP)' and 'Cell-to-Chassis (CtC)'. These innovative designs place strong demands on adhesives to provide not just a single function, but a combination of multiple performances. Specifically, structural integrity to ensure the overall rigidity of the battery pack, efficient thermal conductivity to enable heat transfer from battery cells to the cooling system, and electrical insulation to guarantee safety in high-voltage environments are simultaneously required. To meet these complex demands, high-performance polyurethane, epoxy, and silicone-based adhesives are being developed, which also contribute to lightweighting and maximizing spatial efficiency.

The Future of Adhesive Technology Pursues Safety and Sustainability

The role of adhesives in EV batteries extends beyond mere bonding. The extended lifespan of batteries, optimization of charging performance, and crucially, protection against potential hazards like thermal runaway, depend on advancements in adhesive and sealant materials. Particularly during a thermal runaway event, intumescent sealants and flame-retardant coatings act as barriers to prevent the spread of fire and heat, contributing to occupant safety. Looking ahead, accelerated developments are expected in sustainable aspects, such as recyclability and the introduction of bio-based materials, along with improvements in manufacturing efficiency through integration with automated dispensing systems, and the creation of new materials that guarantee reliability under increasingly harsh environmental conditions. Adhesive technology continues to be a core innovation driving the sustainable growth of the EV industry and the realization of a safer, higher-performance mobility society.

Source: https://www.inyerself.com/post/what-adhesives-are-used-in-electric-vehicle-batteries

Collected: June 26, 2026 | Automated Research System (Gemini API)

#08 ATLANT 3D, A*STAR IMRE, and NAMIC Establish AI-Driven Materials Discovery Hub in Singapore

Published June 24, 2026 PR Newswire Singapore

OVERVIEW

ATLANT 3D, Singapore's A*STAR Institute of Materials Research and Engineering (A*STAR IMRE), and the National Additive Manufacturing Innovation Cluster (NAMIC) have signed an MOU to establish an Advanced Materials Development Hub (A-HUB) in Singapore. This tripartite partnership combines ATLANT 3D's DALP® technology with A*STAR IMRE's materials engineering expertise and NAMIC's additive manufacturing capabilities to advance AI-driven materials discovery. The hub will explore applications in advanced packaging, silicon photonics, and semiconductor manufacturing, aiming to position Singapore as a leading center for advanced materials development in the Asia-Pacific.

ATLANT 3D, A*STAR IMRE, and NAMIC Launch New AI-Driven Materials Discovery Hub in Singapore

ATLANT 3D, a leader in innovative 3D printing technology, has entered into a strategic Memorandum of Understanding (MOU) with Singapore's A*STAR Institute of Materials Research and Engineering (A*STAR IMRE) and the National Additive Manufacturing Innovation Cluster (NAMIC). The objective of this partnership is to establish an 'Advanced Materials Development Hub' (A-HUB) in Singapore, dedicated to pioneering AI-driven materials discovery. This collaborative initiative is set to become a critical foundation for accelerating materials innovation in the rapidly evolving fields of semiconductors, photonics, and advanced packaging.

Integration of DALP® Technology with Singaporean Expertise

The A-HUB will integrate ATLANT 3D's proprietary DALP® (Direct Atomic Layer Processing) technology with A*STAR IMRE's world-class, deep expertise in materials engineering, and NAMIC's robust additive manufacturing capabilities. DALP® technology enables precise material deposition at the atomic layer scale. By combining this with AI and machine learning, the process of discovering, synthesizing, and characterizing new materials can be dramatically accelerated. This synergy will facilitate the rapid exploration and optimization of high-performance materials, a feat often challenging with traditional material development methods.

Key Application Areas and Global Impact

The establishment of this advanced materials development hub will primarily focus on the following application areas:

- **Advanced Packaging:** Developing higher performance and more reliable material solutions for next-generation semiconductor packaging, addressing the needs of AI and high-performance computing.
- **Silicon Photonics:** Exploring innovative materials for silicon photonic devices, which are crucial for improving optical communication and data transfer speeds.
- **Semiconductor Manufacturing:** Developing new materials that contribute to yield improvement and cost reduction in semiconductor manufacturing processes, which are increasingly miniaturized and high-performing.

This partnership holds strategic significance for Singapore, solidifying its position as a vital hub for advanced materials research and development in the Asia-Pacific region. The A-HUB is expected to contribute to the global materials science community and serve as an open innovation platform for solving complex technological challenges faced by industries. In the long term, this initiative is anticipated to be a driving force behind material science breakthroughs essential for realizing sustainable, high-performance future electronics and devices.

Source: https://www.prnewswire.com/news-releases/atlant-3d-astar-imre-and-namic-sign-mou-to-advance-ai-driven-materials-discovery-in-singapore-302807648.html

Collected: June 26, 2026 | Automated Research System (Gemini API)

#09 Sheen Technology Enhances EV Range and Safety through Advanced Battery Thermal Management

Published June 18, 2026 Sheen Technology China

News Republic

SHEEN'S NEWS

OVERVIEW

Sheen Technology emphasizes that effective thermal management is crucial for extending EV battery range and recommends precise application of thermal pastes or greases. Applying thin, uniform gap filler layers and utilizing phase change materials optimizes heat absorption and dissipation, stabilizing battery core temperatures. Advanced approaches, including additive manufacturing of silicon carbide structures and integrated aluminum alloy cold plates, further boost thermal conductivity and heat dissipation efficiency, improving overall EV performance and safety.

Sheen Technology Improves EV Range and Safety with Innovative Thermal Management

Sheen Technology advocates that thermal management for New Energy Vehicle (NEV) batteries is absolutely critical for extending the range of electric vehicles (EVs). The company recommends the precise application of appropriate thermal pastes or greases to maintain stable operating temperatures for batteries. Overheating can lead to performance degradation, reduced lifespan, and even increased risk of thermal runaway, making efficient thermal management solutions indispensable for ensuring EV reliability and safety.

Precise Heat Transfer and Advanced Material Technologies

In EV battery thermal management, applying a thin and uniform layer of gap filler minimizes thermal resistance between battery cells and cooling components, maximizing heat transfer efficiency. Furthermore, the utilization of Phase Change Materials (PCMs) contributes to stabilizing battery core temperatures by absorbing and storing heat when the battery reaches a specific temperature range, and then releasing it. This mitigates thermal stress on batteries even under demanding conditions, helping to maintain their performance.

Next-Generation Thermal Management Technologies and Outlook

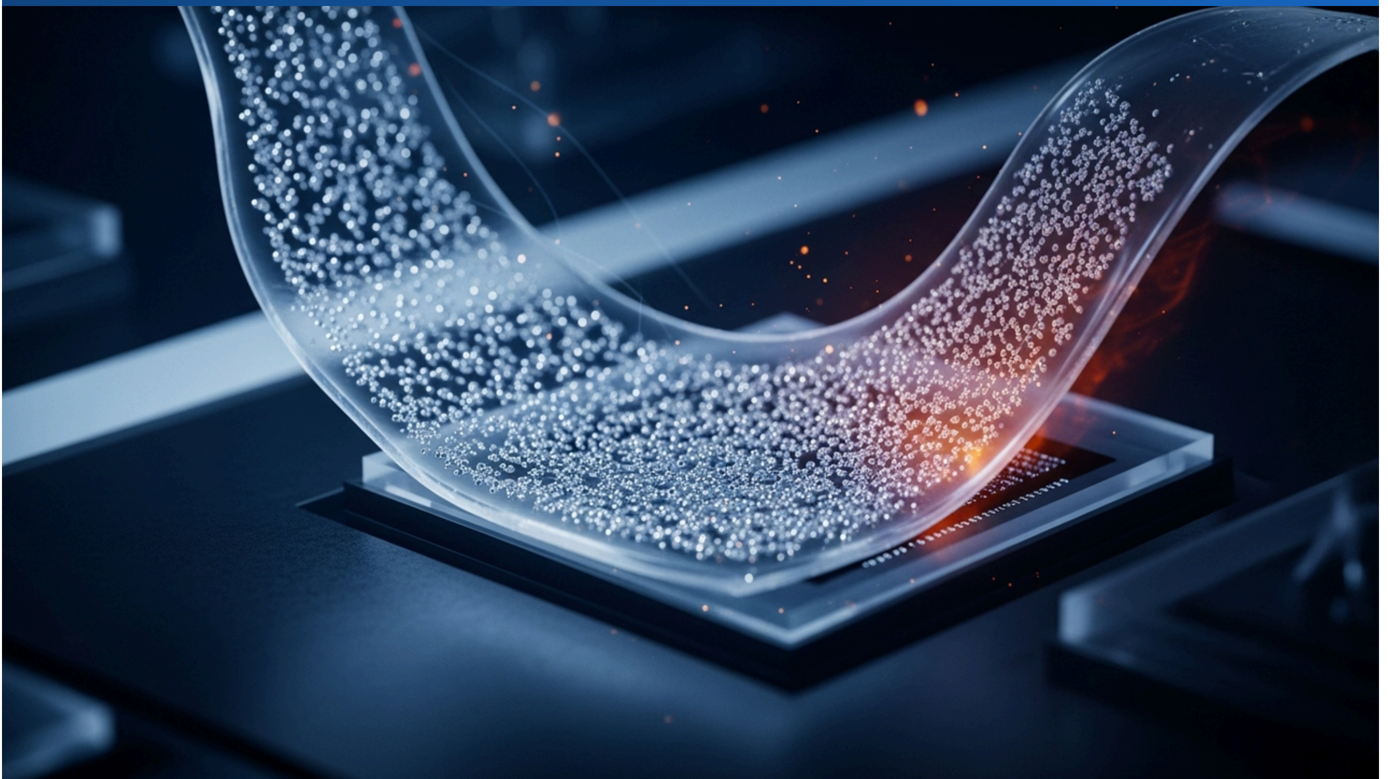
Sheen Technology is also focusing on more advanced thermal management technologies, including the additive manufacturing (3D printing) of silicon carbide (SiC) structures and the integration of aluminum alloy cold plates. SiC, with its high thermal conductivity and mechanical strength, is advantageous for forming heat sinks and cooling channels with complex internal geometries. This allows for maximizing the heat dissipation surface area per unit volume, significantly enhancing thermal conductivity. The combination with aluminum alloy cold plates provides excellent heat dissipation capabilities while being lightweight, further increasing the overall thermal management efficiency of EV battery packs. These technologies directly lead to extended EV range, improved fast-charging capabilities, prolonged battery lifespan, and minimized risk of thermal runaway. Sheen Technology's efforts are expected to continue growing in importance as foundational technologies supporting the sustainable growth of the NEV market.

Source: https://www.sheenthermal.com/thermal-management-for-new-energy-vehicle-batteries.html

Collected: June 26, 2026 | Automated Research System (Gemini API)

#10 Flexible Epoxy and Sintered Silver Micro-fillers Advance Low-Temperature Sintering and Reliability in WBG Semiconductor Packaging

Published June 23, 2026 ResearchGate Global



OVERVIEW

A new study reports that die-attach materials combining flexible epoxy binders with sintered silver (s-Ag) micro-fillers accelerate low-temperature sintering and significantly enhance interconnection properties and reliability in wide bandgap (WBG) semiconductor packaging. The research evaluates s-Ag material properties, tensile mechanical characteristics, and reliability under high-temperature storage, power cycling, and thermal shock tests, providing effective design parameters. This innovation maximizes the low energy loss and high-temperature operating capabilities of WBG devices, driving semiconductor industry advancements.

IN DEPTH

Flexible Epoxy and Sintered Silver Micro-fillers Revolutionize Low-Temperature Sintering and Reliability in WBG Semiconductor Packaging

Groundbreaking research in wide bandgap (WBG) semiconductor packaging has unveiled a novel die-attach material that utilizes a flexible epoxy as a binder in conjunction with sintered silver (s-Ag) micro-fillers. This innovative approach accelerates the sintering process at lower temperatures while significantly enhancing both interconnection properties and overall reliability. This method offers a distinct advantage over traditional high-temperature sintering, reducing energy consumption and enabling applicability to a wider range of substrate materials.

Technical Details and Evaluation Methodology

The study provides a detailed review of the fundamental properties of s-Ag materials and their tensile mechanical characteristics. Crucially, it elucidates the mechanism by which the introduction of flexible epoxy alleviates internal stresses within the sintered silver layer, thereby improving its resistance to external mechanical stresses. For reliability assessment, rigorous stress tests including High-Temperature Storage, Power Cycling, and Thermal Shock Tests were employed. These tests validated the long-term stability and robustness of the s-Ag die-attach, providing effective design parameters to ensure the reliability of WBG devices under harsh operating conditions.

Impact on WBG Semiconductor Devices and Future Prospects

WBG semiconductor devices, such as SiC and GaN power devices, offer significant advantages over traditional silicon-based devices in terms of lower energy loss, higher switching frequencies, and enhanced high-temperature operation capabilities. However, realizing their full potential necessitates thermally and mechanically robust packaging. The low-temperature sintered s-Ag die-attach material with flexible epoxy, as demonstrated in this research, represents a pivotal technology for addressing these challenges in WBG devices. This technology is expected to accelerate the adoption of WBG devices in a wide range of applications, including more compact and efficient power electronics, EVs, and renewable energy systems. This advancement in semiconductor packaging technology is poised to play a crucial role in enhancing the performance and sustainability of next-generation electronics.

Source:
https://www.researchgate.net/publication/403069969_Binder_Chemistry_with_Flexible_Epoxy_for_Accelerated_Lo
Temperature_Sintering_of_Silver_Micro-fillers_and_Enhanced_Interconnection_Properties

Collected: June 26, 2026 | Automated Research System (Gemini API)

#11 openPR.com Reports on The Business Research Company's "Thermal Interface Material Dispensing System Market" Overview

Published June 25, 2026 openPR.com (The Business Research Company) Global

OVERVIEW

This article outlines a market research report published by The Business Research Company via openPR.com. The report projects significant expansion for the Thermal Interface Material (TIM) dispensing system market, driven by EV power electronics, semiconductor device miniaturization, and the rise of AI-driven smart manufacturing. Market innovation is concentrated on low-contamination formulation technologies to minimize outgassing and reduce siloxane volatility, ensuring clean and reliable thermal interfaces for sensitive electronics.

IN DEPTH

Overview of The Business Research Company's Market Research Report

Through openPR.com, The Business Research Company has released an overview of its report on the Thermal Interface Material (TIM) Dispensing System Market. This market is projected for substantial growth, driven by several factors including the increasing demand from Electric Vehicle (EV) power electronics, the ongoing miniaturization of semiconductor devices, and the rapid emergence of AI-driven smart manufacturing systems.

Report Summary

- **Market Focus:** Thermal Interface Material (TIM) Dispensing System Market
- **Key Growth Drivers:** EV power electronics, semiconductor device miniaturization, AI-driven smart manufacturing systems
- **Primary Innovation Areas:** Low-contamination formulation technologies (minimizing outgassing, reducing siloxane volatility)

Key Findings

The report highlights that innovation within the TIM dispensing system market is strongly focused on low-contamination formulation technologies, particularly those that minimize outgassing and reduce siloxane volatility. This is critically important for sensitive electronic devices, especially advanced semiconductors and optical systems, to ensure the cleanliness and reliability of the thermal interface. Such technological advancements guarantee that dispensed TIMs do not negatively impact device performance or long-term reliability. The market is witnessing an increasing demand for more automated and controlled dispensing solutions in manufacturing processes for advanced electronic devices that require high-precision application.

About the Publisher

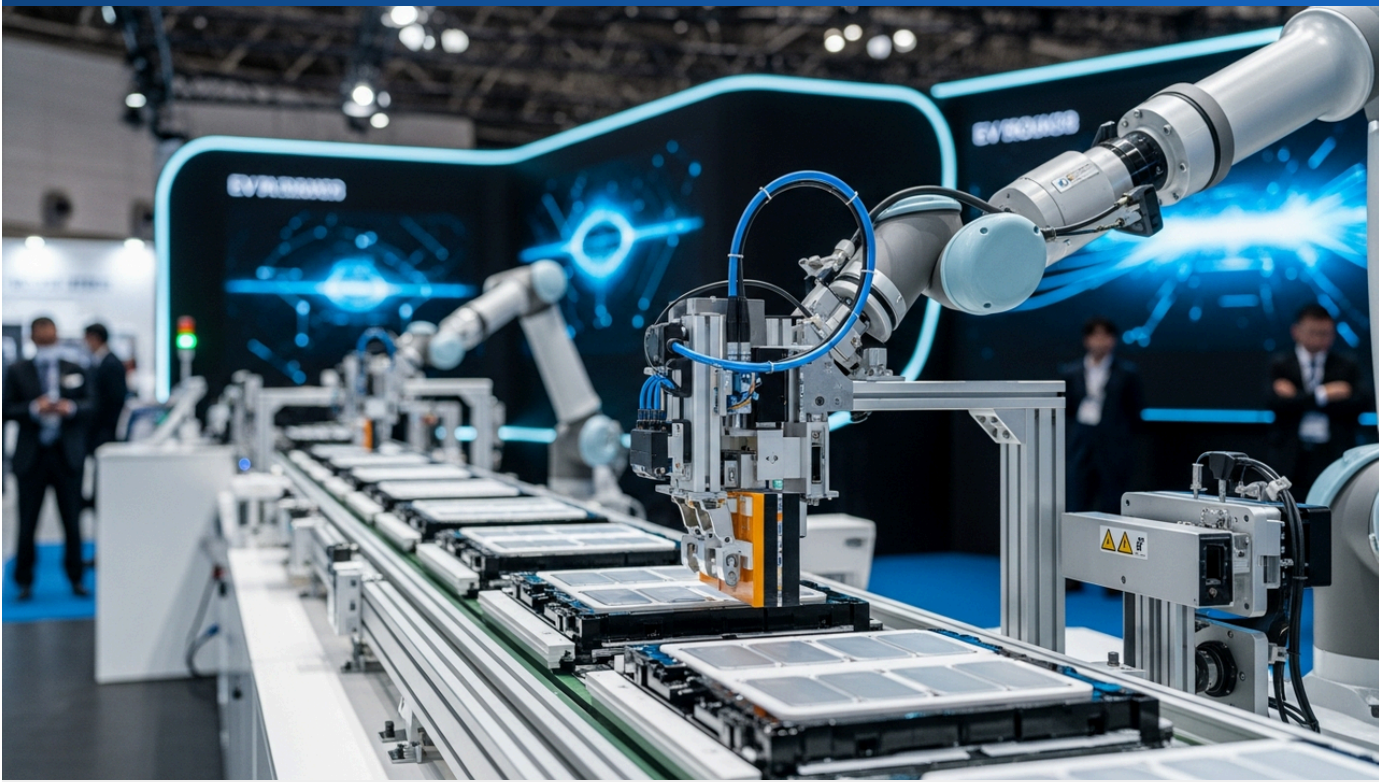
The Business Research Company is a global provider of detailed market research reports, analysis, and forecasts. Leveraging extensive industry knowledge and data analysis capabilities, they offer deep insights to clients for strategic business decision-making.

