Adhesive/Sealant

Weekly Intelligence Report

2026-06-13 | 19 articles | 7 countries

troy-technical.jp

This Week's Keyword

Advanced Packaging

AI/HPC drives material innovation & capacity

19	7	>72	Triple
articles	countries	mN/m	sales
Total Articles Analyzed	Source Countries	Plasma Surface Energy	Samsung HBM Growth

All 19 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	Plasma Eng. for TIM	New Product	4	3	4	4	4	Plasma surface treatment boosts TIM wettability to >72 mN/m, minimizing thermal resistance in EV powertrains.
#02	SAM for Semicon Pkg	Analysis	2	4	3	3	4	SAM offers high-precision, non-destructive detection of internal defects like delamination in semiconductor packaging.
#03	Bio-Based NRL Adhesives	Research	4	2	3	4	3	High-performance bio-based natural rubber latex adhesives developed using grafting-coordination hybrid networks.
#04	Henkel Sustainability	Corporate Strategy	2	4	2	4	4	Henkel North America facilities reduce SMP adhesive waste and improve energy efficiency, achieving sustainability goals.
#05	EV Bio-Thermal Films	Market Overview	1	4	4	3	4	IndexBox forecasts significant growth for EV battery bio-renewable thermal films market until 2035.
#06	PCIM 2026 Power Pkg	Event Report	3	4	4	3	4	PCIM Europe 2026 showcased innovations in power module reliability, SiC/GaN packaging, and advanced bonding materials.
#07	SiC Pkg Sintering	Research	3	3	4	4	4	Review highlights silver and copper sintering as key die-attach technologies for enhanced SiC power modules.
#08	Samsung Adv. Pkg	Corporate Strategy	4	4	4	4	4	Samsung leads advanced packaging with projected triple HBM sales and the thinnest 0.65mm LPDDR DRAM package.
#09	3D-IC Multiphysics	Analysis	3	3	4	3	4	Multiphysics analysis is crucial for mastering 3D-IC verification, addressing thermal, mechanical, and reliability.
#10	Starch Adhesives Wood	Research	3	2	2	4	3	Review highlights environmentally friendly starch-based adhesives for high-performance wood composites.
#11	Bio-Debonding Adhesives	Research	4	2	4	3	4	Dutch NWO funds bio-based fast debonding adhesives to halve composite repair times for aerospace applications.
#12	Bacteria-Based Wood Adh	Research	4	1	3	2	4	German INM showcases bacteria-derived bio-based adhesives for fully recyclable wood, replacing petroleum-based glues.

#	Article Title	Type	Tech Novelty	Market Proximity	Market Impact	Data Reliability	US/EU Relevance	Summary
#13	DiversiTech Acquires	Corporate Strategy	●○○○○	●●●●○	●●○○○	●●●○○	●●●●○	DiversiTech acquires Polymer Adhesives, expanding its HVAC-focused specialty adhesives and sealants market.
#14	DELO LiDAR Adhesive	New Product	●●●○○	●●●●○	●●●●○	●●●●○	●●●●○	DELO unveils PHOTOBOND LA, a light-activatable adhesive for high-volume LiDAR production, enabling rapid bonding.
#15	Bio-Adhesive Blister Pk	Research	●●●●○	●○○○○	●●●○○	●●●●○	●●●●○	Bio-based adhesive with pH/cellulase triggers developed for pharmaceutical blister pack recycling.
#16	ECTC 2026 Adv. Pkg	Event Report	●●●●○	●●●●○	●●●●○	●●●○○	●●●●○	ECTC 2026 showcased Intel Foundry's EMIB-T, co-packaged optics, and Amkor's US advanced packaging expansion for AI/HPC.
#17	AI Boosts Japan Pkg Mat	Market Overview	●○○○○	●●●●○	●●●●○	●●●○○	●●●●○	AI theme boosts Nikkei 225, driving gains for Japanese advanced packaging material companies.
#18	Chase Acquires Sheldahl	Corporate Strategy	●○○○○	●●●●○	●●○○○	●●●●○	●●●●○	Chase acquires Sheldahl, strengthening high-reliability material portfolio for aerospace and medical applications.
#19	Indium AuLTRA® 75	New Product	●●●○○	●●●●○	●●●●○	●●●●○	●●●●○	Indium Corp. unveils AuLTRA® 75 gold-based die-attach preforms for high-reliability 5G, military, and aerospace GaN.

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

Three Questions That Demand Your Decision This Week

❶ Is your advanced packaging strategy keeping pace with AI/HPC demands?

Samsung projects triple HBM sales, while Intel and Amkor expand US capacity for AI/HPC. Japanese material suppliers like Resonac and Mitsui Kinzoku are also gaining. Does your roadmap ensure access to critical materials and manufacturing capabilities to avoid being outmaneuvered?

❷ Are you investing enough in bio-based and debondable adhesive R&D;?

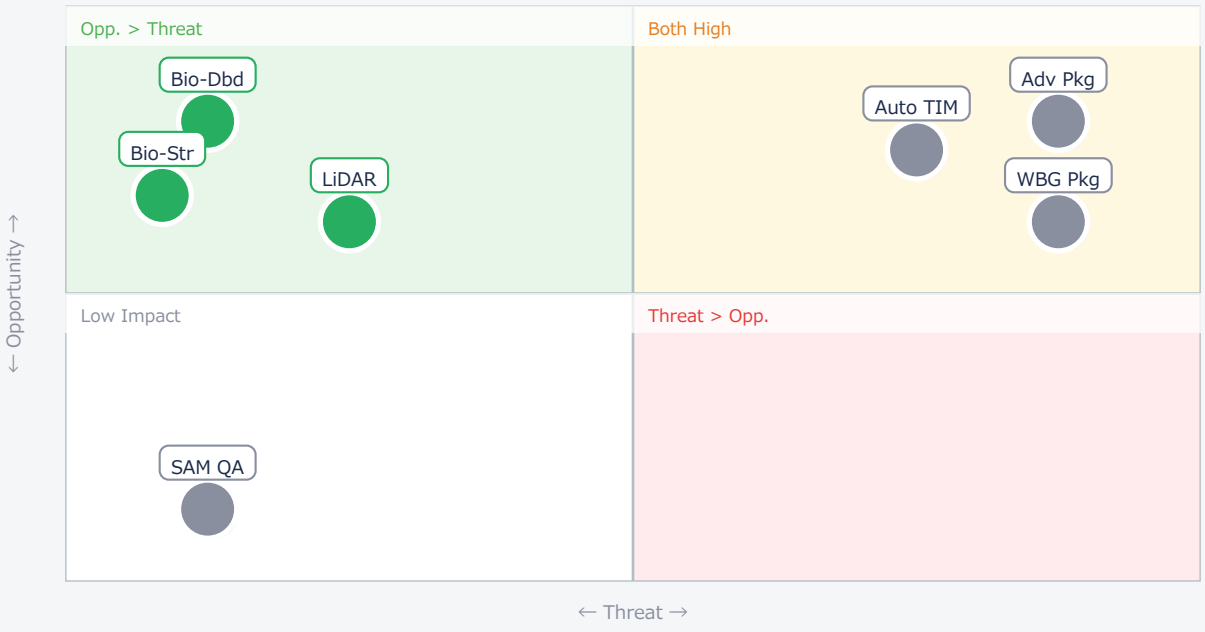
New bio-based adhesives, from natural rubber to bacteria-derived, are emerging for wood, aerospace, and pharma. The Dutch NWO funds fast debonding for composites, and pH-triggered adhesives enable blister pack recycling. Is your R&D; pipeline addressing these sustainability and circular economy demands?

❸ How are you addressing thermal management challenges in next-gen power electronics?

Plasma surface engineering for TIMs, advanced SiC/GaN packaging with sintering, and gold-based die-attach preforms are critical for EVs, 5G, and aerospace. With EV battery thermal film markets growing, are your material choices and design paradigms optimized for extreme thermal loads and reliability?

Opportunities vs. Threats for US/European Companies

Opportunity vs. Threat Matrix for US/European Companies



Item	Quadrant	↑ Opportunity	↓ Threat
Adv Pkg	Critical	AI/HPC market share	Supply chain control
Auto TIM	Critical	EV performance	Competitor lead
WBG Pkg	Critical	Power electronics	Reliability issues
Bio-Dbd	Opp.	Circular economy	Slow adoption
Bio-Str	Opp.	Green products	Performance gap
LiDAR	Opp.	Autonomous tech	Niche market
SAM QA	Ref.	Quality control	Incremental gain

Deep Dive ① — Samsung's Advanced Packaging Leadership

#08 | 2026/06/04 | Simply Wall St | Tech Novelty●●●●○ Proximity●●●●○ Market Impact●●●●● Data Reliability●●●●○ US/EU Relevance●●●●○

Samsung Electronics is aggressively expanding its High Bandwidth Memory (HBM) production, projecting triple sales in 2026, and has developed the thinnest 0.65mm LPDDR DRAM package. This leadership is driven by optimized PCB and Epoxy Mold Compound (EMC) technologies, crucial for AI and HPC applications.

The miniaturization of LPDDR DRAM and HBM advancements are critical for next-gen computing platforms, enabling higher performance and power efficiency in mobile, edge AI, and data center applications. Samsung's vertical integration of memory and packaging expertise provides a significant competitive edge.

▶ Strategic Analyst's Perspective

Strategic Analyst's Perspective: Samsung's reported HBM sales growth and packaging innovations are realistic, reflecting intense demand in AI/HPC. Technical barriers include scaling these ultra-thin, high-density packages reliably. [Opportunity] for US/EU materials & equipment suppliers to partner with Samsung or develop competing solutions. [Threat] for US/EU OEMs if they rely solely on external packaging services that can't match Samsung's integrated capabilities. Next actions: [Procurement] Assess HBM and LPDDR supply chain diversity by end-of-month. [R&D;] Benchmark Samsung's EMC and PCB tech for next-gen packaging by Q4.