Source: https://www.openpr.com/news/4560737/thermal-interface-material-tim-dispensing-system-market

Collected: June 26, 2026 | Automated Research System (Gemini API)

#12 tesa Unveils Automated Adhesive Solutions for EV Battery Assembly at Automotive Engineering Exposition 2026 in Japan

Published June 24, 2026　Auto-Innovations International　Japan／Germany



OVERVIEW

tesa showcased advanced adhesive tapes and automated structural sealing solutions for EV manufacturing at the Automotive Engineering Exposition 2026 in Yokohama and Nagoya, Japan. In collaboration with Japan Plasmatreat, atmospheric plasma technology combined with structural adhesives has been proven to enhance surface wettability and bonding reliability in automotive paint shops and battery assembly lines. Specifically, tesa's dielectric and structural adhesive tapes serve as wrapping for prismatic and cylindrical cells and as waterproof barriers for battery packs, boosting EV performance and safety.

IN DEPTH

tesa Presents Automated Adhesive Solutions for EV Battery Assembly at Automotive Engineering Exposition 2026 in Japan

tesa, a global leader in adhesive tapes, showcased its advanced adhesive tapes and automated structural sealing solutions specifically designed for electric vehicle (EV) manufacturing at the Automotive Engineering Exposition 2026 held in Yokohama and Nagoya, Japan. This announcement addresses the rapid proliferation of EVs and the consequent sophistication of battery assembly processes, making significant contributions to improving production efficiency and quality.

Integration of Surface Treatment Technology through Collaboration with Japan Plasmatreat

Through a strategic collaboration with Japan Plasmatreat, tesa has developed an innovative solution that further enhances bonding reliability. By combining atmospheric plasma technology with structural adhesives, surface wettability in automotive paint shops and battery assembly lines is significantly improved, leading to enhanced adhesive adhesion. This technology particularly demonstrates its value in bonding dissimilar materials and complex-shaped components that were challenging with conventional surface treatments. Optimizing surface pre-treatment reduces the risk of bonding failures and ensures long-term product reliability.

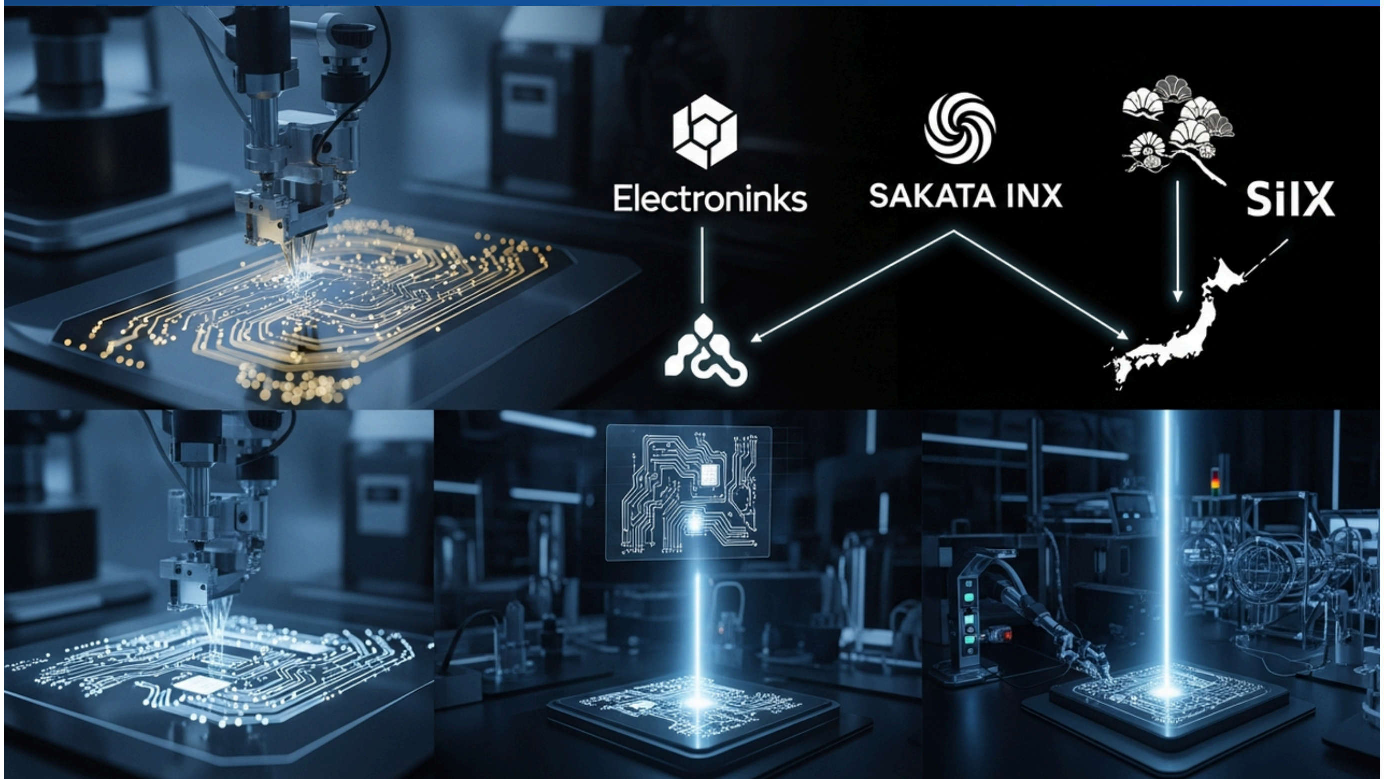
tesa's Adhesive Tapes Enhance EV Battery Performance and Safety

The exhibited tesa dielectric and structural adhesive tapes play a critical role in key EV battery components. Specifically, they are used for wrapping prismatic and cylindrical battery cells, providing both electrical insulation between cells and mechanical protection. Furthermore, these adhesive tapes act as waterproof barriers for battery packs, preventing the ingress of moisture and external contaminants, thereby extending battery life and enhancing safety. This solution also contributes to automating the assembly processes of battery modules and packs, reducing manual labor, and consequently lowering manufacturing costs and increasing production capacity. tesa's technology offers a comprehensive approach to the challenges faced by the EV industry, namely performance improvement, safety assurance, and manufacturing efficiency.

Source: https://www.auto-innovations.net/news/112248-automated-adhesives-optimize-ev-battery-assembly

#13 Electroninks Partners with SAKATA INX and SIIX to Bring Metal-Complex Conductive Ink Technology to Japanese Market

Published June 22, 2026 IMAPS 3D InCites Content Platform Japan／USA



OVERVIEW

Electroninks has announced a strategic partnership with Japan's SAKATA INX Corporation and SIIX Corporation to introduce its metal-complex conductive ink technology to the Japanese electronics and semiconductor industries. This collaboration combines material innovation, manufacturing expertise, and a nationwide distribution network to accelerate the adoption of advanced conductive inks in advanced semiconductor packaging, automotive, consumer electronics, and printed electronics markets. This initiative is expected to facilitate high-performance, lower environmental impact electronic component manufacturing.

IN DEPTH

Electroninks Expands Metal-Complex Conductive Ink Technology into Japanese Market via Partnership with Japanese Companies

Electroninks, an innovative materials technology company, has formed a strategic partnership with Japan's SAKATA INX Corporation and SIIX Corporation. The objective of this alliance is to introduce Electroninks' proprietary metal-complex conductive ink technology into Japan's vast electronics and semiconductor industries, thereby accelerating its adoption. This partnership will merge material innovation with manufacturing expertise and a nationwide distribution network, contributing to the realization of new electronic component manufacturing processes.

From Advanced Packaging to Printed Electronics

The primary target markets for this collaboration are diverse and include advanced semiconductor packaging, which is becoming increasingly high-performance; the rapidly electrifying automotive industry; sophisticated consumer electronics; and the printed electronics market, noted for its environmentally friendly manufacturing processes. Electroninks' metal-complex conductive inks allow for low-temperature sintering and excel in forming fine patterns compared to conventional conductive materials. This enables simplified manufacturing processes, reduced energy consumption, and the realization of more complex circuit designs.

Contribution to Sustainable Electronic Component Manufacturing and Future Outlook

SAKATA INX Corporation will contribute its deep expertise in ink manufacturing, while SIIX Corporation will provide its extensive experience in Electronics Manufacturing Services (EMS) and a global customer base. This tripartite cooperation will not only enhance the performance and reliability of conductive inks but also contribute to the overall efficiency of the supply chain. In the future, this advanced conductive ink technology is expected to become a standard for more sustainable and environmentally friendly electronic component manufacturing processes. Its application scope is particularly poised for significant expansion in the disposable device and flexible electronics sectors, holding the potential to create new market opportunities. This partnership marks a crucial step in fostering technological innovation within Japanese industry and contributing to the advancement of the global electronics sector.

Source: https://www.3dincites.com/2026/06/electroninks-expands-global-footprint/

Collected: June 26, 2026 | Automated Research System (Gemini API)

#14 Henkel Expands Paper Coatings Portfolio for Sustainable Packaging Solutions, Addressing EU Regulations

Published June 23, 2026 ProPack.pro Germany

OVERVIEW

Henkel Adhesive Technologies has expanded its paper coatings portfolio to meet regulatory requirements like the EU Packaging and Packaging Waste Regulation (PPWR). By offering new water-based barrier coatings and heat-seal coatings, Henkel enhances the functionality of paper-based packaging and strengthens its 'Design for Recycling' approach. This initiative supports the transition to sustainable packaging solutions in both food and non-food sectors, contributing to environmental impact reduction and a circular economy.

IN DEPTH

Henkel Significantly Expands Coating Portfolio for Sustainable Paper Packaging to Meet EU Regulations

Henkel Adhesive Technologies, a global leader in adhesive technology, has significantly expanded its portfolio of paper coatings to address increasingly stringent regulatory requirements, such as the European Union's (EU) Packaging and Packaging Waste Regulation (PPWR). This strategic move aims to accelerate the market's transition towards sustainable packaging solutions, contributing to environmental protection and improved resource efficiency.

Innovation in Water-Based Barrier Coatings and Heat-Seal Coatings

Henkel's newly offered solutions include the following key technologies:

- **Water-Based Barrier Coatings:** These provide excellent barrier properties against water vapor, oxygen, and grease for paper-based packaging materials, replacing traditional plastic films. This design allows for extending the shelf life of food products while maintaining the recyclability of the packaging material.
- **Heat-Seal Coatings:** These exhibit strong heat-seal strength even on paper-based substrates, ensuring product integrity while maintaining production efficiency on high-speed packaging lines. These coatings are developed based on the concept of 'Design for Recycling,' aiming for easy processing of used packaging materials within existing recycling infrastructures.

Impact on Food and Non-Food Sectors and Future Outlook

These innovative paper coating solutions are widely applicable in both food packaging (e.g., snacks, coffee, frozen foods) and non-food packaging (e.g., detergents, personal care products). Henkel's technology provides brand owners with powerful tools to reduce plastic usage, enhance recyclability, and meet consumer demands for sustainability. This portfolio expansion demonstrates Henkel's commitment to reinforcing its drive towards a circular economy and broadening the frontier of sustainable material solutions. Moving forward, as regulatory shifts and consumer preferences accelerate, Henkel's initiatives are expected to be a critical factor in further driving transformation across the entire packaging industry.

Source: https://propack.pro/henkel-expands-paper-coatings-portfolio-for-more-sustainable-solutions/

Collected: June 26, 2026 | Automated Research System (Gemini API)

#15 Cool It Thermo-Tec Offers 2000°F Rated Reflective Foil and Ceramic Coated Mats for EV Battery Thermal Runaway Containment

Published June 21, 2026   Cool It Thermo-Tec   USA

OVERVIEW

Cool It Thermo-Tec provides 2000°F rated reflective foil and ceramic coated mats as automotive thermal management solutions, specifically repurposed for EV battery thermal runaway containment. These products are also used for heat and noise control in exhaust systems and vehicle cabins, addressing demands for flame-retardant, non-conductive, and high-temperature barrier materials. As the EV market grows, the importance of these advanced thermal and fire protection materials for ensuring battery safety and durability is increasing.

IN DEPTH

Cool It Thermo-Tec Provides 2000°F Rated Reflective Foil for EV Battery Thermal Runaway Containment

Cool It Thermo-Tec, a leading company in automotive thermal management solutions, offers innovative thermal and fire protection materials that play a crucial role in ensuring the safety of electric vehicle (EV) batteries. The company's flagship products, including 2000°F (approximately 1093°C) rated reflective foil and ceramic coated mats, are specifically being repurposed for EV battery Thermal Runaway Containment. Their flame-retardant, non-conductive, and high-temperature barrier performance are highly valued.

Diverse Automotive Applications and Material Properties

Cool It Thermo-Tec's products are widely used not only for EV battery thermal runaway containment but also for general automotive exhaust systems and heat and noise control within vehicle cabins. These materials possess a combination of properties:

- **Flame Retardancy:** Delays or stops the spread of flames during a fire, enhancing occupant safety.
- **Non-Conductivity:** Prevents the formation of unintended current paths in high-voltage systems, reducing the risk of electrical short circuits.
- **High-Temperature Barrier:** Maintains its structure and performance even when exposed to extremely high temperatures, effectively blocking heat diffusion.

These properties are essential for preventing localized abnormal heating that may occur within an EV battery pack from spreading to adjacent cells, modules, or even the entire vehicle cabin.

Growth of the EV Market and the Future of Thermal and Fire Protection Materials

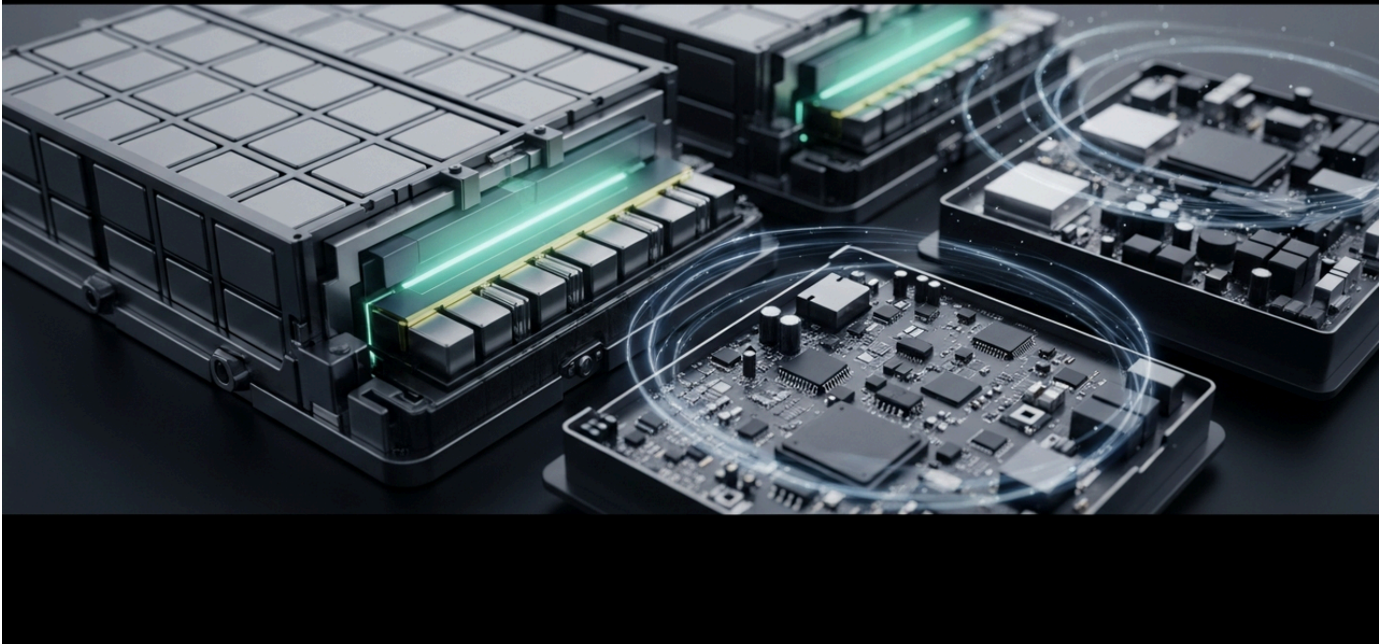
As the electric vehicle market continues its exponential growth, concerns about safety are also rising with the increasing energy density of battery packs. Thermal runaway containment is an unavoidable challenge for the commercial success of EVs and gaining consumer trust. High-performance thermal and fire protection materials offered by specialized companies like Cool It Thermo-Tec provide crucial solutions to this challenge. Moving forward, as EV designs further evolve and battery technologies become more complex, the demand for these materials will only increase. The company is expected to contribute to enhancing the safety and performance of next-generation EVs by providing lighter, thinner, and higher-performance thermal and fire protection solutions through continuous research and development.

Source: https://electronics.alibaba.com/buyingguides/cool-it-thermo-tec-guide-heat-+-sound-protection-for-cars

Collected: June 26, 2026 | Automated Research System (Gemini API)

#16 Insulating Boron Nitride Thermal Conductive Material Significantly Enhances Safety and Performance of EV Batteries and Power Modules

Published June 23, 2026 Tech Briefs USA



OVERVIEW

Insulating Boron Nitride (BN) thermal conductive material is reported as crucial for significantly improving the safety and performance of EV batteries and power modules. The high thermal conductivity of BN fillers minimizes hotspots and uniformly disperses heat in EV batteries. Its excellent dielectric strength blocks stray currents, preventing short circuits while maintaining efficient heat dissipation. The inertness and stability of hexagonal BN provide resistance to oxidation and high-temperature degradation, ensuring long-term reliability.

IN DEPTH

Insulating Boron Nitride Thermal Conductive Material Dramatically Enhances Safety and Performance of EV Batteries and Power Modules

In the realm of electric vehicle (EV) batteries and power modules, insulating Boron Nitride (BN) thermal conductive material has been reported to play an extremely critical role in significantly improving device safety and performance. Due to its unique properties, BN offers an ideal solution for thermal management challenges in these high-power, high-thermal-density applications.

Thermal Conductivity and Electrical Properties of BN Fillers

BN fillers, with their high thermal conductivity, are capable of minimizing hotspots that occur within EV batteries and power modules, and uniformly dispersing heat throughout the system. This reduces the risk of performance degradation and damage due to localized overheating, thereby extending device lifespan and enhancing reliability. Furthermore, BN possesses excellent dielectric strength (electrical insulation), which effectively blocks the occurrence of stray currents in high-voltage environments, preventing electrical short circuits while maintaining efficient heat dissipation. This property is particularly vital in EV applications where safety is paramount.

Stability and Long-Term Reliability of Hexagonal BN

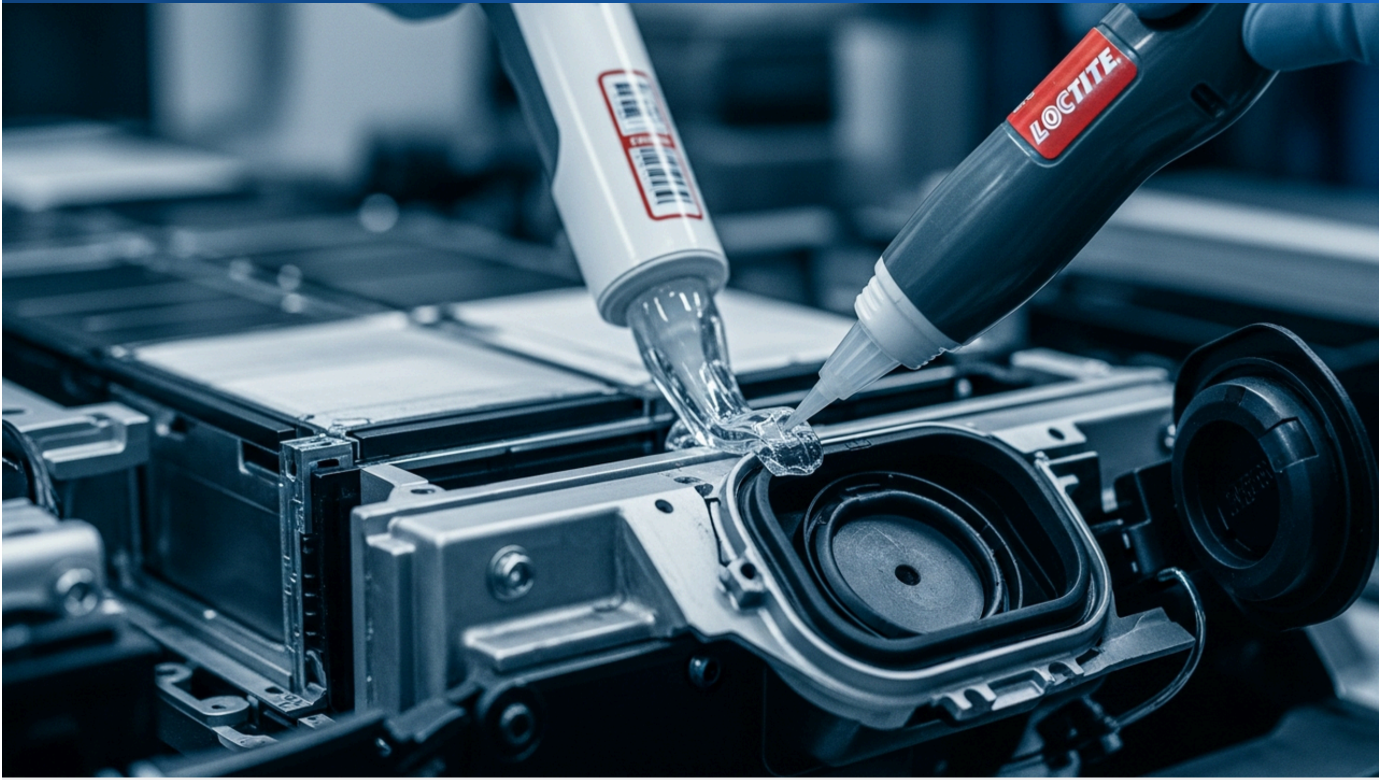
Hexagonal Boron Nitride (h-BN), in particular, provides long-term reliability under harsh operating conditions due to its chemical inertness and thermal stability. h-BN exhibits high resistance to oxidation and chemical degradation at high temperatures, and when incorporated as a compounding material in adhesives and compounds, it maintains its performance over extended periods. This ensures stable thermal management performance throughout the entire service life of EV batteries and power modules. This advanced material technology directly contributes to extending EV range, improving fast-charging capabilities, and above all, ensuring occupant safety, serving as a critical foundation for the realization of next-generation e-mobility.

Source: https://www.sheenthermal.com/insulating-boron-nitride-thermal-conductive-material.html

Collected: June 26, 2026 | Automated Research System (Gemini API)

#17 Henkel's Loctite Unveils New Adhesive Solutions for E-Mobility Enabling Safe and Sustainable EV Repairs

Published June 24, 2026 Engineer Live Germany



OVERVIEW

Henkel's Loctite brand has launched new adhesive solutions for the e-mobility market, enabling safe and sustainable repairs for electric vehicles (EVs). This portfolio aims to extend EV lifespans and reduce their environmental footprint. The announcement reflects Henkel's ongoing commitment to innovation and sustainability in the automotive sector, setting new standards for EV maintenance and repair.

IN DEPTH

Henkel's Loctite Unveils E-Mobility Adhesive Solutions Enabling Safe and Sustainable EV Repairs

Henkel, a global supplier of adhesives, sealants, and functional coatings, has announced a new portfolio of innovative adhesive solutions for the e-mobility market under its flagship Loctite brand. These new products are primarily aimed at enabling safe and sustainable repairs for electric vehicles (EVs). This initiative is expected to significantly contribute to extending the lifespan of EVs and, consequently, reducing the overall environmental footprint of the automotive industry.

New Challenges in EV Repair and Loctite's Solutions

The increasing complexity of EV structures and battery systems presents new challenges for repair processes. EV-specific requirements exist, such as high-voltage components, lightweight composite materials, and thermal management systems, which are difficult to address with conventional automotive repair techniques. Loctite's new adhesive solutions are specifically designed to meet these challenges, offering the following key benefits:

- **Maintaining Structural Integrity:** High-performance structural adhesives that restore original rigidity and strength to EV structural components damaged in collision repairs.
- **Electrical Safety:** Adhesives with excellent dielectric properties to ensure reliable insulation for battery packs and high-voltage cables.
- **Thermal Management:** Thermally conductive adhesives and gap fillers to support efficient heat dissipation in battery systems, reducing the risk of thermal runaway.
- **Sustainability:** Contribution to resource conservation through environmentally friendly formulations and reduced parts replacement via repair.

These products equip repair shops with the tools needed to repair EVs safely, efficiently, and with environmental consideration.

Industry Impact and Henkel's Commitment to Sustainability

The launch of this new portfolio from Loctite strongly reflects Henkel's ongoing commitment to innovation and sustainability in the automotive sector. As EV adoption grows, the demand for efficient and reliable repair solutions is expected to soar. By addressing this demand, Henkel enhances the value of EVs throughout their lifecycle and serves as a model for applying circular economy principles to the automotive industry. Going forward, the company will further strengthen cooperation with automotive manufacturers and repair service providers, playing an indispensable role in the sustainable development of the e-mobility ecosystem.

Source: https://engineerlive.com/new-adhesive-solutions-e-mobility-loctite/

Collected: June 26, 2026 | Automated Research System (Gemini API)

#18 Henkel Launches LOCTITE MS 9650 Silane-Modified Adhesive for Automotive Displays and TEROSON EP 52 Next-Gen Structural Adhesive for EVs

Published June 26, 2026 Henkel Adhesives / MarkNtel Advisors Germany

OVERVIEW

Henkel has introduced two innovative adhesive solutions for the automotive market: LOCTITE MS 9650, a silane-modified polymer adhesive designed for automotive display components and lightweight structures, offering strong adhesion, vibration resistance, UV durability, and long-term flexibility while meeting low-VOC requirements. Concurrently, the new TEROSON EP 52 Series of structural adhesives enhances vehicle body integrity, durability, and vibration damping for automotive manufacturing. These advancements address the industry's demand for high-performance, sustainable, and lightweight bonding solutions.

IN DEPTH

Key Findings

Henkel has unveiled two significant adhesive innovations for the evolving automotive sector: LOCTITE MS 9650, a high-performance adhesive tailored for automotive display and lightweight structural applications, and the TEROSON EP 52 Series, a next-generation structural adhesive for vehicle body-in-white applications. LOCTITE MS 9650 sets a new benchmark with its exceptional UV durability, long-term flexibility, and compliance with low-VOC standards, crucial for interior and exterior automotive components. The TEROSON EP 52 Series is engineered to dramatically improve the structural integrity, durability, and vibration damping capabilities of car bodies, contributing to enhanced safety and driving comfort in automotive production lines.

Technical Details

LOCTITE MS 9650 leverages advanced silane-modified polymer technology to deliver both robust adhesion and superior vibration resistance. This adhesive is vital for securely bonding automotive display components, ensuring reliability under harsh in-car environmental conditions over extended periods. Its low-VOC formulation also supports greener manufacturing processes. The TEROSON EP 52 Series employs sophisticated epoxy chemistry to offer lightweight, high-strength bonding solutions as alternatives to traditional welding and mechanical fasteners. This facilitates overall vehicle weight reduction, leading to improved fuel efficiency for internal combustion engine vehicles and extended range for electric vehicles. Furthermore, its design specifically contributes to enhancing crash safety performance.

Background and Industry Context

The automotive industry is undergoing profound transformations driven by electrification, lightweighting initiatives, and the proliferation of larger, more sophisticated displays. These trends necessitate adhesive and sealant materials with unprecedented levels of performance and reliability. Adhesives are increasingly becoming a critical joining method, replacing conventional welding and fastening in areas such as EV battery packs, lightweight chassis structures, and complex infotainment systems. Henkel's latest product launches are strategically positioned to address these market dynamics, offering concrete solutions to the design and production challenges faced by automotive manufacturers globally.

Strategic Significance and Outlook

These new adhesive solutions are expected to propel further advancements in automotive bonding technology, fostering the development of safer, more sustainable, and higher-performance vehicles. Specifically, LOCTITE MS 9650 will contribute to improved in-cabin comfort and adherence to environmental regulations, while the TEROSON EP 52 Series will enhance design flexibility for EV structural components and boost manufacturing efficiency. Henkel is committed to solidifying its leadership in automotive adhesive technologies through continuous innovation and customer-centric development.

Source: https://www.henkel-adhesives.com/tz/en/product/underfills/loctite_eccobondfp4530sf0.html

Collected: June 26, 2026 | Automated Research System (Gemini API)

#19 U.S. Department of Energy Drives Research on Novel Encapsulants and Edge Sealing to Boost Thin-Film PV Module Durability

Published June 22, 2026 U.S. Department of Energy (DOE) USA

OVERVIEW

The U.S. Department of Energy (DOE) is advancing research into novel encapsulants and edge sealing methods to significantly enhance the durability and reliability of thin-film photovoltaic (PV) modules under its PVRD2 project. This initiative aims for a comprehensive understanding of layer formation during encapsulation and the temporal evolution of material properties, interfaces, and module behavior under accelerated testing. Additionally, Fraunhofer USA Inc. is exploring non-penetrating adhesive attachment interfaces for securing framed glass modules to asphalt shingles, promising innovations in installation methods.

IN DEPTH

Key Findings

The U.S. Department of Energy (DOE), through its "Photovoltaics Research and Development 2: Modules and Systems (PVRD2)" project, is intensely focused on researching innovative encapsulant and edge sealing technologies that hold the potential to dramatically improve the long-term durability and reliability of thin-film photovoltaic (PV) modules. This concerted effort is designed to mitigate performance degradation of PV modules under harsh environmental conditions, thereby extending their operational lifespan. A core objective is to achieve a profound understanding of layer formation mechanisms during encapsulation and the evolution of material properties, interfacial behaviors, and overall module performance under accelerated testing regimes, establishing a robust foundation for next-generation PV technology development.

Technical / Clinical Details

The PVRD2 project places significant emphasis on optimizing the chemical composition and physical properties of novel encapsulant materials. This includes exploring advanced polymer and composite materials engineered to enhance resistance against moisture ingress, thermal stress, and UV degradation. Concurrently, edge sealing technologies are being developed to effectively prevent the penetration of moisture and contaminants from module edges, which is crucial for overall module reliability. Fraunhofer USA Inc., a key partner, is investigating non-penetrating adhesive attachment interfaces for securing conventional framed glass modules to asphalt shingles. This innovative approach eliminates the need for direct roof penetration, thereby reducing installation costs and improving waterproofing performance, enhancing the versatility and safety of PV system installations.

Background & Context

While solar power continues its global expansion as a vital renewable energy source, the durability and long-term reliability of PV modules remain critical challenges. Thin-film PV modules, despite offering advantages such as lightweight, flexibility, and lower manufacturing costs, are particularly susceptible to degradation from external environmental factors. Traditional encapsulants and sealing techniques often struggle to prevent the ingress of moisture and oxygen and to withstand thermal stresses caused by temperature fluctuations, leading to material damage within the module and subsequent performance decline or failure. This project directly addresses these issues, aiming to provide foundational technologies that will enable broader market acceptance and deployment of advanced thin-film PV technologies.

Strategic Significance & Outlook

The novel encapsulant and edge sealing technologies emerging from the DOE's PVRD2 project are poised to substantially elevate the performance and reliability of thin-film PV modules, consequently improving the cost-effectiveness and sustainability of solar energy. The deeper scientific understanding derived from long-term empirical data will provide indispensable guidance for future PV product design. Furthermore, innovative installation technologies, such as the non-penetrating adhesive attachment interface developed by Fraunhofer USA Inc., promise to simplify installations and reduce costs, accelerating the global adoption of solar power. These advancements represent crucial steps toward supporting the worldwide transition to clean energy.

Source: https://www.energy.gov/cmei/systems/photovoltaics-research-and-development-2-modules-and-systems-pvrd2

#20 Novel Mesogen-Containing Epoxy Monomer Enhances Thermally Conductive Potting Compounds, Balancing Thermal Conductivity and Reliability

Published June 23, 2026 MDPI Switzerland

OVERVIEW

A mesogen-containing reactive epoxy monomer (LCE) was designed, synthesized, and incorporated into commercial thermally conductive epoxy potting compounds to tune their thermal, rheological, and mechanical properties, as well as fracture-surface morphology. This research successfully addressed the challenge of balancing high thermal conductivity with processability and long-term reliability. The introduction of LCE offers a promising solution for advanced thermal management in high-performance electronic devices, contributing to their enhanced durability.

IN DEPTH

Key Findings

To optimize the performance of thermally conductive epoxy potting compounds, a novel mesogen-containing reactive epoxy monomer (LCE) was designed, synthesized, and integrated into existing commercial formulations. This innovative approach demonstrated effective tunability of the potting compound's thermal conductivity, rheological properties, mechanical characteristics, and fracture-surface morphology. This represents a significant stride towards addressing the long-standing challenge of simultaneously achieving high thermal conductivity, excellent processability, and long-term reliability in electronic component thermal management.

Technical Details

The LCE monomer, possessing a liquid crystalline mesogen structure, influences the internal microstructure of the material when incorporated into the epoxy network. This structural control allows for maintaining high thermal conductivity while optimizing rheological properties such as viscosity, thereby improving applicability in manufacturing processes. Precise control over the fracture-surface morphology enhances the material's stress distribution capability and crack propagation resistance, boosting its durability against mechanical impact and thermal cycling. Compared to conventional epoxy potting compounds, LCE-modified materials are expected to exhibit superior thermal stability and stress-relief capabilities, directly contributing to the enhanced reliability of electronic components used under severe thermal conditions, such as high-power semiconductor devices and EV battery modules.