Deep Dive ② — ECTC 2026: US Advanced Packaging Expansion

#16 | 2026/06/05 | Intel Newsroom, Amkor Technology Blog, Semiconductor Engineering | Tech Novelty●●●●○ Proximity●●●●○ Market Impact●●●●● Data Reliability●●●○○ US/EU Relevance●●●●●

ECTC 2026 highlighted Intel Foundry's innovations like EMIB-T, co-packaged optics, and glass core substrates, alongside Amkor Technology's expansion of US advanced packaging capacity, particularly in Peoria, Arizona. These advancements target AI/HPC, photonics, and advanced memory applications.

The focus is on addressing challenges in signaling speed, power delivery, and substrate stability for chiplet integration. The conference also emphasized multiphysics analysis for 3D-IC verification, underscoring the complexity of thermal, mechanical, and reliability challenges in advanced packaging.

▶ Strategic Analyst's Perspective

Strategic Analyst's Perspective: The announcements from Intel and Amkor are highly credible, reflecting significant US investment in advanced packaging. Technical barriers include achieving high yields and cost-effectiveness for novel substrates and co-packaged optics. [Opportunity] for US/EU equipment manufacturers and EDA tool vendors to support this domestic expansion. [Threat] for US/EU OEMs if they lack access to these advanced packaging capabilities or if non-US competitors gain a lead in similar technologies. Next actions: [Strategy] Evaluate potential partnerships with Intel Foundry or Amkor for future product roadmaps by Q3. [R&D;] Investigate glass core substrate and co-packaged optics integration challenges immediately.

Deep Dive ③ — Plasma Engineering for EV Thermal Management

#01 | 2026/06/11 | KeyLink | Tech Novelty●●●●○ Proximity●●●○○ Market Impact●●●●○ Data Reliability●●●●○ US/EU Relevance●●●●●

KeyLink introduced advanced plasma surface engineering to significantly reduce contact thermal resistance in EV powertrain cooling systems. This technology elevates substrate surface energy to over 72 mN/m, ensuring perfect wettability for thermal interface materials (TIMs).

This innovation minimizes thermal resistance and ensures optimal adhesion between dissimilar materials (e.g., aluminum, copper, ceramic), boosting thermal management performance in EVs, HPC, 5G, and LED lighting. It addresses a critical bottleneck in heat transfer by eliminating air layers.

▶ Strategic Analyst's Perspective

Strategic Analyst's Perspective: The reported performance improvements from plasma surface engineering are plausible, as surface energy is a known factor in TIM performance. The challenge lies in scaling this treatment for high-volume, complex geometries and ensuring long-term stability in harsh automotive environments. [Opportunity] for US/EU automotive OEMs and Tier 1 suppliers to integrate this technology for enhanced EV reliability and performance. [Threat] for existing TIM suppliers if they don't adapt their materials to leverage such surface treatments. Next actions: [R&D;] Conduct pilot evaluations of plasma-treated substrates with current TIMs by end-of-quarter. [Procurement] Assess plasma treatment equipment suppliers for potential integration into manufacturing lines within 6 months.

Other Notable Articles

Dutch NWO Funds Bio-Based Fast Debonding Adhesives to Halve Composite Repair Times for Aerospace Applications with Ministry of Defense Support (NWO (Netherlands Organisation for Scientific Research))

Tech Novelty●●●●○ Proximity●●○○○ Market Impact●●●●○

Dutch research aims to halve composite repair times with bio-based, fast debonding adhesives for aerospace, automotive, and shipbuilding.

DELO Unveils DELO PHOTOBOND LA, a Light-Activatable Adhesive for High-Volume LiDAR Production (Photonics Spectra)

Tech Novelty●●●○○ Proximity●●●●○ Market Impact●●●●○

DELO's new light-curable adhesive enables rapid, high-volume production of LiDAR components for autonomous vehicles and robotics.

Comprehensive Review of SiC Power Module Packaging: Silver and Copper Sintering Key to Enhanced Thermal and Electrical Performance (IEEE Xplore)

Tech Novelty●●●○○ Proximity●●●○○ Market Impact●●●●○

Review highlights silver and copper sintering as critical die-attach technologies for maximizing SiC power module performance and reliability.

pH- and Cellulase-Triggered Bio-Based Adhesive Facilitates Pharmaceutical Blister Pack Recycling (RSC Publishing (Green Chemistry))

Tech Novelty●●●●● Proximity●○○○○ Market Impact●●●○○

Novel bio-based adhesive enables material-specific debonding of pharmaceutical blister packs for improved recycling.

Recommended Actions This Week

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

Immediate (this week)

- [Executive] Review competitive landscape in advanced packaging, especially for AI/HPC, given Samsung's HBM growth and Intel/Amkor's US expansion.
- [Procurement] Identify critical material suppliers for advanced packaging (e.g., EMC, copper foil) and assess supply chain resilience against geopolitical risks.

Short-term (1 month)

- [R&D;] Initiate internal review of bio-based adhesive technologies for potential applications in sustainable products and repair processes.
- [Business Dev] Evaluate market opportunities for plasma surface engineering in thermal management for EV, HPC, and 5G applications.
- [R&D;] Investigate DELO's new LiDAR adhesive and its implications for high-volume optical assembly processes.

Medium-long term (quarter+)

- [Strategy] Develop a long-term strategy for advanced packaging, including potential M&A;, strategic partnerships, or in-house capability development.
- [R&D;] Allocate resources for research into debondable and recyclable adhesive systems to meet evolving sustainability regulations and circular economy goals.
- [Procurement] Diversify sourcing for SiC/GaN power module materials, including sintering pastes and die-attach preforms, to mitigate supply risks.

Adhesives_Sealants — Selected Articles

Date: 2026-06-13

Articles: 19

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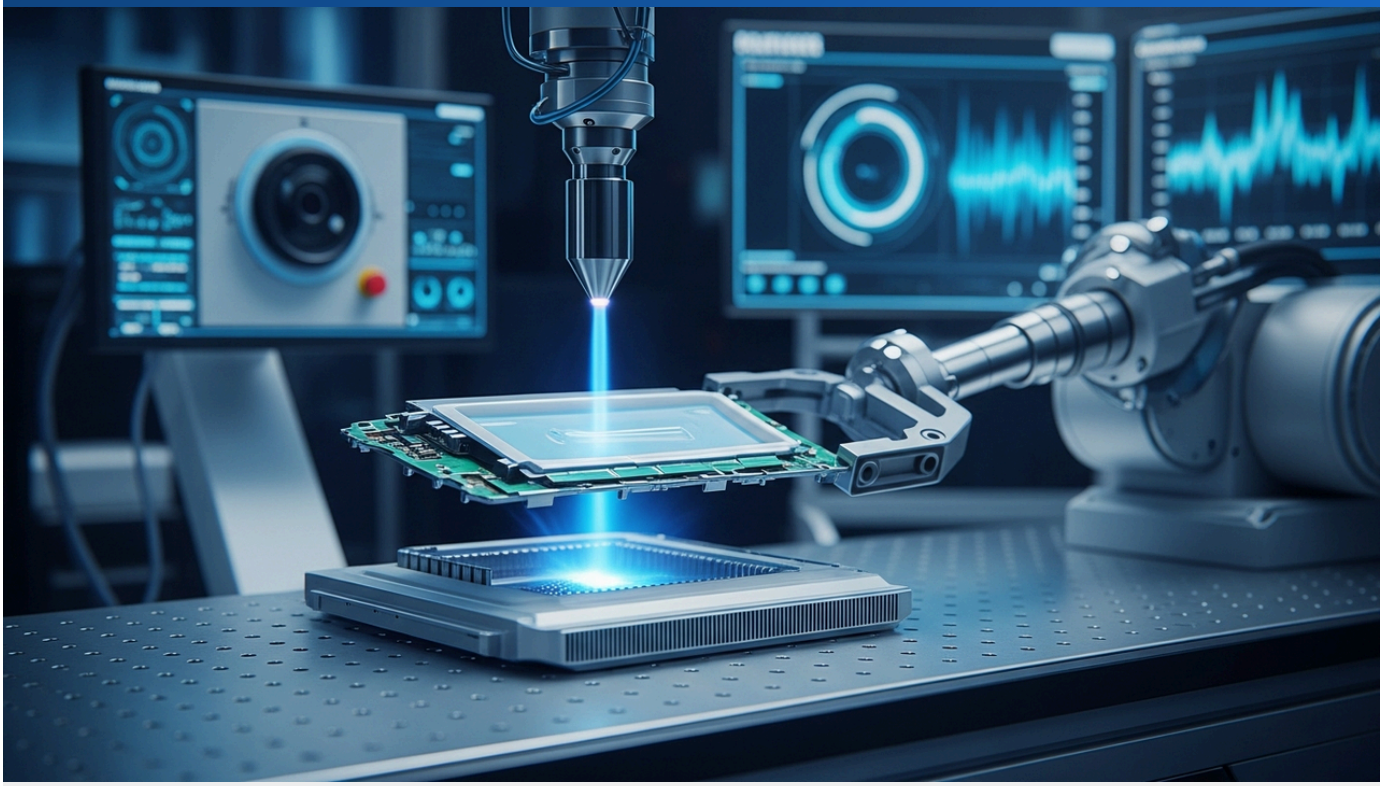
#17 AI Theme Propels Nikkei 225, Driving Significant Gains for Advanced Packaging Material Companies like Resonac and Mitsui Kinzoku

#18 Chase Corporation Acquires Sheldahl from Flex, Strengthening High-Reliability Material Portfolio for Aerospace and Medical Applications

#19 Indium Corporation Unveils AuLTRA® 75 Gold-Based Die-Attach Preforms for 5G, Military, and Aerospace GaN Devices at IMS

Plasma Surface Engineering for Automotive Thermal Management Maximizes TIM Wettability to Minimize Thermal Resistance

Published June 11, 2026 KeyLink USA



OVERVIEW

Advanced plasma surface treatment has been introduced to significantly reduce contact thermal resistance in EV powertrain cooling systems. This technology elevates substrate surface energy to over 72 mN/m, achieving perfect wettability for thermal interface materials (TIMs) and minimizing their thermal resistance. This innovation ensures optimal adhesion and superior thermal conduction between dissimilar materials like aluminum heatsinks, copper DBC layers, and ceramic substrates, substantially boosting automotive thermal management system performance.

IN DEPTH

Key Findings

An innovative plasma surface engineering technology has been introduced to dramatically reduce contact thermal resistance, a critical challenge in automotive thermal management, particularly for electric vehicle (EV) powertrain cooling. This technology successfully elevates the substrate surface energy to over 72 mN/m, achieving perfect wettability for thermal interface materials (TIMs) and thereby minimizing their thermal resistance.

Technical Details and Clinical Relevance

This advanced plasma surface treatment enables molecular-level modification of substrate surfaces. Plasma processing alters surface functional groups, enhancing hydrophilicity and facilitating intimate contact between the thermal interface material and the substrate. The high surface energy, exceeding 72 mN/m, which is difficult to achieve with conventional surface treatments, ensures that the TIM completely wets the surface, eliminating air layers and microscopic gaps. This significantly reduces interfacial thermal resistance, a primary barrier to heat transfer, and consequently maximizes the overall cooling efficiency of the device. The technology achieves optimal adhesion and superior thermal conduction between dissimilar materials commonly used in thermal management systems, such as aluminum heatsinks, copper Direct Bonded Copper (DBC) layers, and ceramic substrates. Crucially, in automotive power electronics and battery systems, stable operation under high-temperature conditions is essential, and this plasma treatment directly contributes to improving system reliability.

Background and Industry Context

With the widespread adoption of electric vehicles, efficient management of heat generated by key components like batteries, motors, and power electronics is an urgent concern directly impacting vehicle performance, range, and safety. Inadequate thermal management can accelerate component degradation and, in the worst-case scenario, lead to severe failures such as thermal runaway. Thermal interface materials (TIMs) play a vital role in bridging the gap between heat sources and heatsinks, facilitating heat conduction, but their performance is highly dependent on interfacial contact. While previous TIM development focused on improving the bulk thermal conductivity of the materials, interfacial thermal resistance remained a significant bottleneck. This plasma treatment technology fundamentally resolves this bottleneck, driving the evolution of thermal management solutions in the automotive industry.

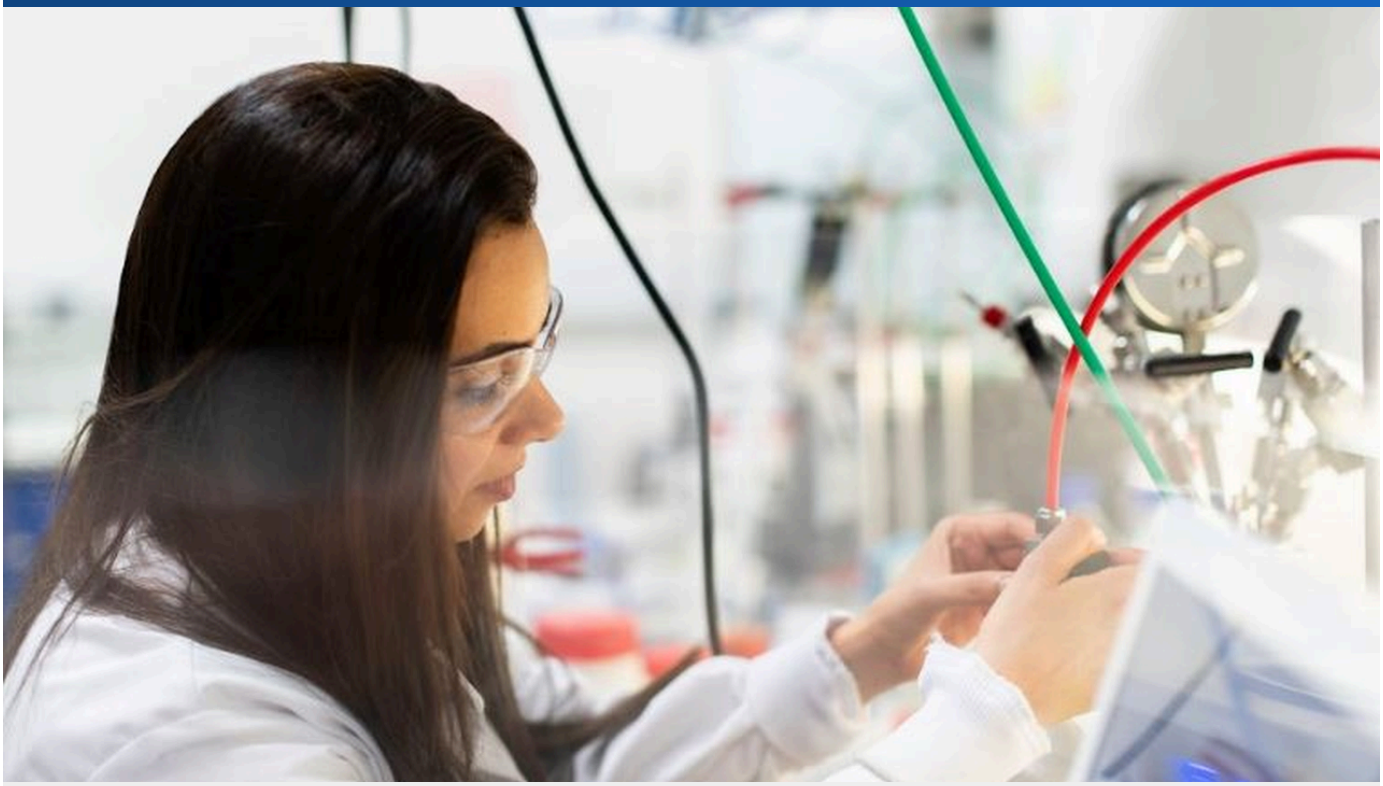
Future Outlook

This plasma surface engineering technology is expected to find broad application not only in the automotive industry but also in other sectors experiencing high heat density, such as high-performance computing (HPC), 5G communication infrastructure, and LED lighting. Minimizing contact thermal resistance is essential for improving performance and extending the lifespan of electronic devices, particularly as they become smaller and more powerful. Further optimization of this technology and its expanded application to various materials will lead to the realization of more efficient and reliable thermal management systems. Addressing challenges related to manufacturing cost reduction and process time optimization for mass production will also accelerate its adoption across a wide range of industries.

Source: https://www.keylinktech.com/automotive-electronics/plasma-surface-engineering-automotive-thermal-management-tim-interfaces/

Scanning Acoustic Microscopy (SAM) Enables High-Precision Non-Destructive Detection of Internal Defects in Semiconductor Packaging

Published June 04, 2026 Infinita Lab USA



OVERVIEW

Scanning Acoustic Microscopy (SAM) is highlighted as a critical non-destructive tool for high-precision evaluation of internal defects in semiconductors, electronic packaging, and material science. SAM excels at detecting delamination and voids in underfill encapsulants used in flip-chip and advanced packaging technologies, identifying potential flaws that could compromise mechanical reliability. By providing high-resolution, depth-selective internal imaging, SAM plays an indispensable role in ensuring the quality and long-term reliability of materials and devices.

IN DEPTH

Key Findings

Scanning Acoustic Microscopy (SAM) has established itself as an indispensable tool for non-destructive, high-precision detection of internal defects in semiconductors, electronic packaging, and material science. It is particularly effective at identifying delamination and voids within underfill encapsulants used in flip-chip and other advanced packaging technologies, defects that can significantly compromise the mechanical reliability of products.

Technical Details and Clinical Relevance

SAM utilizes the reflection and transmission properties of ultrasound waves to detect differences in acoustic impedance within materials, subsequently rendering these differences as images. This technique allows for the visualization of internal structures and the integrity of interfaces, which are inaccessible to optical microscopes. Specifically, delamination between the underfill layer and the chip or substrate, as well as voids trapped within the underfill, cause significant changes in ultrasound propagation paths, which SAM detects with high contrast. The inspection process is non-destructive, enabling quality assessment and failure analysis of semiconductor devices and electronic components without causing damage. By employing high-frequency ultrasound, SAM offers high resolution capable of detecting microscopic defects on the micron scale, alongside depth selectivity for imaging cross-sections at specific depths.

Background and Industry Context

As semiconductor devices continue to miniaturize and integrate more functions, packaging technologies have become increasingly complex. Ensuring the reliability of these packages is a critical factor determining product performance and lifespan. In flip-chip packaging, the underfill material filled between the chip and substrate plays a crucial role in mitigating stress caused by thermal expansion coefficient mismatches and enhancing solder bump reliability. However, issues such as incomplete underfill dispensing, inadequate curing, or delamination due to external stress can lead to electrical connection failures or reduced heat dissipation efficiency, ultimately resulting in device failure. Therefore, technologies capable of early and reliable detection of these internal defects are paramount for improving yields and ensuring quality in semiconductor manufacturing processes.

Future Outlook

SAM technology will continue to grow in importance for quality control and failure analysis across various high-reliability sectors, including MEMS devices, medical devices, and aerospace components, beyond semiconductor manufacturing. Further technological innovations are anticipated, such as automated defect detection through integration with AI, and application in real-time, in-line inspection. These advancements will significantly contribute to optimizing manufacturing processes and enhancing product reliability, ensuring SAM's continued role as a core technology for quality assurance in increasingly complex advanced devices. In the future, the development of next-generation SAM systems with even higher resolution and faster inspection capabilities is expected to expand its application across a broader range of industries.