Background & Context

Modern high-performance electronic devices demand increasing integration and operating speeds, leading to significant challenges with escalating heat generation. Effective thermal management is crucial for maintaining device performance, extending lifespan, and ensuring reliability. Thermally conductive potting compounds are vital materials for efficiently dissipating heat from electronic components, but achieving a combination of high thermal conductivity, excellent processability, and mechanical reliability has been technically challenging. This research aims to overcome this trade-off, paving the way for the development of advanced thermal management materials that meet the stringent requirements of next-generation electronic devices.

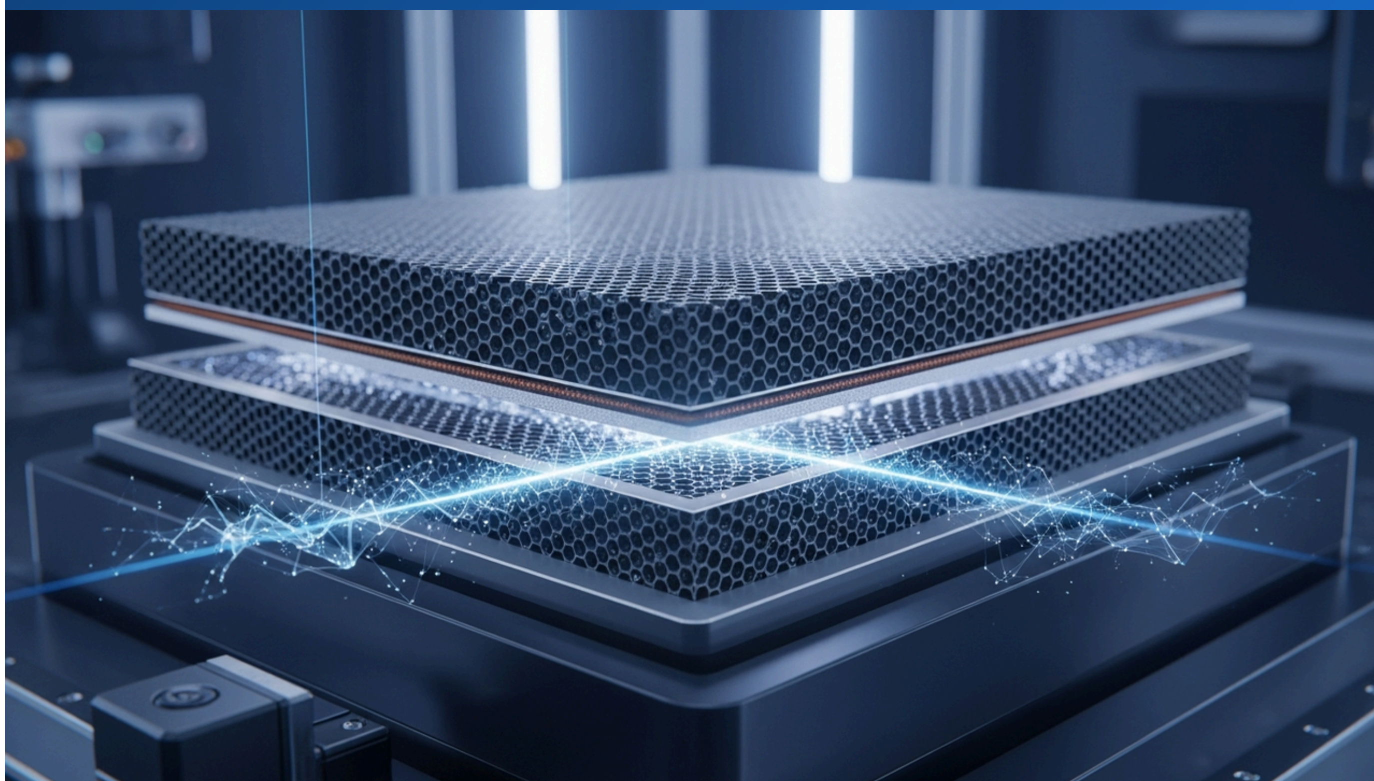
Strategic Significance & Outlook

The technology of thermally conductive potting compounds incorporating mesogen-containing reactive epoxy monomers (LCE) holds the potential to bring about a paradigm shift in electronic device thermal management. As this technology undergoes further optimization and mass production, it is expected to significantly contribute to the miniaturization, power enhancement, and long-term reliability of high-performance applications such as CPUs, GPUs, power modules, LEDs, and EV batteries. Materials that achieve a high balance of thermal conductivity and mechanical reliability are particularly critical for accelerating the development of advanced technologies like autonomous driving systems and AI chips. This innovation is anticipated to spur innovation across the entire electronics industry.

Source: https://www.mdpi.com/2073-4360/18/12/1503

#21 New LGF/PP Honeycomb Composite and High-Shear Strength Adhesive Significantly Improve Lithium-Ion Battery Bottom Plate Impact Protection

Published June 26, 2026 MDPI Switzerland



OVERVIEW

A lightweight bottom plate design based on long glass fiber-reinforced polypropylene (LGF/PP) honeycomb composite has been proposed to address impact safety concerns for power batteries in new energy vehicles. Combined with high-shear strength structural adhesive bonding technology, this design demonstrated significantly improved protection efficiency of the power battery bottom against ball impacts. This breakthrough contributes to enhanced EV safety and lightweighting, representing a pivotal advancement in battery reliability.

IN DEPTH

Key Findings

With the accelerating adoption of new energy vehicles (NEVs), ensuring the impact safety of power battery undersides has become a critical imperative. This research introduces a novel lightweight bottom plate design utilizing a long glass fiber-reinforced polypropylene (LGF/PP) honeycomb composite. When integrated with high-shear strength structural adhesive bonding technology, this design demonstrably and significantly improves the protection efficiency of battery undersides against ball impacts. This not only enhances the structural safety of EVs and occupant protection but also contributes to the overall lightweighting of the vehicle.

Technical Details

The proposed bottom plate design capitalizes on the LGF/PP honeycomb composite's superior energy absorption characteristics and inherent lightweight properties. The LGF/PP honeycomb efficiently dissipates and absorbs energy during impact, thereby mitigating direct damage to the battery cells. Compared to conventional metallic bottom plates, this composite material offers substantial weight reduction, contributing to increased vehicle range and improved energy efficiency. Furthermore, the high-shear strength structural adhesive is crucial for inhibiting delamination within the honeycomb composite and maintaining its structural integrity under impact loads. Adhesive bonding reduces stress concentration points more effectively than traditional fastening methods like riveting or welding, promoting a more uniform distribution of impact energy. Experimental results confirm that this combination of composite material and adhesive bonding provides excellent protection performance in ball impact tests, with particular emphasis on its durability against high-speed impacts.

Background & Context

The rapid expansion of the new energy vehicle market places paramount importance on the safety of battery systems, especially their protection performance during collisions. Battery packs are often located at the bottom of vehicles, making them susceptible to impacts from road debris or accidents. Conventional battery protection materials and designs have faced challenges related to increased weight and complex manufacturing processes. The combination of LGF/PP honeycomb composite and structural adhesive bonding proposed in this research offers a novel solution that achieves both lightweighting and enhanced safety, setting a new standard for NEV design. This represents a significant technological advantage for battery system suppliers and automotive manufacturers seeking to boost their competitiveness.

Strategic Significance & Outlook

This battery bottom plate protection technology, employing LGF/PP honeycomb composites and high-shear strength adhesives, holds substantial potential for advancing the safety and efficiency of new energy vehicles. Widespread adoption of this technology in mass-produced vehicles could significantly reduce the risk of battery fires, further bolstering consumer confidence in EVs. Moreover, the benefits of lightweighting extend beyond increased range, contributing to improved vehicle dynamics and making it an indispensable element for achieving high-performance EVs. Future efforts will focus on further optimization and extensive validation across various impact scenarios, with expectations for expanding the application scope of this technology and contributing to higher safety standards across the automotive industry.

Source: https://www.mdpi.com/2504-4494/10/7/218

#22 Synthomer Divests Volatile Acrylate Monomers Business to Mutares SE & Co. KGaA to Boost Profitability and Cash Generation

Published June 19, 2026   Synthomer   UK

OVERVIEW

Synthomer has announced an agreement to sell Synthomer a.s., its Czech-based acrylate monomers business, to German private equity firm Mutares SE & Co. KGaA. This strategic divestment aims to remove a highly cyclical and capital-intensive basic chemicals business from the group portfolio. The transaction is expected to improve Synthomer's profitability and cash generation, allowing it to focus on more specialized and higher-margin areas.

IN DEPTH

Key Findings

Chemicals manufacturer Synthomer has announced the signing of a definitive agreement to divest its Czech-based acrylate monomers business, Synthomer a.s., to Mutares SE & Co. KGaA, a German private equity investment firm. This sale marks a significant step in Synthomer's portfolio restructuring, signifying a withdrawal from a highly cyclical and capital-intensive basic chemicals sector. The transaction is anticipated to strengthen Synthomer's financial position, enabling greater investment and focus on higher-margin, value-added product segments.

Technical Details

Acrylate monomers are crucial chemical intermediates used extensively across various industries, including coatings, adhesives, sealants, and textiles. They are in high demand as primary raw materials for UV-curable resins and pressure-sensitive adhesives. However, their market performance is significantly influenced by crude oil prices and broader macroeconomic fluctuations. While Synthomer's acrylate monomer business possessed substantial production capacity, its market volatility impacted the group's overall performance. Mutares SE & Co. KGaA, specializing in restructuring and enhancing the value of companies in challenging situations, intends to strengthen its portfolio through this acquisition.

Background & Context

The chemical industry, particularly the basic chemicals sector, is characterized by its strong susceptibility to global economic trends, raw material price volatility, and geopolitical risks. Many leading chemical companies are strategically shifting towards more specialized, high-margin specialty chemicals businesses to mitigate these risks and achieve sustainable growth. Synthomer's decision to divest its acrylate monomers business aligns with this broader industry strategic pivot. This divestment creates financial and strategic latitude for the company to concentrate resources on high-growth niche areas, such as recyclable adhesives and high-performance polymers.

Strategic Significance & Outlook

This divestment is a critical step for Synthomer to optimize its business portfolio and accelerate its future growth strategy. By focusing on businesses that generate higher profitability and cash flow, the company aims to enhance shareholder value. The acquisition of the acrylate monomer business by Mutares SE & Co. KGaA opens possibilities for restructuring and exploring new growth opportunities under new ownership. For the adhesives and sealants industry as a whole, strategic moves by key raw material suppliers can influence market supply structures and pricing, making future developments in this area noteworthy.

Source: https://www.synthomer.com/media/company-news/2026/divestment-of-acrylate-monomers/

Collected: June 26, 2026 | Automated Research System (Gemini API)

#23 Henkel Establishes North American Battery Application Center to Accelerate EV Battery Technology Development

Published Date unknown   Henkel Adhesives   Germany

OVERVIEW

Henkel has launched a dedicated Battery Application Center in North America to provide an agile development approach, enabling the long-term success of the electric vehicle (EV) market. The center offers comprehensive application testing capabilities for a wide array of solutions and chemical types, including 1K and 2K thermal interface materials, sealants, structural adhesives, and debonding-on-demand adhesives. This initiative aims to help battery manufacturers and automotive OEMs rapidly and efficiently develop advanced battery solutions.

IN DEPTH

Key Findings

Henkel has established a specialized Battery Application Center in North America to address the rapid growth and evolution of the electric vehicle (EV) market. This strategic investment aims to accelerate the development of EV battery technology and enable the swift, agile delivery of solutions to customers. The center is dedicated to testing and optimizing a comprehensive range of adhesive and sealing solutions essential for the performance, safety, and durability of EV battery packs, spanning from thermal management to structural bonding.

Technical Details

The North American Battery Application Center provides extensive testing capabilities covering materials of various chemical types and formulations. Key solutions include:

- **1K and 2K Thermal Interface Materials (TIMs):** Maximizing heat transfer efficiency from battery cells to cooling systems, preventing overheating, and extending battery life.
- **Sealants:** Protecting battery pack enclosures from moisture, dust, and other environmental factors, ensuring the integrity of internal components.
- **Structural Adhesives:** Enhancing the structural rigidity of battery packs, contributing to lightweighting, and improving crash safety.
- **Debonding-on-Demand Adhesives:** Innovative solutions that allow for adhesive release when needed, facilitating battery recycling and repairability.

These materials are tested and optimized to specific application requirements, aiming to maximize the performance and reliability of EV batteries.

Background & Context

The EV market's expansion heavily relies on advancements in battery technology, which demands higher energy density, faster charging speeds, longer lifespans, and above all, superior safety. Adhesive and sealing materials play a critical role in meeting these requirements. High-performance material solutions are essential for preventing battery thermal runaway, extending vehicle range through lightweighting, and achieving efficient production processes. Henkel's application center provides a collaborative platform for automotive OEMs and battery suppliers to co-develop solutions for these complex challenges.

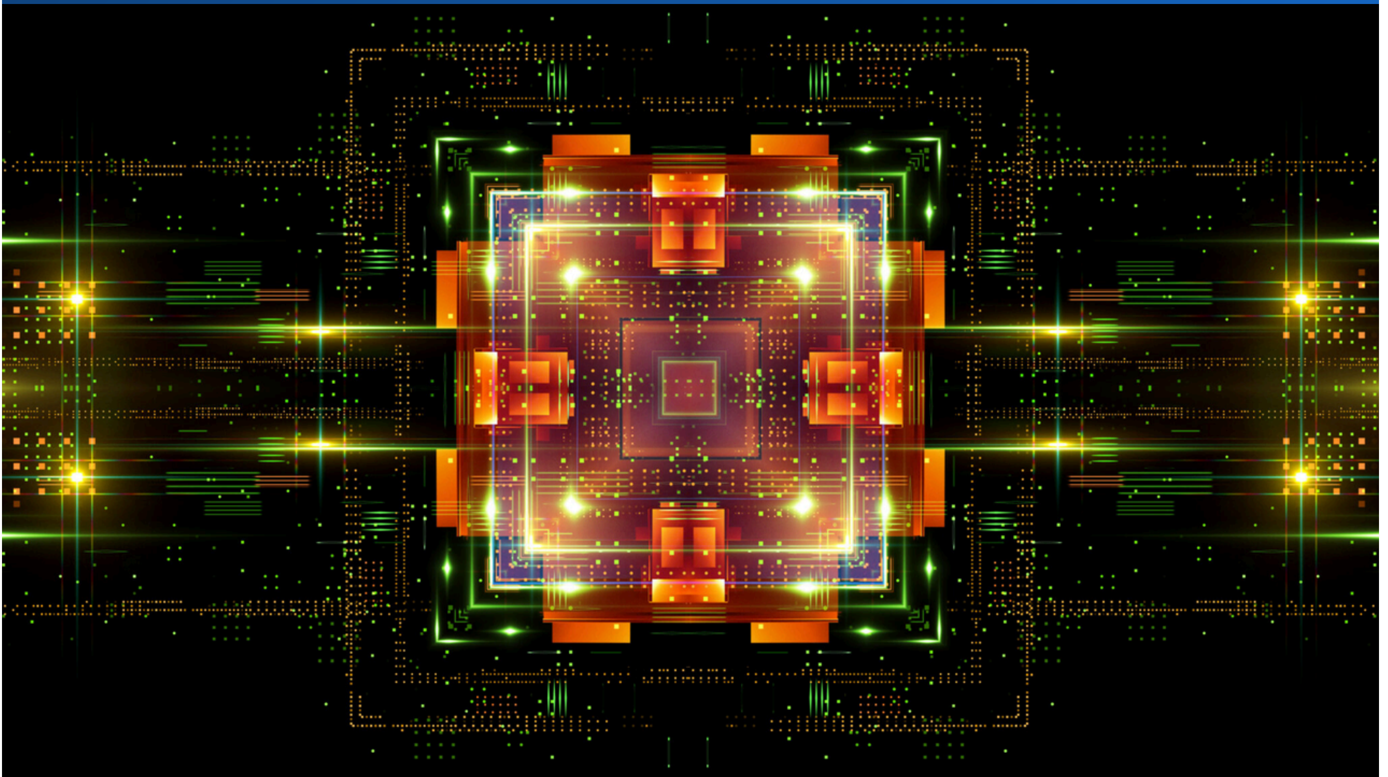
Strategic Significance & Outlook

The establishment of the North American Battery Application Center underscores Henkel's commitment to strengthening its position as a leader in adhesive technology for the EV industry and shaping the future of sustainable mobility. The innovative materials and processes developed through this center are expected to revolutionize EV battery design and manufacturing, accelerating the adoption of safer and higher-performance EVs. Furthermore, solutions like debonding-on-demand adhesives will foster the battery recycling economy, contributing to a circular society. This investment is a cornerstone of Henkel's long-term growth strategy in the EV market.

Source: https://next.henkel-adhesives.com/il/en/industries/automotive/e-mobility/battery-application-center.html

#24 On-Chip Photonics Manufacturing Bottleneck: Key Lies in Improving Adhesive and Encapsulant Thermal and Mechanical Stress Resistance

Published June 18, 2026 Semiconductor Engineering USA



OVERVIEW

On-chip photonics, while promising faster, lower-power data transmission, faces significant manufacturing infrastructure challenges. Specifically, the material stack—including carrier wafers, temporary bonding layers, molding compounds, and encapsulants—critically influences the structural response to thermal and mechanical stress, with warpage being a major concern. Resolving this issue is imperative for high-volume production of on-chip photonics.