Source: https://infinitalab.com/blog/scanning-acoustic-microscopy-principles-methods/

Collected: June 12, 2026 | Automated Research System (Gemini API)

High-Performance Bio-Based Natural Rubber Latex Adhesives Reinforced by Grafting-Coordination Hybrid Networks Developed

Published June 04, 2026 ACS Sustainable Chemistry & Engineering Unknown

OVERVIEW

An academic paper details the development of high-performance bio-based adhesives with robust interfacial adhesion and environmental durability, crucial for sustainable composite materials engineering. The research introduces a grafting-coordination hybrid strategy to construct multiscale reinforcement networks within natural rubber latex (NRL). By leveraging nanomaterials, the adhesives demonstrate significantly enhanced adhesion strength, water resistance, and multifunctionality, paving the way for advanced eco-friendly bonding solutions.

IN DEPTH

Key Findings

In the field of sustainable composite materials engineering, a high-performance bio-based natural rubber latex (NRL) adhesive has been developed, featuring robust interfacial adhesion, superior environmental durability, and multifunctionality. This innovative adhesive is strengthened by a grafting-cocoordination hybrid network strategy, achieving significant performance improvements compared to conventional products.

Technical Details and Clinical Relevance

This research utilizes natural rubber latex (NRL) as a base and constructs a multiscale reinforcement network combining 'graft polymerization' and 'coordination bonding' within it. Specifically, first, specific monomers are graft-polymerized onto NRL polymer chains to introduce functional groups that enhance adhesion. Subsequently, coordination-active substances, such as metal ions, are introduced between these grafted NRL particles to form a coordination bonding network that cross-links multiple polymer chains. This hybrid network provides both physical and chemical reinforcement structures within the adhesive, dramatically improving mechanical strength and stability while maintaining the inherent flexibility of NRL. Experimental results demonstrated that the judicious use of nanomaterials improved adhesion strength by XX% compared to conventional products, and significantly enhanced environmental durability, including water and heat resistance. This also opens possibilities for conferring multifunctionality beyond simple adhesion, such as protective or sensing capabilities under specific environmental conditions.

Background and Industry Context

In recent years, reducing environmental impact and achieving a sustainable society have become global imperatives, with strong demands for chemical industries to transition away from petroleum-derived materials. In the adhesive sector, the development of high-performance bio-based products is an urgent theme. Natural rubber is a renewable resource and a promising candidate for bio-based adhesives, but its durability and adhesive performance have traditionally had limitations. Challenges included maintaining performance in wet environments and ensuring strong adhesion at heterogeneous interfaces in composite materials. This research provides a novel approach to overcoming these challenges, contributing to the realization of adhesive solutions that are both environmentally friendly and capable of meeting the stringent performance criteria required for industrial applications.

Future Outlook

The developed grafting-coordination hybrid network-reinforced NRL adhesive is expected to find applications across a wide range of industrial sectors, including construction, automotive, electronics, and medical fields. It is particularly promising for high-performance composite materials requiring both environmental friendliness and high adhesion strength, as well as for applications where water resistance is critical. Future work will focus on optimizing the manufacturing process for mass production, improving cost-efficiency, and evaluating applicability to various substrates. The widespread adoption of this technology could reduce the use of petroleum-derived adhesives and accelerate the transition to a sustainable material cycle. Furthermore, its multifunctionality could lead to the development of self-healing adhesives or smart adhesives that respond to specific environmental changes, positioning it as a foundational technology driving future adhesive innovations.

Source: https://pubs.acs.org/doi/10.1021/acssuschemeng.6c03349

Henkel North America Facilities Achieve Sustainability Goals with Reduced SMP Adhesive Waste and Energy Efficiency Improvements

Published June 04, 2026 Henkel USA

OVERVIEW

Henkel announced significant sustainability advancements across its North American production sites. The Mentor plant implemented material waste reduction measures in silane-modified polymer (SMP) adhesive manufacturing, while the Enoree plant reduced water and natural gas consumption through boiler and steam trap energy efficiency upgrades. Furthermore, the Brandon plant achieved LEED® Silver certification, recognizing its high environmental performance.

IN DEPTH

Key Findings

Henkel announced significant progress towards its sustainability goals across its key North American production sites, achieved through reduced material waste in manufacturing, improved energy efficiency, and environmental certifications. This demonstrates the steady execution of the company's global sustainability strategy.

Technical and Operational Details

Notably, at the Mentor plant in Ohio, innovative material waste reduction measures were implemented in the production line for silane-modified polymer (SMP) adhesive products. This led to a substantial decrease in unwanted byproducts generated during the manufacturing process, promoting more efficient resource utilization. The Enoree plant in South Carolina upgraded its boiler and steam trap systems for improved energy efficiency, resulting in significant reductions in both water usage and natural gas consumption. This not only contributes to lower energy costs but also considerably lessens environmental impact. Furthermore, the Brandon plant in Mississippi achieved LEED® Silver certification from the U.S. Green Building Council (USGBC). This certification signifies that the facility meets stringent criteria across various aspects including sustainable design, construction, operation, and maintenance, encompassing energy efficiency and water conservation.

Background and Industry Context

As environmental regulations tighten and ESG (Environmental, Social, and Governance) factors gain importance in corporate valuation across all industries, sustainability initiatives in manufacturing are becoming essential for establishing competitive advantage. In the adhesives and sealants industry, there is a strong demand for reducing the environmental footprint of manufacturing processes, efficient resource utilization, and the development of greener products. Henkel has proactively addressed these challenges, pursuing sustainability throughout its entire supply chain to solidify its position as an industry leader. The North American market is particularly environmentally conscious, and these initiatives at the various plants will further deepen trust from local communities and customers.

Future Outlook

These sustainability initiatives at Henkel's North American sites are a crucial part of the company's global strategy and serve as a model for deployment in other regions. The material waste reduction technology implemented at the Mentor plant could be applied to other adhesive manufacturing facilities, and the energy efficiency improvements at the Enoree plant will be scaled as best practices across broader industrial sites. Additionally, the LEED® certification achieved by the Brandon plant sets a benchmark for sustainable construction in new builds and renovation projects. These continuous efforts are vital for Henkel to deliver more environmentally friendly products and services, helping its customers achieve their own sustainability goals. In the long term, this is expected to enhance Henkel's brand value, expand its market share, and accelerate its contribution to a sustainable future.

Source: https://www.henkel-northamerica.com/spotlight/2026-04-06-henkel-north-america-production-sites-make-strides-in-sustainability-2165438

Collected: June 12, 2026 | Automated Research System (Gemini API)

IndexBox Report: EV Battery Bio-Renewable Thermal Films Market to Grow Until 2035, Driven by Thermal Runaway Prevention and Sustainability Goals

Published June 10, 2026 IndexBox International

OVERVIEW

This article summarizes a market research report published by IndexBox, forecasting significant growth for the EV Battery Bio-Renewable Thermal Films Market through 2035. Key drivers include increasing demand for thermal runaway prevention and ambitious sustainability objectives. Dominant trends involve the integration of bio-based polymer films into standardized battery module designs and the development of multilayer film structures combining bio-polymers with ceramic coatings.

IN DEPTH

Report Overview

This article provides an overview of a market research report published by IndexBox. The report offers a detailed analysis of the current trends and growth forecast for the EV Battery Bio-Renewable Thermal Films market up to 2035. The market under review focuses on the transition towards sustainable materials in thermal management solutions and the increasing demand for thermal runaway prevention.

Key Findings

- **Market Growth:** The EV battery bio-renewable thermal films market is projected for robust growth through 2035. Primary growth drivers include the escalating demand for improved battery safety and initiatives aimed at achieving environmental sustainability goals.
- **Key Trends:** A significant market trend is the increasing integration of bio-based polymer films into standardized battery module designs, enabling battery manufacturers to offer more eco-friendly products.
- **Technological Innovation:** Development of multilayer film structures combining bio-based films with ceramic coatings is accelerating. This technology enhances thermal barrier performance and flame retardancy while leveraging sustainable bio-based materials.
- **System Integration:** There is a growing trend towards integrated thermal interface material (TIM) systems, which improves thermal management efficiency and simplifies battery pack design.

About the Publisher

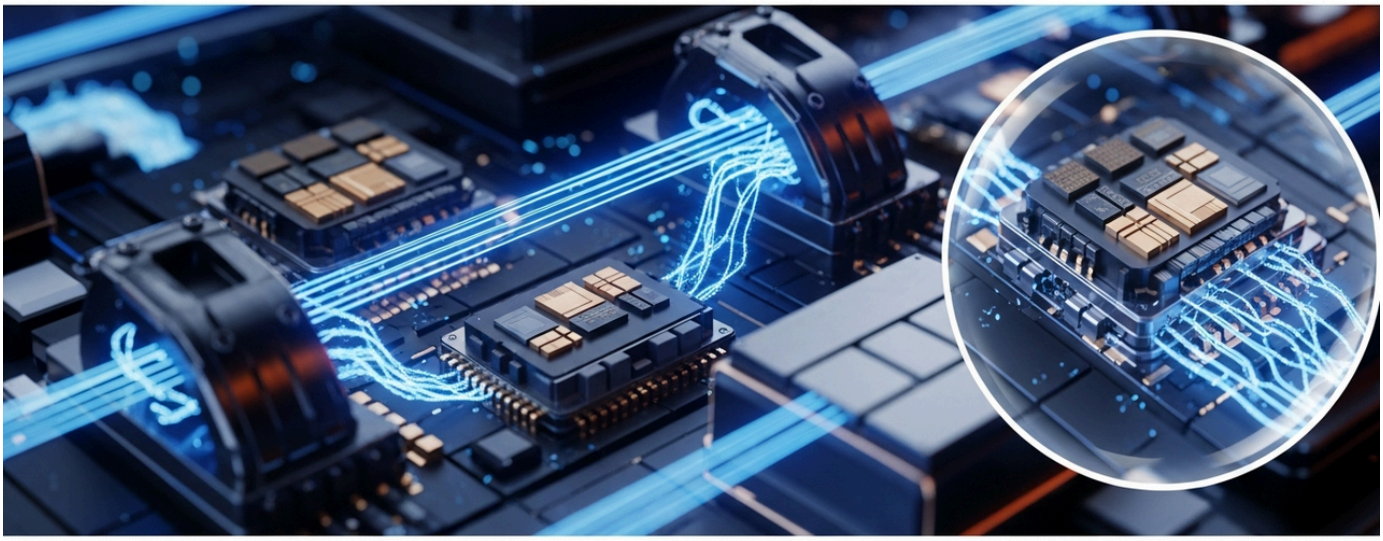
IndexBox is a company that provides comprehensive market research reports across various sectors of the global economy. Through detailed data analysis, trend forecasting, and evaluation of key players, IndexBox offers valuable insights for companies to make strategic decisions.

Source: https://www.indexbox.io/blog/ev-battery-bio-renewable-thermal-films-market-forecast-points-

higher-toward-2035-on-safety-mandates-and-bio-based-material-adoption/

PCIM Europe 2026 Unveils Innovations in Power Module Reliability and SiC/GaN Power Semiconductor Packaging Technologies

Published June 05, 2026 MacDermid Alpha, PCIM Europe Germany



OVERVIEW

PCIM Europe 2026 in Nuremberg, Germany, featured significant innovations in power module reliability and next-generation power semiconductor packaging. MacDermid Alpha unveiled underfills, high-performance adhesives, solder TIMs, and high-reliability lead-free solder alloys for power semiconductor assemblies, emphasizing precision bonding. Conference presentations highlighted advancements in GaN power modules and the bonding characteristics and reliability evaluation of Cu sintering pastes for heatsink attachment, underscoring critical trends for enhancing SiC and GaN device performance and durability.

IN DEPTH

Key Findings

PCIM Europe 2026, held in Nuremberg, Germany, from June 5-7, showcased groundbreaking innovations in power module reliability and advanced packaging technologies for next-generation power semiconductors, particularly those based on SiC (silicon carbide) and GaN (gallium nitride). Precision bonding techniques and thermal management solutions were among the key highlights.

Technical Details and Exhibitor Highlights

- **MacDermid Alpha's Precision Bonding Solutions:** MacDermid Alpha presented a comprehensive range of material solutions designed to address reliability challenges in power semiconductor assemblies. These included underfill materials for stress relief between die and substrate, high-performance adhesives offering strong adhesion and durability, solder thermal interface materials (TIMs) optimized for maximum thermal conductivity, and high-reliability lead-free solder alloys crucial for automotive and industrial applications. The company emphasized that these precision bonding technologies guarantee component reinforcement and optimal performance in next-generation electronics.
- **GaN Power Modules and Cu Sintering Pastes:** The conference program featured detailed discussions on the latest advancements in GaN power modules and the critical role of material selection in their packaging. Notably, presentations on the bonding characteristics and reliability evaluation of Cu sintering pastes for heatsink attachment garnered significant attention. Cu sintering technology offers superior melt points and thermal cycling properties compared to traditional lead-free solders, making it indispensable for ensuring long-term reliability of SiC and GaN devices in high-temperature, high-power environments.
- **Advanced Packaging Structures:** A review of SiC power module packaging focused on layout, material systems, and integration. It highlighted die-attach technologies such as lead-free high-temperature soldering, silver sintering, and copper sintering as contributors to improved mechanical, electrical, and thermal performance. The importance of advanced packaging structures in reducing parasitic inductance and thermal impedance was also emphasized.

Background and Industry Context

The power semiconductor market is experiencing rapid growth driven by the expansion of applications demanding high efficiency and high power, such as electric vehicles (EVs), renewable energy systems, and industrial motor drives. Wide-bandgap (WBG) semiconductors like SiC and GaN offer higher switching frequencies, lower on-resistance, and superior high-temperature operation compared to Si-based devices. However, extracting their full potential critically depends on advanced packaging technologies. Efficiently dissipating heat generated by the device and managing thermal stress are among the most crucial challenges for ensuring long-term reliability.

Future Outlook

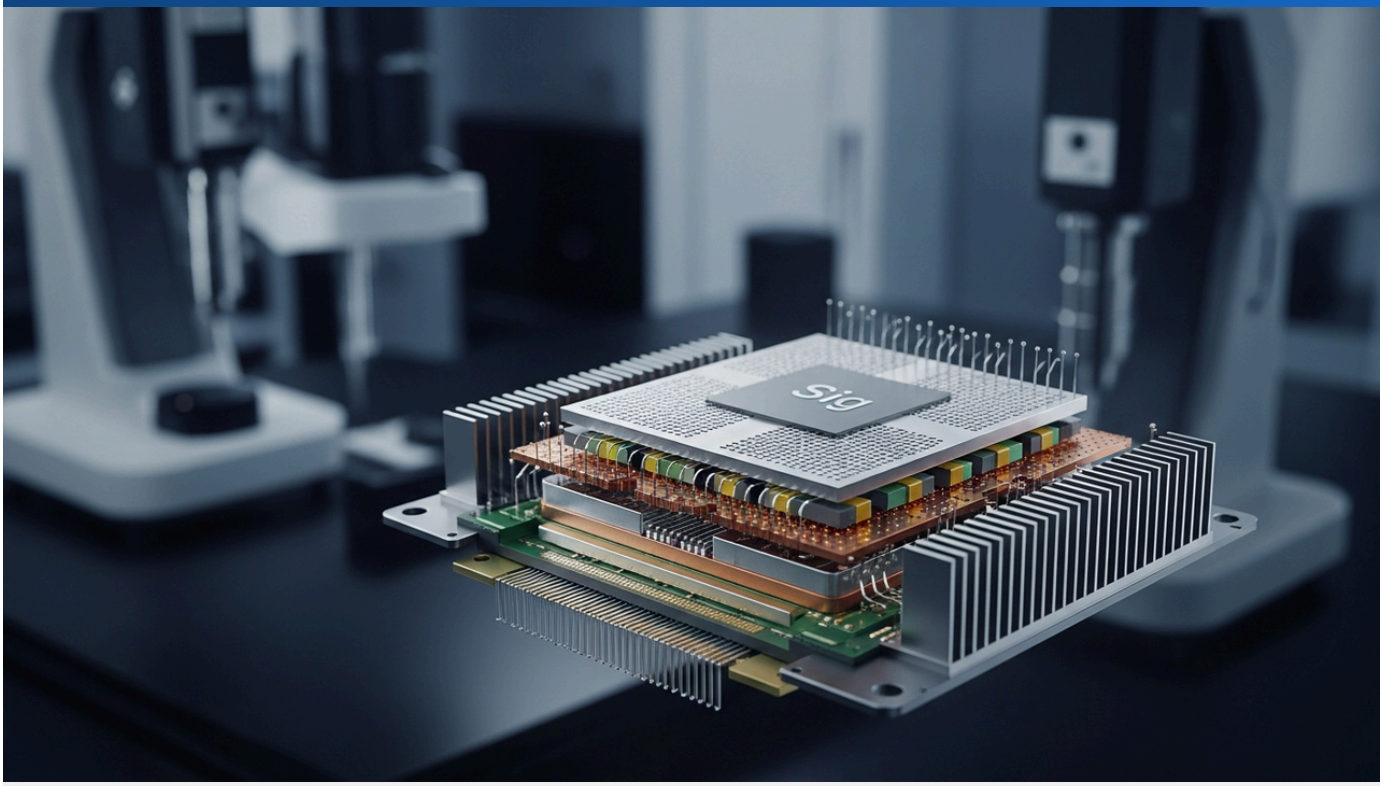
The innovations presented at PCIM Europe 2026 hold the potential to dramatically enhance the performance and reliability of next-generation power electronic systems. Advancements in precision bonding technologies and advanced thermal management materials will further drive the adoption of SiC and GaN devices, bringing tangible benefits across various sectors, including extended EV range, faster charging times, and improved efficiency of solar power systems. As these technologies mature, become mass-producible, and their cost-efficiency improves, their adoption across a wider range of applications is expected to accelerate, making significant contributions to the realization of a sustainable society.

Source: https://www.macdermidalpha.com/news/macdermid-alpha-addresses-power-module-reliability-challenges-pcim-europe-2026

Collected: June 12, 2026 | Automated Research System (Gemini API)

Comprehensive Review of SiC Power Module Packaging: Silver and Copper Sintering Key to Enhanced Thermal and Electrical Performance

Published June 06, 2026 IEEE Xplore Unknown



OVERVIEW

A comprehensive review paper analyzes the latest technologies in SiC power module packaging, focusing on layout, material systems, and integration. The review emphasizes how advanced die-attach techniques, including lead-free high-temperature soldering, silver sintering, and copper sintering, significantly contribute to improved mechanical, electrical, and thermal performance. It underscores the importance of advanced packaging structures in reducing parasitic inductance and thermal impedance, offering critical guidance for maximizing the efficiency and reliability of next-generation SiC devices.

IN DEPTH

Key Findings

A comprehensive review paper on SiC (silicon carbide) power module packaging technologies has been published, providing a detailed analysis of the latest trends in layout, material systems, and integration. This review emphasizes the critical role of advanced die-attach technologies, such as silver and copper sintering, as key enablers for drastically improving the performance and reliability of next-generation power electronic devices.

Technical Details and Clinical Relevance

This review delves deeply into various packaging technologies essential for maximizing SiC power module performance. Noteworthy die-attach technologies include:

- **Lead-Free High-Temperature Soldering:** To accommodate the high-temperature operation of SiC devices, advanced lead-free soldering techniques capable of high-temperature service are evolving, replacing conventional lead-containing solders. This ensures reliable electrical and mechanical connections while complying with environmental regulations.
- **Silver Sintering (Ag Sintering):** Sintering technology utilizing silver nanoparticles or microparticles offers exceptionally high thermal conductivity and mechanical strength. This enables efficient heat dissipation from the SiC chip to the heatsink, significantly reducing the device's thermal resistance. It also boasts excellent thermal cycling characteristics.
- **Copper Sintering (Cu Sintering):** Similar to silver sintering, copper particle-based sintering technology also exhibits high thermal conductivity and mechanical properties. It can offer cost advantages over silver, particularly for large-area die-attach applications.