IN DEPTH

Key Findings

On-chip photonics technology promises to unlock faster and cooler data transmission for data centers and high-performance computing, but its manufacturability remains a formidable barrier. Crucially, the multi-layered material stack, encompassing carrier wafers, temporary bonding layers, molding compounds, and encapsulants, profoundly impacts the structural response to thermal and mechanical stresses. Package warpage, in particular, poses a significant threat to device reliability and yield. Without effective solutions to this issue, on-chip photonics cannot transition to high-volume manufacturing.

Technical Details

On-chip photonics, which processes and transmits optical signals directly on a semiconductor chip, offers superior speed, lower power consumption, and reduced heat generation compared to traditional electrical signals. However, integrating this technology into semiconductor packages involves layering materials with differing coefficients of thermal expansion. This creates substantial internal stresses during manufacturing thermal cycles and subsequent operational temperature fluctuations. Such stresses can lead to package warpage, compromising the reliability of micro-bump interconnections, causing optical misalignment, and ultimately leading to device failure. Current research focuses on developing low-stress adhesives and encapsulants, along with wafer-level stress management techniques, necessitating extensive material characterization and simulation. For instance, careful tuning of the Young's modulus and coefficient of thermal expansion of adhesive layers is being explored to minimize warpage.

Background & Context

With the explosive growth of data, data transfer speeds between chips have become a critical bottleneck in high-performance computing systems like data centers and AI accelerators. On-chip photonics is seen as a next-generation technology to alleviate this bottleneck, attracting substantial investment from major semiconductor manufacturers and cloud service providers. However, achieving precise alignment of photonic chips and maintaining that alignment over time with robust material technologies are key to commercialization. Existing semiconductor manufacturing processes are optimized for electrical chips, meaning photonic integration demands new breakthroughs in material science and process engineering.

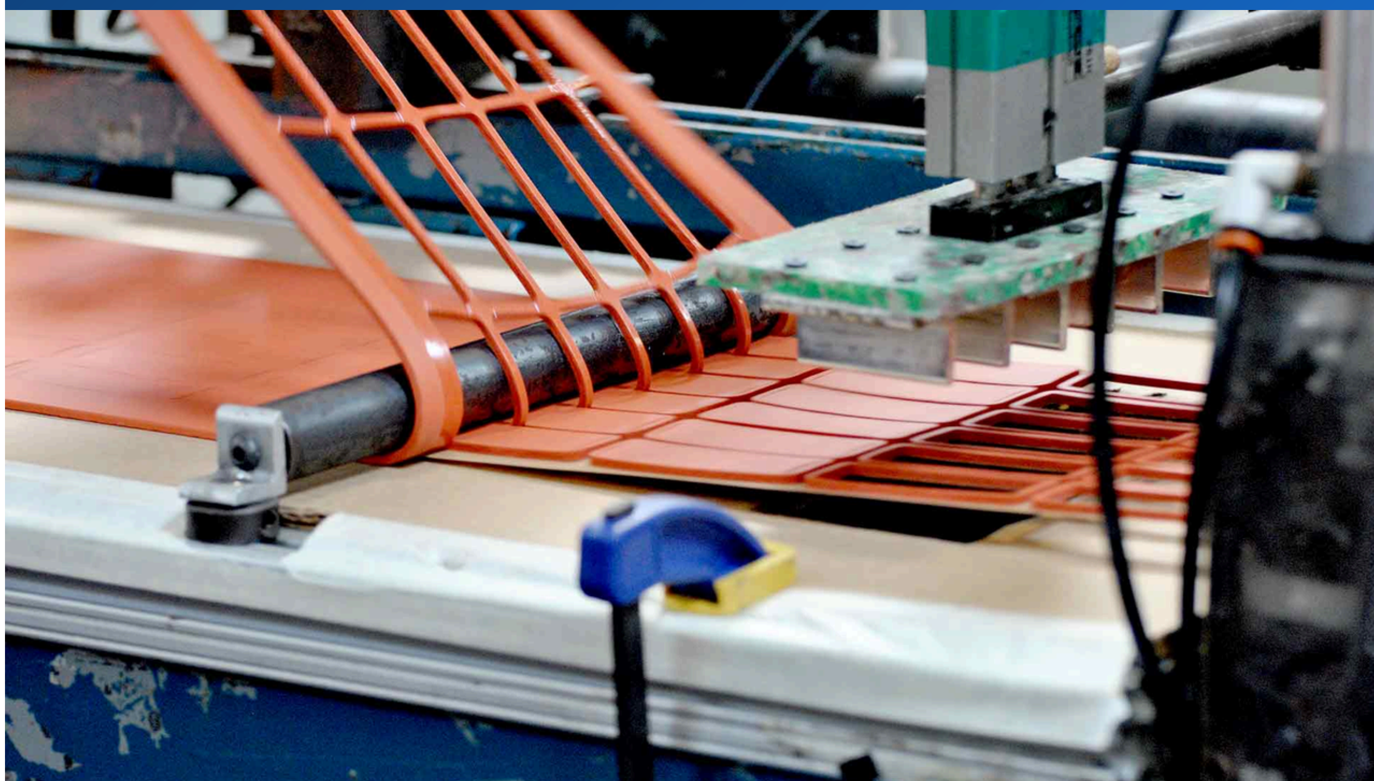
Strategic Significance & Outlook

The evolution of adhesive and encapsulant technologies for on-chip photonics manufacturing is indispensable for building the foundation of future high-performance computing and communication infrastructures. Establishing effective warpage control technologies will directly lead to improved yields and reduced costs, accelerating the adoption of the technology. Moving forward, collaboration among material scientists, packaging engineers, and device designers is expected to drive further development of innovative adhesives and encapsulants that are resistant to thermal stress and can maintain high-precision optical alignment over long periods. Success in this field holds the potential to push beyond the limits of Moore's Law and redefine next-generation "inter-chip connectivity" technologies.

Source: https://semiengineering.com/making-on-chip-photonics-manufacturable/

#25 JBC Technologies, a 3M™ Preferred Converter, Innovates Custom Dielectric Barriers for EV Battery and BESS Applications

Published June 19, 2026 JBC Technologies USA



OVERVIEW

JBC Technologies, as a preferred 3M™ converter, leverages extensive experience in processing flexible materials like pressure-sensitive adhesive tapes and reclosable fasteners into thin, high-strength adhesive components optimized for manual and automated assembly lines. The company specializes in manufacturing custom dielectric barriers for diverse industries, including EV batteries, Battery Energy Storage Systems (BESS), satellites, and aerospace, providing high-reliability bonding solutions.

IN DEPTH

Key Findings

JBC Technologies, established as a preferred 3M™ converter, demonstrates extensive expertise in precisely converting flexible materials, such as pressure-sensitive adhesive tapes and adhesive-backed reclosable fasteners, into thin, high-strength adhesive components. The company provides optimized solutions designed for seamless integration into both manual and automated assembly lines. JBC Technologies has a proven track record in manufacturing custom dielectric barriers, particularly for cutting-edge industries including electric vehicle (EV) batteries, Battery Energy Storage Systems (BESS), satellites, and aerospace, ensuring high reliability and efficient production.

Technical Details

The adhesive components offered by JBC Technologies are manufactured through precise die-cutting, laminating, and slitting of various composite materials. The 3M™ pressure-sensitive adhesive tapes utilized exhibit excellent bond strength and environmental resistance, maintaining stable performance even under harsh conditions such as vibration, thermal cycling, and humidity. Custom dielectric barriers are crucial for ensuring electrical isolation between battery cells and mitigating the risk of short circuits. These barriers are composed of extremely thin yet highly dielectric-strength materials (e.g., specific polymer films and specialized adhesive layers), providing maximum protection within the confined space of a battery pack. Compatibility with automated assembly lines is ensured through precise dimensional tolerances and roll-to-roll processing capabilities, guaranteeing efficiency and quality in mass production.

Background & Context

EV batteries and BESS handle high voltages and currents, making electrical insulation and thermal management critically important. The growing demand for lightweight and compact designs further necessitates high-performance adhesive materials and precision processing technologies. Traditional mechanical fastening methods often lead to increased weight or complex assembly processes. Specialized converters like JBC Technologies, working closely with major material suppliers such as 3M™, provide customized adhesive solutions to address these challenges, thereby supporting the development and mass production of high-performance battery systems. Similar adhesive technologies are also applied in the aerospace sector for satellite lightweighting and reliability enhancement.

Strategic Significance & Outlook

JBC Technologies' specialization in custom dielectric barriers and adhesive component manufacturing is essential for the continued advancement of the EV battery, BESS, and aerospace industries. As battery technology evolves, the demand for dielectric barriers with more complex geometries, higher thermal stability, and enhanced electrical insulation performance will continue to grow. The company is expected to continuously develop innovative solutions to meet these requirements through its partnership with 3M™. This technology will contribute to the realization of safe, high-performance energy storage systems and space exploration technologies, strongly driving growth in related industries.

Source: https://www.jbc-tech.com/applications/

#26 Novel SCP Nanomaterials and Composite Hydrogel Revolutionize Infected Wound Healing with Photothermal/Photodynamic Dual Phototherapy

Published June 23, 2026 ACS Publications USA

OVERVIEW

Bacterial infection hinders wound healing, exacerbated by antibiotic resistance. This study developed three semiconductor conjugated polymer (SCP) nanomaterials (DFPE, DTBA, DTID) using different electron-donor groups, integrating photothermal/photodynamic dual phototherapy functions. Specifically, encapsulating DTID and curcumin within a sodium alginate/chitosan (SA/CS) hydrogel formed a novel composite hydrogel, HGJD, offering an innovative approach to treating infected wounds.

Key Findings

To address the critical challenges of increasing antibiotic resistance and delayed wound healing in infected wounds, a groundbreaking composite hydrogel, HGJD, has been developed. This hydrogel integrates dual phototherapy functions—photothermal (PTT) and photodynamic (PDT)—by combining three types of semiconductor conjugated polymer (SCP) nanomaterials (DFPE, DTBA, DTID), a natural sodium alginate/chitosan (SA/CS) hydrogel matrix, and the therapeutic agent curcumin. Specifically, encapsulating DTID and curcumin within the SA/CS hydrogel achieved a highly effective therapeutic approach for infected wounds.

Technical Details

The SCP nanomaterials developed in this study simultaneously exhibit a photothermal effect (PTT), generating heat upon absorbing specific wavelengths of light, and a photodynamic effect (PDT), producing reactive oxygen species to kill bacteria. By introducing different electron-donor groups, the three SCPs—DFPE, DTBA, and DTID—were engineered to possess distinct light absorption properties and quantum efficiencies, optimized for dual phototherapy. The selected DTID demonstrated high photothermal conversion efficiency in the near-infrared (NIR) region and effective reactive oxygen species generation for PDT. Encapsulating this DTID along with curcumin (a natural antibacterial and anti-inflammatory agent) within the SA/CS hydrogel resulted in the HGJD composite hydrogel, which is highly biocompatible and provides sustained release, suitable for direct application to wound sites. The hydrogel also maintains a moist wound environment and serves as a scaffold to promote cell proliferation. Upon light irradiation, the SCP nanomaterials activate, leading to localized heating and reactive oxygen species generation that efficiently eliminates bacteria, suppresses inflammation, and accelerates wound healing.

Background & Context

Bacterial infection is a primary impediment to chronic wound healing, a significant issue in various types of wounds, including diabetic ulcers, pressure sores, and burns. Conventional antibiotic therapies are becoming increasingly limited due to the emergence of drug-resistant bacteria, necessitating novel antimicrobial treatment strategies. Phototherapy is gaining attention as a non-invasive treatment with fewer side effects. Combining PTT and PDT, in particular, holds potential for addressing a broader spectrum of bacteria and reducing the risk of resistance development. This research integrates biomaterials and nanotechnology to deliver a next-generation wound care solution.

Strategic Significance & Outlook

The clinical application of this composite hydrogel, HGJD, has the potential to profoundly transform the landscape of infected wound treatment. As an antibiotic-independent therapy, it offers new hope to patients struggling with drug resistance. Future research is expected to involve further efficacy and safety evaluations in animal models, leading to human clinical trials. Progressively, this technology could evolve into smart wound dressings, forming integrated systems that simultaneously detect and treat infections. This technology is poised to significantly impact regenerative medicine, infectious disease treatment, and biomedical engineering fields, greatly contributing to improving patients' quality of life.

Source: https://pubs.acs.org/doi/10.1021/acsami.6c06419

Collected: June 26, 2026 | Automated Research System (Gemini API)

#27 Henkel Delivers Advanced Semiconductor Packaging Materials to Tackle Thermal and Mechanical Challenges in 2.5D/3D Packaging

Published Date unknown   Henkel Adhesives   Germany

OVERVIEW

Henkel offers a diverse portfolio of advanced semiconductor packaging solutions, including lid and stiffener adhesives, EMI shielding, liquid compression molding solutions, and underfills. These materials are essential for addressing the complex thermal, mechanical, performance, and reliability challenges inherent in 2.5D and 3D packaging. Henkel's solutions support the high performance and miniaturization needs of next-generation semiconductor devices.

IN DEPTH

Key Findings

Henkel leads the industry by providing a comprehensive range of advanced semiconductor packaging materials, including lid and stiffener adhesives, electromagnetic interference (EMI) shielding materials, liquid compression molding (LCM) solutions, and underfills. These integrated solutions are crucial for effectively addressing the complex challenges related to thermal management, mechanical stress, performance optimization, and long-term reliability that are particularly prevalent in 2.5D and 3D packaging technologies. This robust support system significantly facilitates the realization of next-generation high-performance and miniaturized semiconductor devices.

Technical Details

Henkel's advanced semiconductor packaging materials portfolio incorporates distinctive technologies such as:

- **Lid and Stiffener Adhesives:** These provide high bond strength and thermal stability, maintaining the structural integrity of packages while securely fixing components like heat spreaders.
- **EMI Shielding Materials:** Offering thin yet effective metallic coatings or composite materials, these prevent electromagnetic interference between adjacent components in increasingly dense devices, protecting signal integrity.
- **Liquid Compression Molding (LCM) Solutions:** Enabling IC encapsulation, gap filling, and overmolding of stacked memory chips at wafer or panel level, which enhances manufacturing efficiency and package reliability.
- **Underfills:** In flip-chip and BGA packages, underfills mitigate stress induced by thermal cycling and enhance the mechanical reliability of solder bumps, thereby extending device lifespan.

Each of these materials is optimized to address specific packaging challenges, and their synergistic application enhances overall packaging performance.

Background & Context

The semiconductor industry, facing the limits of Moore's Law, is shifting towards innovative packaging technologies to achieve performance gains. 2.5D and 3D packaging are key to integrating multiple chips vertically or horizontally, improving data transfer speeds, reducing power consumption, and miniaturizing form factors. However, these complex structures introduce new challenges, such as thermal stress during manufacturing processes and heat dissipation during operation. Material suppliers like Henkel play a crucial role in the semiconductor ecosystem by providing high-performance adhesive and encapsulant materials to overcome these technical barriers.

Strategic Significance & Outlook

Henkel's advanced semiconductor packaging material solutions provide an essential technological foundation for future high-growth applications such as AI accelerators, High-Performance Computing (HPC), 5G communication, and autonomous driving systems. The continuous evolution of these material technologies will enable further miniaturization, enhanced functionality, and improved reliability of devices, driving innovation across the entire semiconductor industry. Future focus is expected to be on developing new materials that minimize coefficient of thermal expansion (CTE) mismatch, boost thermal conductivity, and improve manufacturing process compatibility. Henkel plans to intensify its R&D investments in this area, contributing to the realization of next-generation electronic devices.

Source: https://next.henkel-adhesives.com/sk/en/navigation/applications/advanced-semiconductor-packaging.html

#28 Henkel Offers Liquid Compression Molding (LCM) Solutions for Wafer-Level and Panel-Level Packaging

Published Date unknown   Henkel Adhesives   Germany

OVERVIEW

Henkel provides encapsulation materials that enable advanced semiconductor packaging technologies where ICs are molded directly on wafers or panels prior to subsequent processing, using Liquid Compression Molding (LCM). LCM facilitates IC encapsulation, gap filling, and overmolding of stacked memory chips at both wafer and panel levels. This makes it a key enabler for advanced package designs, including fan-in and fan-out wafer-level, panel-level packaging, and high-bandwidth memory (HBM).

IN DEPTH

Key Findings

Henkel significantly advances semiconductor packaging through its innovative encapsulation material solutions for Liquid Compression Molding (LCM) technology. These LCM materials enable integrated circuits (ICs) to be molded directly on wafers or panels before subsequent processing. This technology is positioned as a primary enabler for sophisticated package designs, including fan-in and fan-out wafer-level packaging (WLP), panel-level packaging (PLP), and high-bandwidth memory (HBM), all of which are critical for future high-performance computing.

Technical Details

Liquid Compression Molding involves dispensing a low-viscosity resin onto chips on a wafer or panel, followed by compression and curing. This technology offers several key advantages:

- **Wafer/Panel-Level IC Encapsulation:** Enables the encapsulation of multiple chips simultaneously, significantly boosting production efficiency.
- **Gap Filling:** Achieves uniform filling even in fine gaps and irregularly shaped spaces, preventing void formation and enhancing reliability.
- **Overmolding of Stacked Memory Chips:** Effectively protects individual chips and manages thermal dissipation between layers in vertically stacked structures, such as those found in HBM.

Henkel's LCM materials are formulated with excellent flow properties, low coefficients of thermal expansion (CTE), and high thermal conductivity. These properties contribute to stress relief during thermal cycling and enhance heat dissipation performance, thereby ensuring long-term reliability and stable performance of devices.

Background & Context

The semiconductor industry is witnessing the limitations of traditional packaging technologies as demands for device miniaturization, enhanced performance, and lower power consumption escalate. Wafer-level packaging (WLP) and panel-level packaging (PLP) are foundational for advanced packaging techniques like flip-chip and System-in-Package (SiP), becoming indispensable for mobile devices and AI chips that require increased I/O density and smaller form factors. LCM technology is gaining prominence as a crucial process to reduce manufacturing costs and improve yields for these high-density, high-performance packages. Henkel is at the forefront of driving innovation in this technology from a material science perspective.

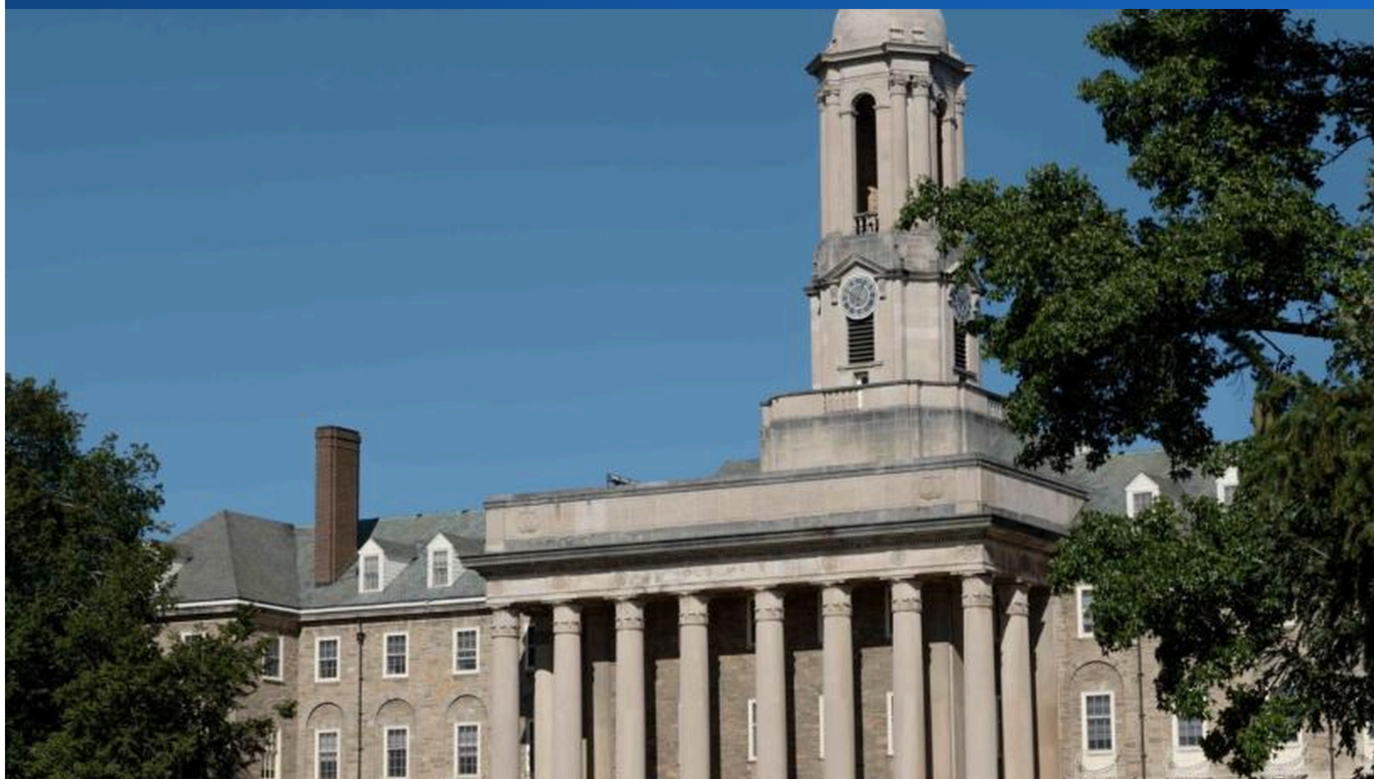
Strategic Significance & Outlook

Henkel's liquid compression molding solutions are expected to further accelerate the adoption of advanced semiconductor packaging technologies. LCM is anticipated to become an indispensable technology, particularly in the manufacturing of high-bandwidth memory (HBM) modules, for which demand is soaring in AI and high-performance computing (HPC) sectors. The evolution of this technology will contribute to reducing packaging costs, improving productivity, and optimizing the electrical and thermal performance of devices, addressing key challenges faced by next-generation electronic devices. Henkel will continue to lead the semiconductor industry's future through ongoing development and optimization of LCM materials in collaboration with its customers.

Source: https://next.henkel-adhesives.com/vn/en/applications/advanced-semiconductor-packaging/liquid-compression-molding-solutions.html

#29 Penn State University Awards GAP Funding for Biodegradable UV-Curable Pressure-Sensitive Adhesive Development – Aiming for Environmental Impact Reduction

Published June 22, 2026 Penn State University USA



OVERVIEW

Penn State University has awarded GAP funding to 12 research commercialization projects, including the development of a "polypeptide-based biodegradable UV-curable pressure-sensitive adhesive." This novel adhesive is anticipated as an eco-friendly alternative to petroleum-derived products for the food, healthcare, and cosmetics industries. This funding aims to accelerate sustainable material development and contribute to reducing environmental impact.

IN DEPTH

Key Findings

Penn State University has awarded GAP funding to 12 research commercialization projects, with a notable focus on the development of a "polypeptide-based biodegradable UV-curable pressure-sensitive adhesive." This project aims to provide an environmentally friendly and sustainable alternative to conventional fossil fuel-derived adhesives, with broad applications anticipated across the food, healthcare, and cosmetics industries. This funding is critical for bridging the gap between research discovery and market entry, propelling sustainable material innovation.

Technical Details

The biodegradable UV-curable pressure-sensitive adhesive under development primarily comprises naturally derived polypeptides. It features rapid curing upon exposure to specific UV light, which can significantly reduce energy consumption during the manufacturing process and improve production efficiency. The adhesive's performance as a pressure-sensitive adhesive (e.g., initial tack, holding power, peel strength) aims to be comparable to or even surpass that of conventional petroleum-derived adhesives. Furthermore, this adhesive is designed to biodegrade in natural environments post-use, reducing waste volume and contributing to solving plastic pollution. For food packaging, strict biocompatibility is ensured for direct food contact, while in healthcare, gentle yet strong adhesion and easy peel-off properties are sought for medical tapes and patches.

Background & Context

In recent years, heightened environmental awareness and stricter regulations (e.g., the EU's Packaging and Packaging Waste Regulation, PPWR) are accelerating the shift towards sustainable materials across all industries. The adhesive industry is no exception, experiencing a rapid increase in demand for products with bio-based, biodegradable, and low-VOC characteristics. The environmental impact of adhesives in single-use packaging and medical supplies is considerable, making the development of biodegradable adhesives an urgent priority. Penn State University's research directly addresses this major market trend, representing a crucial step in shaping the future of adhesive technology.

Strategic Significance & Outlook

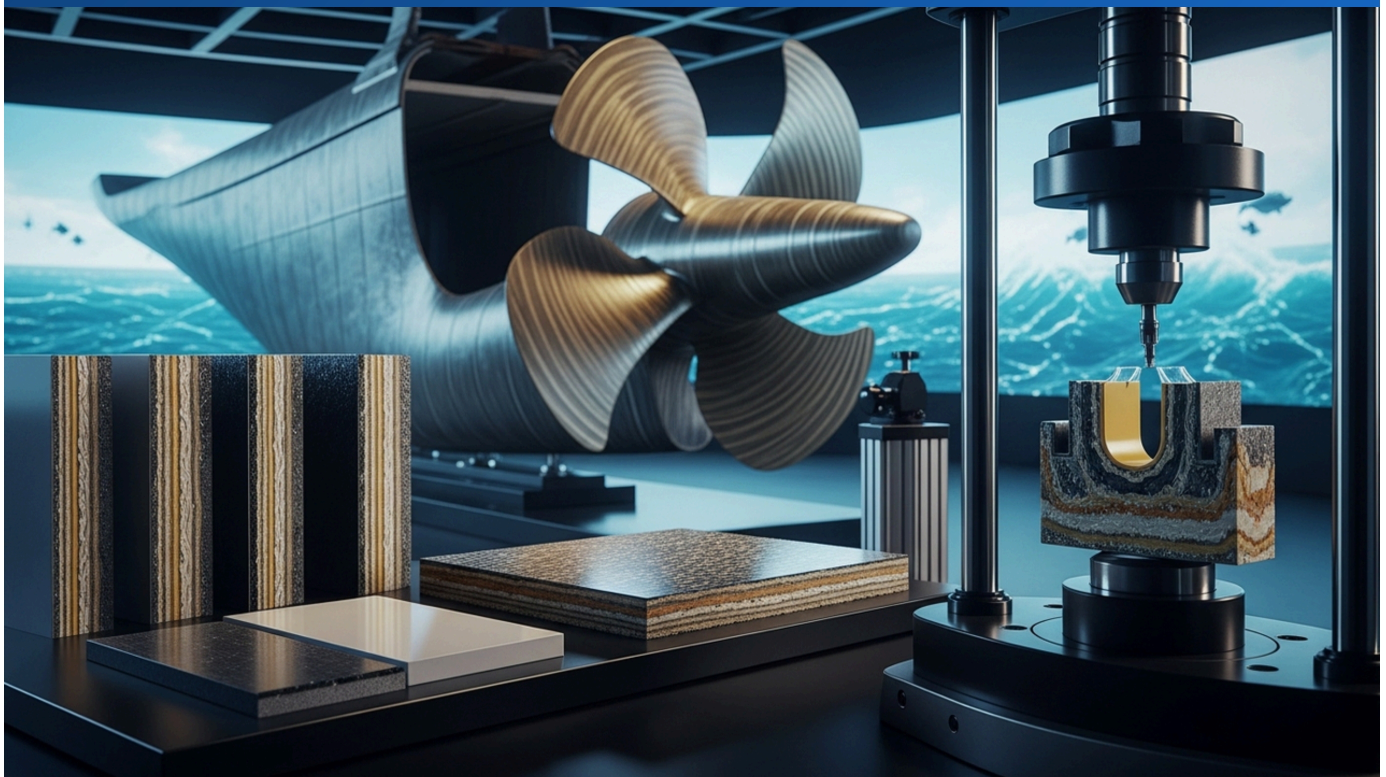
The development of polypeptide-based biodegradable UV-curable pressure-sensitive adhesives is poised to significantly impact environmental performance across multiple industrial sectors. With the award of GAP funding, this technology has secured essential resources to advance from the lab to prototyping and ultimately to commercialization. In the future, widespread adoption of this adhesive in various products is expected to reduce reliance on petrochemicals and contribute to building more sustainable supply chains. This technology could become a success story for green innovation in the adhesive industry, inspiring other R&D projects. For investors, it offers an entry point into the growing bio-based materials market.

Source: https://www.mri.psu.edu/news/news/gap-funding-awarded-12-penn-state-research-commercialization-projects

Collected: June 26, 2026 | Automated Research System (Gemini API)

#30 Expanding Applications of Fiber-Reinforced Polymers in Maritime: Epoxy and Vinylester Composites Meet High Strength and Durability Demands

Published June 18, 2026 ResearchGate / UTHM Publisher International



OVERVIEW

Composite materials, particularly Fiber-Reinforced Polymers (FRP), offer high strength-to-weight ratios, excelling in constructing complex lightweight structures for the maritime industry. While traditional marine structures relied on glass fiber-reinforced polymer composites, more advanced applications now employ carbon or aramid fiber composites combined with epoxy or vinylester matrices to meet demanding mechanical and durability requirements. This review highlights the significant potential FRP brings to maritime applications.

IN DEPTH

Key Findings

The maritime industry is increasingly adopting composite materials, particularly Fiber-Reinforced Polymers (FRP), leveraging their high strength-to-weight ratio for the construction of complex lightweight structures. This review specifically reveals a technological shift in high-performance marine applications from conventional glass fiber-reinforced polymer (GFRP) composites to carbon fiber (CFRP) or aramid fiber (AFRP) composites combined with epoxy or vinylester matrices. These advanced composites are crucial for meeting the stringent mechanical and durability requirements of harsh marine environments.

Technical Details

Historically, GFRP composites dominated traditional marine structures such as small vessels and some recreational boats due to their balanced cost and performance. However, more advanced applications—including larger commercial ships, naval vessels, offshore structures, and deep-sea exploration equipment—demand higher strength, stiffness, fatigue resistance, and superior corrosion resistance than GFRP can provide under extreme operational conditions. This is where composites reinforced with carbon or aramid fibers within an epoxy or vinylester resin matrix demonstrate their full potential. Carbon fiber composites offer exceptionally high tensile strength and stiffness, contributing to structural lightweighting and improved fuel efficiency. Aramid fiber composites, conversely, provide excellent impact absorption and fatigue resistance, making them suitable for areas requiring protection against high-energy impacts. Epoxy resins impart high adhesive strength and chemical resistance, while vinylester resins offer superior water and chemical resistance, ensuring the long-term durability of the composites in marine settings.

Background & Context

The maritime industry faces global trends of improving fuel efficiency, reducing emissions, and tightening environmental regulations. Lightweighting hulls is one of the most effective strategies to achieve these objectives, accelerating the adoption of FRPs. Additionally, novel marine structures, such as offshore wind turbine foundations and floating oil and gas platforms, require innovative materials capable of withstanding severe marine environments. FRPs offer significant advantages over traditional steel, including reduced maintenance costs, extended service life, and greater design freedom. This review provides an overview of the evolution of material selection in marine engineering and points toward future research and development directions.

Strategic Significance & Outlook

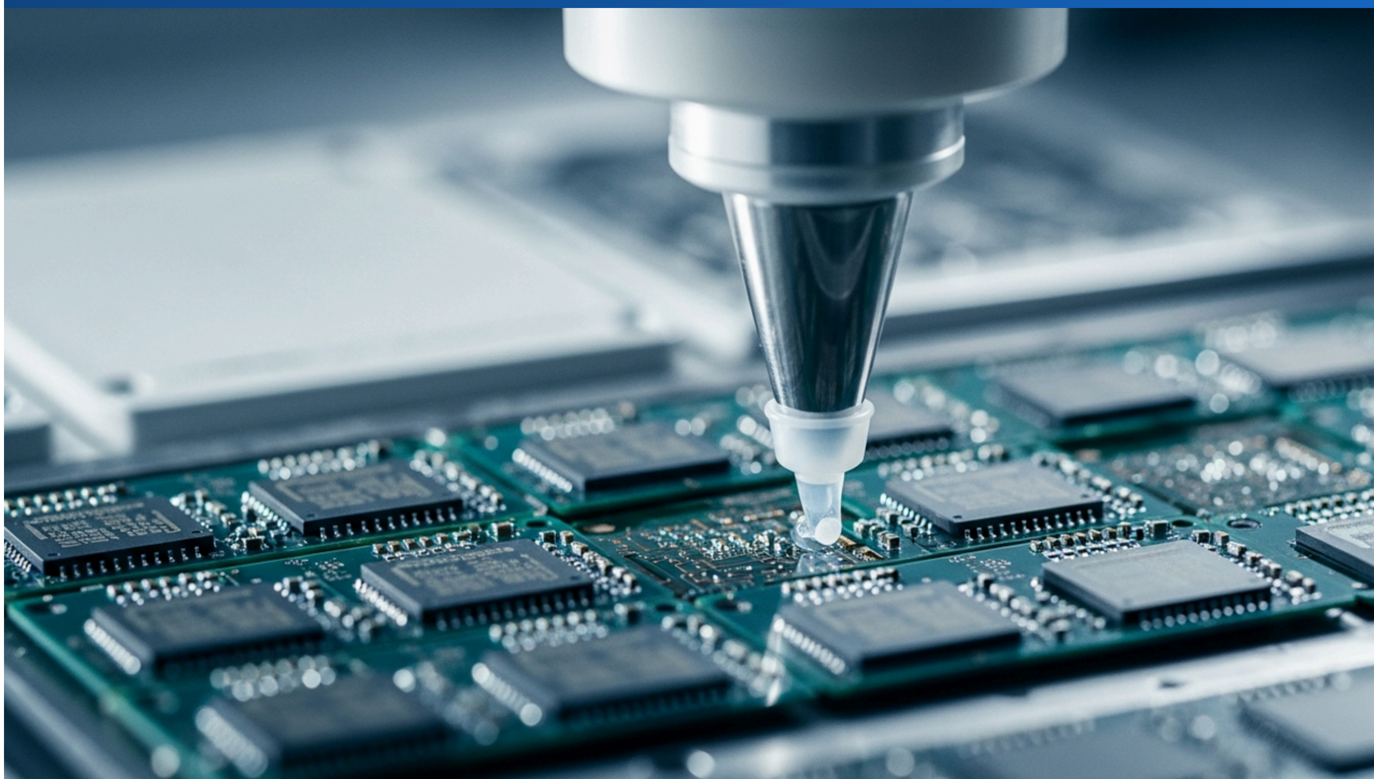
Fiber-Reinforced Polymers will play a critical role in shaping the future of the maritime industry. High-performance epoxy or vinylester-based carbon/aramid fiber composites, in particular, will become indispensable materials for designing next-generation vessels, marine energy systems, and deep-sea technologies. Further research and development should focus on more cost-effective manufacturing methods, composite recycling technologies, and establishing predictive models for long-term environmental degradation behavior. These advancements are expected to broaden the application scope of FRPs, significantly contributing to the sustainability and competitiveness of the maritime industry. Investors should observe innovative material suppliers and manufacturing technology providers in the marine composite market.