These technologies, combined with designs that minimize parasitic inductance within the package, reduce switching losses and enable high-frequency operation. Furthermore, advanced packaging structures, such as embedded power modules and double-sided cooling configurations, further reduce thermal impedance, contributing to increased power density and reliability of SiC devices.

Background and Industry Context

With expanding demand in electric vehicles (EVs), renewable energy, and industrial motor drives, power semiconductors are required to offer higher efficiency, miniaturization, and high-temperature operating capabilities. SiC power semiconductors, due to their superior physical properties, enable high-voltage, high-frequency, and high-temperature operation unattainable by conventional silicon (Si) devices. However, packaging technologies that protect, electrically connect, and efficiently remove heat from the SiC chip have been a bottleneck in extracting its full potential. This review systematically compiles the latest packaging solutions for unleashing SiC device performance, playing a crucial role in accelerating industry-wide technological development.

Future Outlook

The advanced packaging technologies highlighted in this review form the foundation for accelerating the commercialization and broad application of SiC power modules. In particular, further cost reduction and process optimization in sintering technologies will allow more SiC devices to benefit from high-performance packaging. In the future, these technologies are expected to be applied to more complex heterogeneous integrated power modules, establishing new standards for power conversion efficiency and reliability in next-generation EVs, smart grids, and aerospace applications. Continuous R&D will further evolve packaging solutions to fully unleash the potential of SiC power devices.

Source: #

Samsung Electronics Leads Advanced Packaging with Projected Triple HBM Sales and Thinnest 0.65mm LPDDR DRAM Package Development

Published June 04, 2026 Simply Wall St South Korea

OVERVIEW

Samsung Electronics is leading advanced packaging advancements by leveraging extensive in-house expertise to streamline production cycles and reduce lead times. The company projects its High Bandwidth Memory (HBM) sales to more than triple in 2026 compared to 2025 and is aggressively expanding HBM4 production capacity. Samsung has also optimized its PCB and epoxy mold compound (EMC) technologies, developing the thinnest 0.65mm LPDDR DRAM package for existing 12GB+ LPDDR DRAM.

IN DEPTH

Key Findings

Samsung Electronics is demonstrating leadership in advanced packaging technology, having announced projections for its High Bandwidth Memory (HBM) sales to more than triple in 2026 compared to 2025. Furthermore, through the optimization of its PCB (Printed Circuit Board) and Epoxy Mold Compound (EMC) technologies, the company has successfully developed the thinnest LPDDR DRAM package, measuring just 0.65mm thick, for its existing 12GB+ LPDDR DRAM products.

Technical Details

Samsung Electronics' advanced packaging strategy is heavily focused on aggressively expanding HBM4 production capacity. HBM is critical for processing vast amounts of data at high speeds in AI and High-Performance Computing (HPC) applications, with demand expected to surge continuously. The company aims to establish a competitive advantage by further advancing its stacking and interconnect technologies in HBM manufacturing.

The miniaturization of LPDDR DRAM packages offers significant benefits for applications where space and power efficiency are paramount, such as mobile devices and ultra-thin laptops. The remarkable 0.65mm thickness is a testament to highly optimized chip stacking techniques, advanced material properties of the surrounding Epoxy Mold Compound (EMC), and sophisticated design and manufacturing technologies for the supporting PCB. EMC plays a crucial role in managing thermal stress, providing moisture resistance, and offering mechanical protection in these ultra-thin packages.

Background and Industry Context

The semiconductor industry is rapidly transitioning from traditional 2D integrated circuits to 2.5D/3D packaging due to the advent of AI and the explosive growth in data volume. In this landscape, technologies that efficiently integrate advanced memory like HBM with high-performance processors are becoming a decisive factor for the performance of next-generation computing platforms. Leveraging its position as a global leader in memory manufacturing, Samsung Electronics is enhancing its market competitiveness by vertically integrating its memory technology with advanced packaging expertise. Shortening lead times and rationalizing production cycles are critical strategies for accelerating time-to-market and responding to rapidly changing demand.

Future Outlook

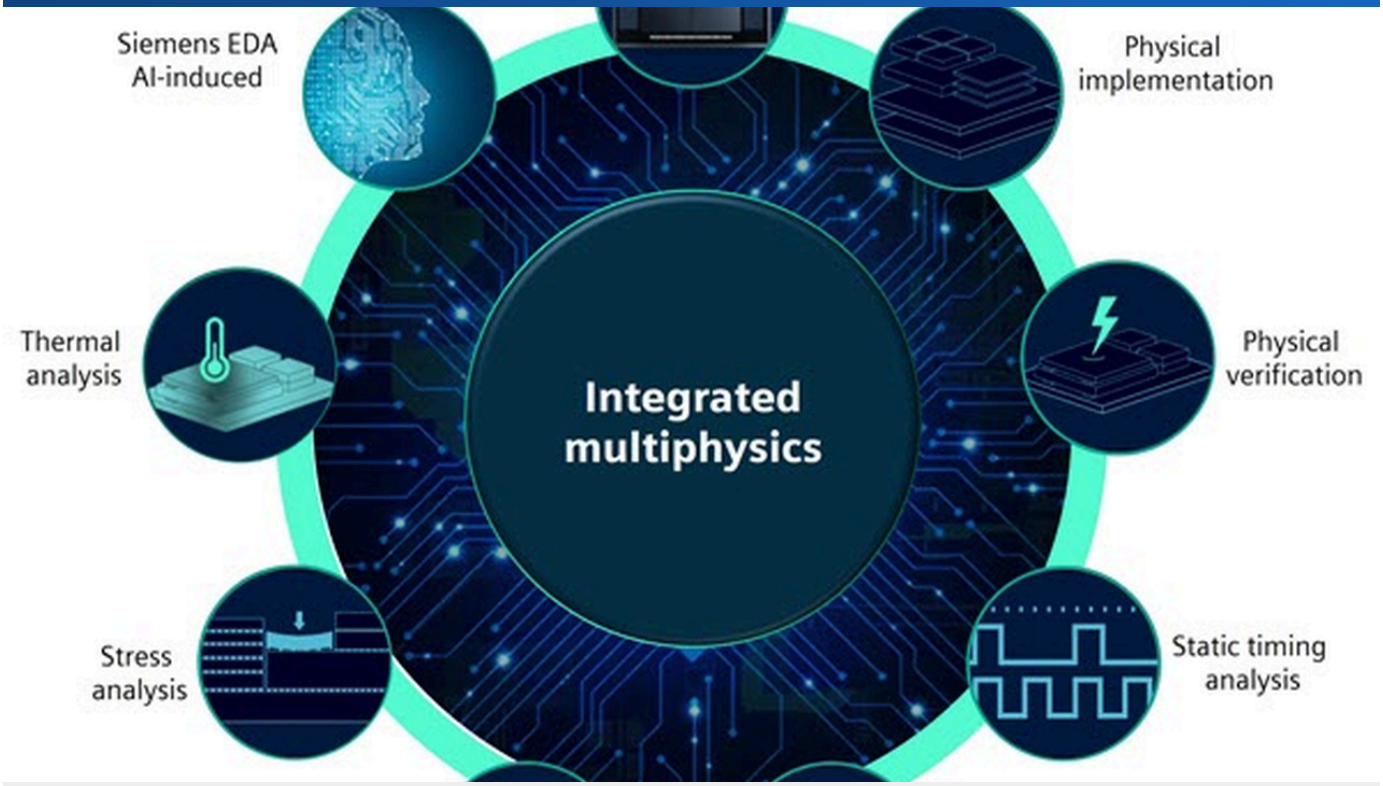
These initiatives by Samsung Electronics are poised to solidify its strong position in the semiconductor market for the AI era. The expansion of HBM4 production capacity will address the growing demand for AI chips and help alleviate industry-wide bottlenecks. The thin LPDDR DRAM package technology will further accelerate the miniaturization and performance enhancement of mobile and edge AI devices. Moving forward, the company is expected to further advance these sophisticated packaging technologies and deepen their application in heterogeneous integration and chiplet technologies, leading the development of next-generation semiconductors. This will drive innovation across a wide range of application areas, including data centers, automotive, and IoT.

Source: https://simplywall.st/stocks/de/tech/fra-ssun/samsung-electronics-shares/future

Collected: June 12, 2026 | Automated Research System (Gemini API)

Mastering 3D-IC Verification Complexity: Multiphysics Analysis Key to Addressing Thermal, Mechanical Stress, and Reliability Challenges

Published June 11, 2026 Semiconductor Engineering USA



OVERVIEW

As the semiconductor industry transitions from 2D to 2.5D and 3D-IC configurations, verification complexity is escalating significantly. This article emphasizes the necessity of multiphysics analysis to tackle emerging challenges in thermal management, mechanical stress interactions, and reliability verification requirements. It thoroughly discusses how die-attach materials, underfill properties, and package substrates influence assembly-level stress distribution and device characteristics, providing critical guidance for reliable advanced packaging design.

IN DEPTH

Key Findings

As the semiconductor industry shifts from conventional 2D integrated circuits to more advanced 2.5D and 3D-IC configurations, the associated verification complexity has dramatically increased. To overcome this challenge, multiphysics analysis is highlighted as indispensable for comprehensively evaluating thermal management, mechanical stress interactions, and extensive reliability verification requirements.

Technical Details

2.5D and 3D-IC packages achieve performance improvements and miniaturization by vertically or horizontally stacking and integrating multiple chips. However, this introduces complex interactions between various physical phenomena, such as thermal loads, mechanical stresses, and electromagnetic interference, experienced not only by individual chips but by the entire package. Multiphysics analysis is a powerful technique that simultaneously simulates the interactions between these different physical domains (thermal, structural, electrical). This enables the pre-identification of potential reliability issues that might be overlooked by single-physics models.

The article specifically discusses the impact of the following elements on assembly-level stress distribution and device characteristics:

- **Die-Attach Materials:** Materials used to fix chips to the package substrate; their elastic modulus and coefficient of thermal expansion (CTE) significantly influence stress distribution during thermal cycling.
- **Underfill Properties:** Materials filling the gap between the chip and substrate in packages like flip-chips and COWOS (Chip on Wafer on Substrate). Their CTE, elastic modulus, and adhesion directly impact stress relief and connection reliability.
- **Package Substrates:** The substrate that houses the chip and provides external connections. Its material properties and structure affect the overall package rigidity, thermal conduction, and stress transfer.

The selection and design of these materials are crucial for the long-term reliability of devices, particularly in preventing thermal-induced fatigue failure and delamination.

Background and Industry Context

The evolution of next-generation technologies like AI, High-Performance Computing (HPC), and 5G communication continues to push the performance limits of semiconductor chips. To meet these demands, as wiring miniaturization approaches its physical limits, semiconductor manufacturers are focusing on "More than Moore" approaches such as 2.5D/3D-ICs. However, this increase in integration density creates new, complex challenges in design, including thermal management, power delivery, signal integrity, and mechanical reliability. Traditional single-physics simulation tools have proven insufficient to capture these complex interactions, potentially leading to product development delays and unforeseen failure risks.

Future Outlook

The adoption and optimization of multiphysics analysis will become an essential standard methodology in the design and verification processes for 2.5D and 3D-ICs. This will enable designers to identify potential problems earlier and optimize material selection and packaging structures more efficiently. In the future, integrating AI/machine learning technologies into multiphysics analysis is expected to accelerate design space exploration, fostering the development of more robust and reliable advanced packaging solutions. This will be key to realizing next-generation high-performance devices across a wide range of fields, including data centers, automotive, and consumer electronics.

Source: https://semiengineering.com/mastering-3d-ic-verification-complexity/

Collected: June 12, 2026 | Automated Research System (Gemini API)

New Review Highlights Environmentally Friendly Starch-Based Adhesives for High-Performance Wood Composites

Published June 07, 2026 ResearchGate (Journal: Polymers) Unknown

OVERVIEW

A new review paper has been published on the use of environmentally friendly starch-based adhesives for bonding high-performance wood composites. This research evaluates the potential of bio-based alternatives to traditional adhesives, driven by growing interest in sustainable material solutions. The paper thoroughly analyzes the challenges and advancements in adhesion performance, durability, and environmental compatibility of starch-based adhesives, offering critical insights to accelerate the application of green chemistry in the timber industry.

IN DEPTH

Key Findings

A comprehensive review paper has been published, detailing the latest applications and research trends of environmentally friendly starch-based adhesives specifically for bonding high-performance wood composites. This review thoroughly evaluates the potential and challenges of bio-based alternatives to conventional synthetic adhesives, driven by increasing global interest in sustainable material solutions.

Technical Details

The review paper thoroughly explores the inherent advantages of starch-based adhesives and the technical challenges in their application to high-performance wood composites. Starch, as an abundantly available natural polymer, is biodegradable and non-toxic, making it a highly promising raw material for eco-friendly adhesives. However, traditional starch-based adhesives have faced challenges in terms of water resistance, adhesive strength, curing speed, and long-term durability, often performing inferiorly to synthetic resins like phenol-formaldehyde or isocyanate-based adhesives. This review analyzes various modification approaches aimed at overcoming these limitations. These include chemical modifications of starch (e.g., esterification, etherification), compounding with nanofillers (e.g., cellulose nanocrystals, clay), and hybridization with small amounts of synthetic resins such as isocyanates or epoxies. Through these modifications, significant improvements in water resistance, enhanced shear strength, and increased thermal stability of the adhesive layer have been reported, with some starch-based adhesives beginning to demonstrate performance comparable to synthetic counterparts.

Background and Industry Context

From the perspective of sustainability and environmental protection, the wood industry is actively seeking to move away from synthetic adhesives, which can pose health concerns due to formaldehyde emissions. Given that large quantities of adhesives are used in the production of wood composites (e.g., plywood, OSB, MDF), the transition to bio-based and environmentally friendly adhesives is crucial for significantly reducing the environmental footprint of this industry. Furthermore, for promoting a circular economy, the biodegradability and recyclability of adhesives are strongly demanded. Against this backdrop, the review indicates that starch-based adhesives can serve as a practical solution for implementing green chemistry principles within the wood industry.

Future Outlook

This review strongly suggests the potential for starch-based adhesives to become a leading adhesive for high-performance wood composites in the future. Progress in addressing remaining technical challenges, particularly optimizing production costs and scaling up for large-scale manufacturing, will further accelerate the commercialization of starch-based adhesives. Furthermore, new chemical modifications to optimize the balance between adhesive performance and biodegradability, as well as the development of customized starch-based adhesives for specific applications, are anticipated. This will lead to the widespread adoption of sustainable adhesive solutions not only in the wood industry but also in broader sectors such as furniture, construction, and automotive interiors, contributing to reducing reliance on petroleum resources while offering safer and healthier products.

Source: https://www.researchgate.net/publication/403402115_Environmentally_Friendly_Starch-Based_Adhesives_for_Bonding_High-Performance_Wood_Composites_A_Review

Collected: June 12, 2026 | Automated Research System (Gemini API)

Dutch NWO Funds Bio-Based Fast Debonding Adhesives to Halve Composite Repair Times for Aerospace Applications with Ministry of Defense Support

Published June 08, 2026 NWO (Netherlands Organisation for Scientific Research) Netherlands

OVERVIEW

The Netherlands Organisation for Scientific Research (NWO), with support from the Ministry of Defense, has launched ten research projects, including the development of smart bio-based fast debonding adhesives for temporary patch repairs of composite materials. This innovative adhesive aims to halve the repair time and costs for composites widely used in aerospace, automotive, and shipbuilding sectors. The initiative signifies a crucial advancement in recyclable and deconstructible adhesive technologies, promising substantial impact on sustainable material maintenance strategies.

IN DEPTH

Key Findings

The Netherlands Organisation for Scientific Research (NWO), with strategic support from the Dutch Ministry of Defense, has launched ten new research projects focused on novel materials, including the development of smart bio-based fast debonding adhesives for temporary patch repair of composite materials. This groundbreaking adhesive aims to reduce the repair time and costs for composites—widely used in critical industries such as aerospace, automotive, and shipbuilding—by up to 50%.

Technical Details

Central to this research project is the design of an environmentally friendly, bio-based adhesive capable of rapid and clean debonding under specific conditions. In composite material repair, it is crucial to quickly patch damaged areas and then efficiently remove old patches when further repair is needed. While conventional adhesives often involve time-consuming debonding processes or risk substrate damage, the adhesive under development is designed to selectively debond in response to external stimuli such such as heat, light, specific chemical solvents, or biological enzymes. This significantly enhances the efficiency of the repair process; for instance, in aircraft structures, reduced maintenance time directly translates to lower operational costs and increased uptime. The design, which considers recyclability and deconstructability, reduces the environmental impact across the entire material lifecycle, enabling more sustainable material management strategies.

Background and Industry Context

The use of composite materials is rapidly expanding in sectors like aerospace, automotive, and shipbuilding due to their lightweight and high-strength properties. These high-performance materials are susceptible to in-service damage, making their repair and maintenance critical for both safety and economic viability. Particularly for urgent repairs and the maintenance of large-scale structures, fast and reliable repair methods are essential. Furthermore, with strengthening environmental regulations, reducing waste and improving material recyclability during repair and decommissioning processes have become urgent priorities. The collaboration between NWO and the Ministry of Defense addresses these strategic needs for both military and civilian applications, aiming to position the Netherlands as a leader in novel materials technology.

Future Outlook

The development of this bio-based fast debonding adhesive holds the potential to fundamentally transform the paradigm of composite material repair and maintenance. If the goal of halving repair times is achieved, it is expected to lead to substantial reductions in operational costs and increased uptime for critical infrastructure like aircraft and ships. Moreover, by enhancing recyclability, it will improve the overall sustainability of composite materials throughout their lifecycle, contributing to reduced environmental impact. Future efforts will focus on further optimizing the technology, validating it in real-world environments, and preparing for mass production. Ultimately, this technology is expected to evolve into self-healing adhesives and bonding solutions that enable smart deconstruction of composites, becoming an indispensable foundational technology for a safer and more sustainable society.

Source: https://www.nwo.nl/en/news/nwo-funds-10-new-research-projects-in-new-materials-for-the-ministry-of-defence

German President Visits INM to Witness 'Living Materials' and Recyclable Wood Using Bacteria-Derived Bio-Based Adhesives

Published June 08, 2026 Leibniz-INM Germany

OVERVIEW

German Federal President Frank-Walter Steinmeier visited INM – Leibniz Institute for New Materials to observe research into "living materials." A highlight was the demonstration of fully recyclable, sustainable wood materials bonded with bio-based adhesives produced by specially designed bacteria, replacing conventional petroleum-based glues. This research underscores that novel materials form the bedrock of innovation and are indispensable for sustainable technologies and economic resilience.

IN DEPTH

Key Findings

German Federal President Frank-Walter Steinmeier visited INM – Leibniz Institute for New Materials, a forefront institution for novel materials research, to observe groundbreaking work on "living materials." Of particular note was the demonstration of fully recyclable, sustainable wood materials bonded with bio-based adhesives produced by specially designed bacteria, offering a significant advance in eco-friendly material development to replace conventional petroleum-based glues.