Source: https://www.researchgate.net/publication/372222209_A_Review_Assessment_of_Fiber-Reinforced_Polymers_for_Maritime_Applications

Collected: June 26, 2026 | Automated Research System (Gemini API)

#31 Hoenle Adhesives Launches High-Reliability Underfill 'Structalit® 8205' for Miniaturized, High-Density Electronic Assemblies

Published June 22, 2026 Adhesives & Sealants Industry (ASI) Germany



OVERVIEW

Hoenle Adhesives has introduced Structalit® 8205, an underfill designed for modern, miniaturized, and high-density electronic assemblies, offering exceptional mechanical stability, thermal performance, and long-term reliability. This board-level underfill utilizes micronized filler technology to reduce the coefficient of thermal expansion (CTE) and improve material compatibility, thereby meeting the high-reliability demands of advanced electronic designs. This significantly enhances device lifespan and performance stability.

IN DEPTH

Key Findings

Hoenle Adhesives has launched Structalit® 8205, a high-performance underfill, to meet the prevailing trends of miniaturization and increased density in modern electronic assemblies. This innovative board-level underfill is engineered to deliver exceptional mechanical stability, superior thermal performance, and long-term reliability. By employing micronized filler technology, it effectively reduces the coefficient of thermal expansion (CTE), thereby enhancing thermomechanical compatibility between disparate materials such as chips and substrates, and satisfying the stringent reliability demands in advanced electronic designs.

Technical Details

Structalit® 8205 is an epoxy-based material designed to fill the narrow gaps between semiconductor chips and printed circuit boards (PCBs) in packaging technologies like flip-chip and ball grid array (BGA). Its core micronized filler technology minimizes filler particle size, allowing rapid and complete penetration into even the smallest gaps, thus suppressing void formation. This filler also helps match the CTE of the underfill closely with that of the chip and substrate, minimizing thermal stress induced by temperature changes. This alleviates concentrated stress on solder bumps, significantly improving the reliability of interconnections under harsh conditions such as thermal cycling, shock, and vibration. Consequently, device operational lifespan is extended, and failure rates are reduced.

Background & Context

With the proliferation of AI, 5G communication, and IoT devices, electronic devices are becoming increasingly high-performance, compact, and dense. This trend leads to more complex semiconductor packaging, making thermomechanical stress management between the chip and substrate a critical challenge. Particularly in packages with fine-pitch connections and minute solder bumps, stress concentration due to CTE mismatch can be a primary cause of device failure. Underfills are increasingly important as indispensable materials to resolve such issues and ensure device reliability. Hoenle Adhesives' Structalit® 8205 is a product designed to meet these cutting-edge industry requirements.

Strategic Significance & Outlook

Hoenle Adhesives' Structalit® 8205 is set to open new avenues for the design and manufacturing of next-generation electronic devices demanding high reliability. This underfill, with its micronized filler technology and optimized CTE, is expected to play a crucial role in applications operating under harsh environments, such as high-performance computing (HPC), automotive electronics, and medical devices. The widespread adoption of this technology will lead to the supply of more robust and long-lasting electronic products, contributing to technological innovation and sustainable growth across the entire electronics industry. Hoenle Adhesives aims to continuously support the enhancement of electronic component reliability through the development of such advanced materials.

Source: https://www.adhesivesmag.com/articles/102480-hoenle-adhesives-underfill-for-electronics

Collected: June 26, 2026 | Automated Research System (Gemini API)

#32 Zhengzhou Kerton Chemical Highlights Broad Applications of Epoxy Adhesives for High Performance and Reliability Across Industries

Published June 25, 2026 Zhengzhou Kerton Chemical Co., Ltd China

OVERVIEW

Zhengzhou Kerton Chemical Co., Ltd. emphasized the critical role of epoxy adhesives across diverse sectors including automotive, aerospace, electronics, construction, and new energy. For applications such as chip underfill, electronic component encapsulation, low-power LED potting, and conductive adhesives, epoxy resin systems are highlighted as the only viable choice, proving indispensable for many advanced applications demanding high performance and reliability.

IN DEPTH

Key Findings

Zhengzhou Kerton Chemical Co., Ltd. has underscored the indispensable nature of epoxy adhesives in modern industry, playing a pivotal role across a wide array of sectors including automotive, aerospace, electronics, construction, and new energy. The company specifically highlights that for applications demanding high reliability and performance—such as chip underfill, electronic component encapsulation, low-power LED potting, and conductive adhesives—epoxy resin systems remain the most viable and effective choice.

Technical Details

Due to their unique chemical structure, epoxy adhesives offer exceptional bond strength, heat resistance, chemical resistance, and electrical insulation properties. This enables strong bonding across a broad range of materials, including metals, ceramics, glass, and composites. In the semiconductor industry, epoxy-based underfills enhance the reliability of flip-chip and BGA packages, mitigating stress caused by thermal cycling. Epoxy compounds used for potting and encapsulation of electronic components protect delicate circuits from moisture, vibration, and physical damage. For low-power LED potting, epoxy with a balanced transparency and heat dissipation maximizes light output and lifespan. Conductive epoxy adhesives are utilized for connecting heat-sensitive components where soldering is impractical and for forming fine circuits, contributing to the miniaturization and enhanced performance of electronic circuits.

Background & Context

Today's industries face escalating demands for improved product performance, extended durability, miniaturization, and reduced manufacturing costs. Epoxy adhesives are increasingly valued as versatile solutions that meet these requirements. Epoxy technology is critical in many areas, including structural bonding and thermal management in electric vehicle (EV) battery packs, lightweight structural bonding in aerospace, and high-density packaging in advanced electronics. Companies like Zhengzhou Kerton Chemical Co., Ltd. are focused on the research, development, and supply of high-performance epoxy adhesives to meet these evolving market needs.

Strategic Significance & Outlook

The market for epoxy adhesives is projected to continue its sustained growth. As technology advances, there will be further development of more environmentally friendly (low-VOC, bio-based) and specialized epoxy adhesives (e.g., high thermal conductivity, ultra-fast curing, re-bondable). This will enhance the importance of epoxy adhesives in an even wider range of demanding applications, such as next-generation AI devices, autonomous driving technologies, and renewable energy infrastructure. Zhengzhou Kerton Chemical Co., Ltd. aims to remain at the forefront of these technological innovations, continuously strengthening its product portfolio and offering customized solutions to meet customer needs.

Source: https://www.kerton-industry.com/blog_detail/what_is_epoxy_adhesive_.html

Collected: June 26, 2026 | Automated Research System (Gemini API)

#33 Wisconsin Department of Transportation Releases Approved Products List to Ensure Material Quality for Construction Projects

Published June 18, 2026 Wisconsin Department of Transportation USA

OVERVIEW

The Wisconsin Department of Transportation has released an Approved Products List for pre-certifying materials, including adhesives and sealants, to guarantee their quality and performance in construction projects. This list serves as a part of quality verification activities, aiming to enhance the reliability of material selection for public infrastructure. It contributes to improving transparency and efficiency in construction projects.

IN DEPTH

Key Findings

The Wisconsin Department of Transportation (Wisconsin DOT) has published a comprehensive "Approved Products List" to ensure the quality and performance of materials used in the state's construction projects. This list pre-certifies a wide variety of construction materials, including adhesives and sealants, and serves as a critical component of their quality verification activities. This initiative significantly enhances the reliability and safety of material selection for infrastructure projects across the state, thereby guaranteeing the quality of public works.

Technical Details

Materials featured on the Approved Products List must meet stringent criteria and specifications established by the Wisconsin DOT. These requirements encompass physical properties (strength, durability, flexibility), chemical properties (corrosion resistance, weatherability), and workability. For adhesives and sealants, particular emphasis is placed on:

- **Adhesion Strength:** Sufficient bonding capability to various substrates (concrete, asphalt, metal, etc.).
- **Durability:** Long-term resistance to temperature fluctuations, UV exposure, moisture penetration, and freeze-thaw cycles.
- **Workability:** Appropriate curing times, ease of application, and stability under jobsite conditions.

Suppliers are required to submit product test data, quality control processes, and historical performance records for review to meet these standards. Regular re-evaluations are also conducted to ensure ongoing product quality.

Background & Context

In public infrastructure projects, the quality of materials directly impacts the safety, durability, and maintenance costs of structures. Historically, the use of unsuitable materials or insufficient quality control has led to premature deterioration of structures and unexpected failures. The introduction of an Approved Products List is an effective measure to mitigate such risks and elevate quality standards across the construction industry. This approach increases transparency for state governments, provides clear quality targets for material suppliers, fosters competition, and ultimately delivers better value for taxpayers.

Strategic Significance & Outlook

The publication of the Wisconsin DOT's Approved Products List will significantly impact the state's construction industry. It is expected that high-quality adhesives, sealants, and other materials will be preferentially used, extending the lifespan of infrastructure and reducing maintenance costs. In the future, this approach may spread to other states and regions, contributing to improved quality of public works nationwide. For material manufacturers, it serves as a guideline for product development, incentivizing investment in higher-performance and more reliable adhesive and sealing solutions. This initiative is a crucial step towards building sustainable and resilient infrastructure.

Source: https://wisconsindot.gov/pages/doing-bus/eng-consultants/cnslt-rsrces/tools/appr-prod/default.aspx

#34 Evonik Enhances Composite Performance with Crosslinkers for Lightweight, High-Strength, and High-Fatigue Resistance Epoxy Systems in Wind Turbine Blades

Published Date unknown Evonik Germany

OVERVIEW

Evonik offers advanced crosslinkers for composites, specifically targeting wind turbine blades, enabling the development of lightweight, strong, and highly fatigue-resistant epoxy systems. These crosslinkers support the evolving demands of the wind energy industry for increasing rotor sizes and higher energy output, significantly improving wind power efficiency and reliability.

IN DEPTH

Key Findings

Evonik, a specialty chemicals manufacturer, provides advanced crosslinkers that fundamentally enhance the performance of composite materials, with a specific focus on wind turbine blades. The company's crosslinkers enable the development of epoxy systems that combine lightweight properties with high strength and excellent fatigue resistance. This technology addresses the stringent demands of the wind energy industry for increasing rotor sizes and higher energy output, proving indispensable for improving the efficiency and reliability of wind power generation.

Technical Details

Evonik's crosslinkers react with epoxy resins to form a three-dimensional network structure, imparting superior mechanical and thermal properties to the cured composite material. Wind turbine blades, being massive structures, must withstand intense wind loads and fatigue over prolonged periods. Utilizing Evonik's crosslinkers results in epoxy composites with properties such as:

- **High Strength and Stiffness:** Maintaining the structural integrity of blades and minimizing deformation.
- **Lightweight:** Reducing blade weight, which decreases turbine installation costs and improves power generation efficiency.
- **Excellent Fatigue Resistance:** Preventing damage from repetitive loading throughout the blade's operational lifespan, which can span decades.
- **High Environmental Resistance:** Enhancing protection against harsh external factors like UV radiation, moisture, and temperature fluctuations.

These properties are crucial for overcoming design challenges associated with increasing blade sizes, such as tip deflection and vibration.

Background & Context

Driven by growing concerns over climate change and energy security, wind power is expanding its role globally as a primary renewable energy source. To maximize power generation efficiency, wind turbine rotor blades are becoming progressively larger, with designs now exceeding 100 meters in length. However, increasing blade size introduces challenges related to balancing material weight and strength, manufacturing costs, and transportation/installation logistics. Evonik's crosslinker technology supports the industry's development by providing key materials that enable blade manufacturers to develop high-performance and cost-effective composite solutions for these challenges.

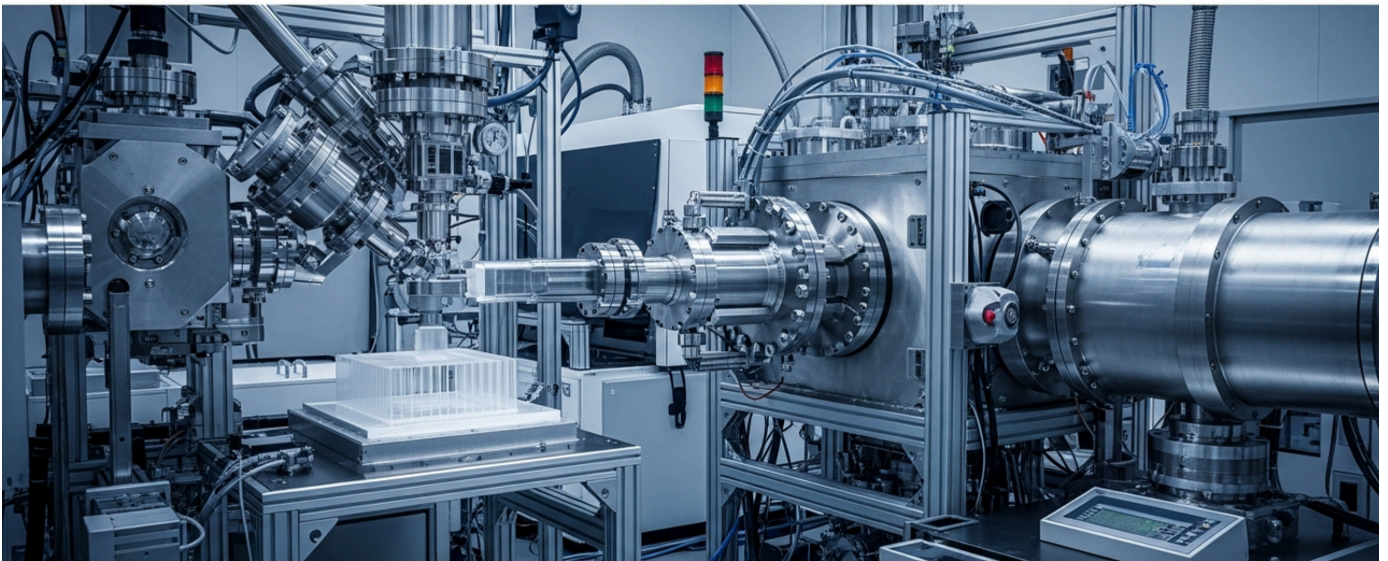
Strategic Significance & Outlook

Evonik's crosslinker technology will be a crucial foundation supporting the sustained growth and technological innovation of the wind energy industry. Going forward, further material science exploration is expected to lead to the development of even higher-performance crosslinkers, contributing to extended blade lifespan, simplified manufacturing processes, and improved recyclability. This technology is indispensable for further reducing the cost of wind power, opening new markets such as offshore wind, and ultimately accelerating the global transition to clean energy. Investors should pay attention to advanced material technologies supporting the growth of the renewable energy market.

Source: https://www.evonik.com/en/company/businesslines/cl/markets-new/crosslinkers-for-composites.html

#35 Chemical Vapor Deposition (CVD): Key Technology for High-Quality Thin-Film Deposition in the Semiconductor Industry

Published Date unknown Wikipedia International



OVERVIEW

Chemical Vapor Deposition (CVD) is a critical thin-film deposition method used to produce high-quality, high-performance solid materials, widely utilized in the semiconductor industry to form conductive layers ranging from tens to hundreds of nanometers to several micrometers. Plasma-Enhanced CVD (PECVD) enables deposition at lower temperatures, proving key for advanced semiconductor manufacturing. CVD is an essential process for diverse applications in material science and engineering.

IN DEPTH

Key Findings

Chemical Vapor Deposition (CVD) stands as a critically important thin-film deposition technique for manufacturing high-quality and high-performance solid materials. This process is extensively utilized in the semiconductor industry, enabling the precise formation of conductive, insulating, or semiconducting thin films ranging from tens to hundreds of nanometers up to several micrometers. CVD technology forms the foundational pillar supporting the performance and reliability of modern electronic devices, with Plasma-Enhanced CVD (PECVD) significantly enhancing the flexibility of semiconductor manufacturing processes by enabling deposition at lower temperatures.

Technical Details

The CVD process is based on the principle of introducing volatile precursor gases into a reaction chamber, where they undergo chemical reactions on a substrate surface to deposit a solid thin film. These reactions can be driven by various energy sources, including heat (thermal CVD), plasma (PECVD), or light (photo-CVD). PECVD, by activating precursor gases through plasma, allows for film deposition at relatively lower temperatures, minimizing damage to heat-sensitive substrates or existing device structures. This greatly expands the applicability of CVD in manufacturing complex semiconductor devices with multi-layered structures. The deposited thin films exhibit excellent density, uniformity, and compositional control, making CVD useful for depositing various materials such as silicon nitride (SiN), silicon dioxide (SiO2), polysilicon, tungsten, and aluminum.

Background & Context

The semiconductor industry continually advances device miniaturization and integration in line with Moore's Law, demanding extremely precise material processing technologies. CVD is one of the central techniques for forming various functional layers in sub-micron to nano-scale semiconductor devices, including gate dielectrics, interconnect layers, and passivation films for transistors. Particularly in advanced devices like 3D NAND flash memory and high-performance logic ICs, uniform film deposition onto complex topographical structures is required, and CVD's advanced control capabilities make this possible. The continuous evolution of CVD technology also contributes to reducing semiconductor manufacturing costs and improving yields.

Strategic Significance & Outlook

Chemical Vapor Deposition (CVD) technology will continue to be a crucial driving force for innovation in the semiconductor industry. Its role is expected to increase further with ongoing miniaturization, the introduction of new materials (e.g., 2D materials and high-k dielectrics), and the formation of more complex 3D structures. Combinations with related technologies like Atomic Layer Deposition (ALD), alongside the introduction of new plasma sources and in-situ monitoring techniques, will further enhance CVD process control and efficiency. This will provide the essential material foundation for realizing ultra-high-performance semiconductor devices that underpin next-generation technologies such as AI, 5G, autonomous driving, and quantum computing. CVD remains a dynamic research field that continues to push the boundaries of materials science and engineering.

Source: https://en.wikipedia.org/wiki/Chemical_vapor_deposition

#36 Olin and Huntsman Merge in $12.5 Billion All-Stock Deal, Forming North American Chemical Giant

Published June 22, 2026 Plastics Today USA

OVERVIEW

Olin Corp. and Huntsman Corp. announced an all-stock merger on June 16, 2026, creating OlinHuntsman Corp., a North American chemical powerhouse with approximately $12.5 billion in annual revenue. This strategic consolidation reflects a trend in the chemical industry towards selective, defensive M&A, particularly within high-value specialty additive sectors like CASE (coatings, adhesives, sealants, elastomers). Investors are prioritizing resilient end-market exposure and defensible profitability amidst ongoing economic uncertainties.

IN DEPTH

Key Findings: Olin and Huntsman Form $12.5 Billion Chemical Giant, Signifying Strategic M&A Shift

In a major industry move on June 16, 2026, Olin Corp. and Huntsman Corp. announced an all-stock merger of equals, creating OlinHuntsman Corp., a new North American chemical titan boasting approximately $12.5 billion in annual revenue. This strategic consolidation is a clear indicator of the chemical industry's evolving M&A landscape, where activities are becoming more selective and defensive, particularly in specialized additive sectors such as CASE (Coatings, Adhesives, Sealants, and Elastomers).

Technical & Commercial Details: Portfolio Synergy and Market Leadership

- The merger combines Olin's leadership in chlor alkali and epoxy with Huntsman's strengths in polyurethanes and performance products, creating a diversified portfolio spanning essential chemicals and high-value specialties.
- The combined entity's annual revenue of $12.5 billion positions it as a significant global player, capable of leveraging economies of scale for enhanced cost efficiency and increased investment in R&D.
- Within the CASE sector, the integration of both companies' expertise and product lines is expected to drive innovation and offer more comprehensive solutions to customers, addressing complex formulation challenges.
- This transaction aligns with investor sentiment that, in times of economic volatility, favors businesses with robust exposure to resilient end markets and a proven track record of defensible profitability.

Background & Context: Navigating Economic Headwinds in the Chemical Sector

The global chemical industry has been navigating a period of significant uncertainty, marked by fluctuating raw material costs, high energy prices, and increasing pressure from customers and regulators regarding sustainability. Against this backdrop, M&A strategies have shifted from aggressive expansion to more focused efforts on strengthening core businesses, de-risking portfolios, and securing stable revenue streams. The Olin-Huntsman merger exemplifies this "selective and defensive" approach, aiming to fortify their positions in high-margin, specialized chemical segments.

Strategic Significance & Outlook: A New Era for Specialty Chemicals

OlinHuntsman Corp. is poised to exert considerable influence across the global specialty chemicals market. Its combined technological capabilities and broad product offerings are expected to drive advancements in CASE materials, among other segments, through streamlined supply chains and accelerated product development cycles. As sustainability mandates grow globally, the new company's commitment to developing lower-carbon products and contributing to circular economy initiatives will be keenly observed. This merger sets a critical precedent for future consolidation and strategic repositioning within the chemical industry.

Source: https://www.plasticstoday.com/business/olin-huntsman-merger-signals-selective-m-a-era-in-chemicals

Collected: June 26, 2026 | Automated Research System (Gemini API)

#37 Dow and Univar Solutions Partner to Expand Distribution of Decarbia™ Low-Carbon Products with PCF Certification

Published June 22, 2026 Adhesives/Sealants.org USA

OVERVIEW

Dow and Univar Solutions have forged a long-term agreement to significantly broaden the distribution of Dow's Decarbia™ low-carbon product portfolio, which comes with certified Product Carbon Footprint (PCF) statements. This partnership directly addresses the growing demand for sustainable chemical solutions within the adhesives and sealants industry. The collaboration is set to accelerate the adoption of environmentally responsible materials, enabling customers to meet their decarbonization targets.

IN DEPTH

Key Findings: Dow and Univar Solutions Boost Access to Certified Low-Carbon Products

Dow and Univar Solutions have announced a long-term distribution agreement to substantially expand market access for Dow's innovative Decarbia™ portfolio of low-carbon products. These materials will be supplied with certified Product Carbon Footprint (PCF) statements, providing transparent quantification of their environmental impact throughout their lifecycle. This initiative directly responds to the adhesives and sealants industry's deepening commitment to sustainability and the escalating market demand for eco-conscious solutions.

Technical & Commercial Details: Driving Sustainable Chemistry Adoption

- The Decarbia™ product line leverages Dow's advanced low-carbon manufacturing processes, resulting in a significantly reduced carbon footprint compared to conventional chemical alternatives.
- The accompanying PCF certifications, verified by third parties, offer unparalleled transparency into the greenhouse gas emissions associated with each product, from raw material sourcing to manufacturing and distribution. This allows customers to make informed choices that contribute to their broader supply chain decarbonization goals.
- Univar Solutions will utilize its extensive global distribution network and deep market expertise to broaden the reach of Dow’s sustainable offerings across the coatings, adhesives, sealants, and elastomers (CASE) markets.
- This collaboration reinforces the industry-wide recognition that green chemistry principles and sustainable product development are increasingly becoming key competitive differentiators.

Background & Context: The Imperative for Sustainability in Chemicals

The chemical industry faces mounting pressure from governments, consumers, and investors to mitigate its environmental impact amidst the global climate crisis. The adhesives and sealants sector, serving diverse industries like automotive, construction, and electronics, is pivotal in this transition towards more sustainable materials. Transparent disclosure of product carbon footprints is emerging as a critical metric for evaluating corporate environmental performance, incentivizing companies to intensify their efforts in reducing emissions across the entire supply chain.

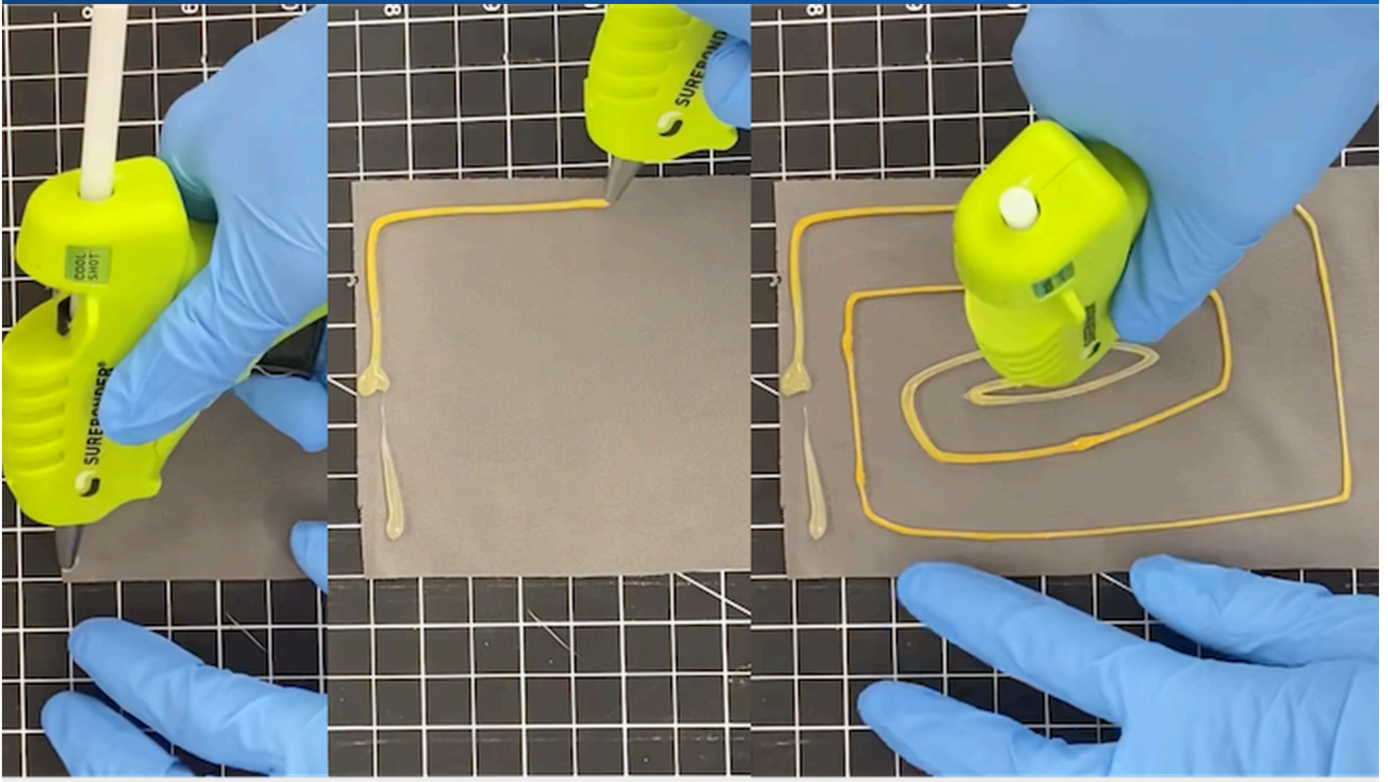
Strategic Significance & Outlook: Catalyzing Decarbonization in Adhesives

The partnership between Dow and Univar Solutions is expected to accelerate decarbonization trends within the adhesives and sealants market. By facilitating easier access to low-carbon products, end-product manufacturers can more readily achieve their sustainability targets. It is anticipated that PCF-certified products will become a widespread industry standard, with environmental performance becoming a primary criterion for product selection. This trend is likely to prompt other chemical suppliers to pursue similar initiatives, further propelling the transition to sustainable materials across the industry.

Source: https://adhesives.org/news-innovations/

#38 Geisys Ventures Unveils Patented D-Glue Debondable Adhesive, Enabling Product Reusability and Driving Circular Economy

Published June 25, 2026 Design World USA



OVERVIEW

Geisys Ventures, led by Kristoffer Stokes and Philip Costanzo, has developed the patented D-Glue technology platform, a debondable adhesive designed to simplify product manufacturing and disassembly. This innovative glue enables reprocessing, repair, and reuse throughout a product's entire lifecycle, aiming to foster a true circular economy. D-Glue is initially targeting consumer electronics, textiles, apparel, and the energy sector to significantly reduce waste and improve resource efficiency.

IN DEPTH

Key Findings: D-Glue Debondable Adhesive Revolutionizes Product Lifecycle Management for Circular Economy

The "D-Glue" technology platform, developed by Kristoffer Stokes and Philip Costanzo of Geisys Ventures, promises to revolutionize how products are manufactured, repaired, and disassembled throughout their lifecycle. This patented debondable adhesive is engineered to maintain strong adhesion under normal conditions yet can be easily debonded upon specific external stimuli, such as heat or particular chemical agents. This breakthrough facilitates unprecedented ease in product reprocessing, repair, and component reuse, serving as a critical enabler for a true circular economy.

Technical & Commercial Details: Mechanism and Initial Market Focus

- **On-Demand Debonding:** D-Glue is designed to switch from an adhesive state to a non-adhesive state in response to controlled external triggers. This "on-demand" debonding capability eliminates the need for destructive disassembly methods, significantly reducing the risk of component damage during repair or end-of-life processing.
- **Lifecycle Versatility:** Unlike conventional adhesives that often complicate repair and recycling, D-Glue allows for rework at any stage of a product's life. This simplifies manufacturing defect repairs, enables consumer-level product servicing, and streamlines final recycling or component recovery processes.
- **Targeted Sectors:** Geisys Ventures is initially focusing D-Glue's application on consumer electronics (e.g., smartphones, tablets), textiles, apparel, and the energy sector (e.g., solar panels). These industries often face challenges related to short product lifespans, significant waste generation, or high maintenance and repair costs, making them prime candidates for circular economy solutions.
- **Environmental Impact Reduction:** By increasing the reusability of components and reducing energy consumption and emissions associated with waste disposal, D-Glue substantially improves the environmental footprint of manufactured goods.

Background & Context: The Global Push for Circularity

The global shift from a linear "take-make-dispose" economy to a circular model is an urgent imperative driven by concerns over resource depletion, waste accumulation, and climate change. The electronics industry, in particular, grapples with rapid product obsolescence and complex, difficult-to-recycle designs. Regulatory bodies, notably in the European Union, are introducing legislation mandating greater recyclability and repairability at the product design stage. Technologies like debondable adhesives are thus becoming crucial solutions for meeting these evolving regulatory requirements.

Strategic Significance & Outlook: Adhesives as Enablers of Sustainable Futures

Debondable adhesives like D-Glue represent more than just an evolution in bonding agents; they have the potential to fundamentally transform product design, manufacturing, consumption, and disposal paradigms. Widespread adoption of this technology could facilitate new business models centered around "product-as-a-service" and "right to repair," empowering consumers to extend product lifespans and make more environmentally conscious choices. Looking ahead, D-Glue is expected to find applications across a broader range of industrial sectors, further expanding the role of adhesive technology in achieving a sustainable society.

Source: https://www.designworldonline.com/a-glue-that-lets-go-d-glues-debondable-adhesive-changes-how-engineers-think-about-end-of-life/

#39 tesa Unveils Three Automation-Ready Adhesive Solutions to Boost EV Battery Performance and Reliability at Automotive Engineering Exposition 2026

Published June 24, 2026 PR Newswire Germany

OVERVIEW

tesa showcased three advanced, automation-ready adhesive solutions at the Automotive Engineering Exposition 2026, designed to enhance electric vehicle (EV) battery performance and reliability. These innovative solutions target battery cell wrapping, battery pack sealing, exterior attachments, and bodyshop processes. Through a joint display with Plasmatreat, tesa also highlighted how the integration of surface treatment with adhesive technology can dramatically improve bonding performance, signaling its commitment to the future of e-mobility.

IN DEPTH

Key Findings: tesa Introduces Three Advanced Automated Adhesive Solutions for Enhanced EV Battery Performance and Reliability

At the Automotive Engineering Exposition 2026, tesa made a significant announcement, unveiling three advanced, automation-ready adhesive solutions aimed at substantially improving the performance and reliability of electric vehicle (EV) batteries. These solutions are poised to contribute to streamlining EV manufacturing processes and extending product lifespans, covering a wide array of applications including battery cell wrapping, battery pack sealing, and even exterior attachments and bodyshop processes. Furthermore, in a joint demonstration with Plasmatreat, tesa concretely illustrated how the synergistic integration of surface treatment technology with adhesive technology optimizes bonding performance.

Technical & Commercial Details: Adhesive Technologies for EV Challenges

- **Battery Cell Wrapping:** Efficient wrapping of battery cells is crucial for ensuring cell stability, preventing damage from vibrations, and reducing the risk of thermal runaway. tesa's solutions enable high-speed, precise automated application, eliminating bottlenecks in the manufacturing process.
- **Battery Pack Sealing:** EV battery packs require robust protection against moisture, contaminants, and external impacts. tesa's adhesive sealing solutions provide excellent water and dust resistance and durability, guaranteeing the long-term reliability of the battery pack. This is a critical factor directly impacting EV lifespan and safety.
- **Exterior Attachments and Bodyshop Processes:** To achieve vehicle lightweighting and greater design freedom, adhesive bonding for components is widely adopted in the automotive industry. tesa offers solutions that meet the high bonding strength, durability, and integration requirements for automotive manufacturers, contributing to reduced production costs and improved quality.
- **Collaboration with Plasmatreat:** The integration with Plasmatreat’s plasma surface treatment technology enhances the surface energy of the bonding substrates, dramatically improving the wettability and adhesion of the adhesive. This maximizes bonding strength between dissimilar materials, achieving highly reliable joints. This is particularly effective for solving multi-material joining challenges in EVs.

Background & Context: Explosive EV Market Growth and Adhesive Technology Evolution

Amidst the global decarbonization trend, the electric vehicle (EV) market continues its rapid expansion. For widespread EV adoption, key factors include battery performance (range, charging speed), safety (thermal runaway prevention), and manufacturing cost reduction. Adhesive technology is gaining significant attention as a primary enabling technology to address these challenges, offering advantages over traditional mechanical fastening in terms of lightweighting, stress distribution, and thermal management for battery pack assembly. Automation capability is crucial for achieving mass production and cost efficiency for EVs.

Strategic Significance & Outlook: Supporting Sustainable, High-Performance EV Production

The solutions introduced by tesa reconfirm the critical importance of adhesive technology in EV manufacturing. Automation-ready, high-performance adhesives accelerate manufacturing processes and improve quality, while dramatically enhancing EV battery safety and durability. Subsequently, tesa will continue to collaborate with automotive industry partners to develop innovative adhesive solutions that support the further evolution of e-mobility. The integration with surface treatment technologies has the potential to become a new standard across the adhesive industry, enabling sustainable bonding solutions for diverse materials.

Source: https://www.prnewswire.com/apac/news-releases/next-generation-bonding-tesa-showcases-automotive-adhesive-solutions-at-automotive-engineering-exposition-2026-302807160.html