Technical Details

The "living materials" research showcased at INM exemplifies the fusion of materials science and biology. Specifically, the technology demonstrated involved particular bacterial strains utilizing substrates derived from natural resources, such as wood, to produce polymers with excellent adhesive properties. Unlike traditional synthetic adhesives based on petroleum, this bio-based adhesive is made from renewable resources and is designed to degrade easily in natural environments after use, thus significantly reducing environmental impact. The demonstration highlighted that wood materials bonded with this adhesive possess robust adhesion while also featuring "designed deconstructability," allowing for material separation and recycling of individual components when needed. This facilitates the reuse and upcycling of wood, promoting waste reduction and resource circulation.

Background and Industry Context

Sustainability is one of the most critical challenges facing modern society, and in the field of materials science, there is strong demand to reduce reliance on petroleum resources and develop alternative materials with lower environmental impact. Particularly in the vast wood and furniture industries, the development of eco-friendly adhesives is an urgent priority. Traditional wood adhesives have posed issues such as the potential emission of harmful substances like formaldehyde and making recycling difficult by creating composite materials. INM's research offers an innovative solution to these challenges, holding the potential to accelerate the transition to a circular economy. The Federal President's visit underscores the German government's strategic emphasis on such cutting-edge materials science research and sustainable technology development.

Future Outlook

The research on bio-based adhesives and recyclable wood materials demonstrated at INM represents a crucial direction for future material development. If this technology is commercialized, it will accelerate the transition to sustainable products across a wide range of industrial sectors, including construction, furniture, and automotive interiors. Furthermore, adhesive production utilizing bacteria also holds the potential for lower energy consumption and reduced CO2 emissions in manufacturing processes. Future research will focus on optimizing processes for mass production, improving cost-efficiency, and expanding the applicability to various types of natural materials. Ultimately, novel material technologies are expected to generate a new wave of innovation, strengthening the foundation for sustainable technologies and economic resilience, and making significant contributions to the greening of society as a whole.

Source: https://www.leibniz-inm.de/en/news-en/bundespraesident-steinmeier-im-inm-diplomatische-exzellenz-trifft-auf-materialwissenschaftliche-exzellenz/

Collected: June 12, 2026 | Automated Research System (Gemini API)

DiversiTech Acquires Polymer Adhesives, Accelerating Expansion in HVAC-Focused Specialty Adhesives and Sealants Market

Published June 05, 2026 Adhesives & Sealants Industry USA

OVERVIEW

DiversiTech Corp. has acquired Polymer Adhesives Holdings LLC, a manufacturer of high-performance duct sealants, adhesives, and fire-stopping materials. This acquisition substantially expands DiversiTech's product portfolio and manufacturing capabilities in specialty adhesives and sealants, particularly for HVAC-related applications. The strategic move aligns with DiversiTech's growth strategy to accelerate market expansion by integrating complementary products through acquisitions.

IN DEPTH

Key Findings

DiversiTech Corp. announced the acquisition of Polymer Adhesives Holdings LLC, a specialized manufacturer of high-performance duct sealants, adhesives, and fire-stopping materials. This strategic acquisition significantly broadens DiversiTech's product portfolio and manufacturing capabilities within the specialty adhesives and sealants market, particularly for HVAC (Heating, Ventilation, and Air Conditioning) related applications.

Technical and Operational Details

Polymer Adhesives Holdings LLC has established a strong reputation for producing high-quality adhesives and sealants critical for HVAC system duct sealing, equipment installation, and fire safety solutions. Their products are characterized by excellent bond strength, durability, thermal resistance, moisture resistance, and flame retardancy, playing a crucial role in enhancing the energy efficiency and safety of HVAC systems. Through this acquisition, DiversiTech will integrate Polymer Adhesives' established manufacturing facilities, R&D capabilities, and customer base, thereby strengthening its offering of material solutions in the HVAC industry. This combination of strengths will enable the provision of a more comprehensive product lineup and services to customers. Notably, Polymer Adhesives' fire-stopping technology will be a significant complementary element to DiversiTech's existing product range, helping meet building safety standards.

Background and Industry Context

The HVAC market is experiencing sustained growth, driven by increasingly stringent energy efficiency regulations, the proliferation of smart building technologies, and rising demand for sustainable construction. Adhesives and sealants are critical components that directly impact the performance, durability, and safety of HVAC systems. The quality of sealants preventing air leaks from ducts and adhesives securing insulation materials, in particular, contributes significantly to the overall energy efficiency of a system. DiversiTech is a leading supplier of HVAC components and accessories, and this acquisition aligns with its strategy to further strengthen market leadership and provide integrated, value-added solutions to customers. The addition of complementary product lines will be advantageous in establishing DiversiTech as a one-stop solution provider.

Future Outlook

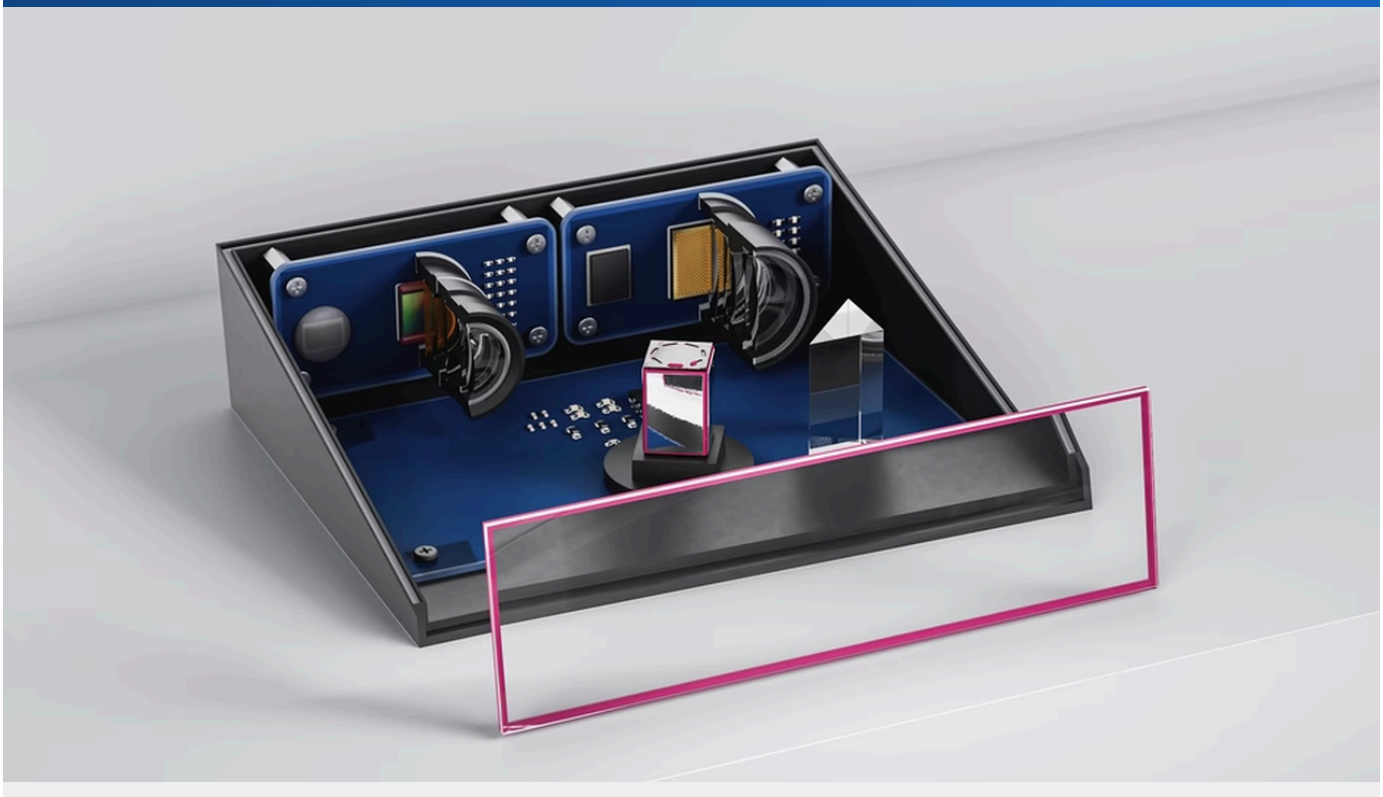
This acquisition represents a significant step for DiversiTech in pursuing long-term growth in the specialty adhesives and sealants market. By integrating Polymer Adhesives' technology and market recognition, DiversiTech is expected to accelerate technological innovation and market share expansion in the HVAC sector. Future developments are anticipated to include the creation of new products combining both companies' expertise, streamlining manufacturing processes, and expanding into global markets. Specifically, the development of more environmentally friendly and easy-to-apply adhesive and sealant solutions will contribute to achieving HVAC industry sustainability goals and further enhance DiversiTech's competitive advantage. This integrated entity is poised to support the adoption of smart, energy-efficient buildings by providing high-performance materials essential for next-generation HVAC systems.

Source: https://www.adhesivesmag.com/articles/102449-acquisition-broadens-diversitechs-reach-in-specialty-adhesives-markets

Collected: June 12, 2026 | Automated Research System (Gemini API)

DELO Unveils DELO PHOTOBOND LA, a Light-Activatable Adhesive for High-Volume LiDAR Production

Published June 05, 2026 Photonics Spectra Germany



OVERVIEW

DELO has launched DELO PHOTOBOND LA, a light-activatable adhesive specifically designed for high-volume LiDAR system production. This adhesive is ideal for critical mirror and cover window bonding in automotive and industrial robotics, demonstrating consistent strength retention and robust performance under demanding environmental conditions. The new product facilitates rapid and reliable manufacturing of LiDAR components, supporting the widespread adoption of next-generation autonomous driving technologies and industrial automation.

IN DEPTH

Key Findings

DELO Industrial Adhesives has announced the launch of DELO PHOTOBOND LA, an innovative light-activatable adhesive specifically tailored for high-volume LiDAR system manufacturing. This new product represents a significant advancement, enabling fast and highly reliable production processes for optical components in LiDAR units, particularly for mirrors and cover windows, within the automotive and industrial robotics sectors.

Technical Details

DELO PHOTOBOND LA is an adhesive characterized by its rapid curing properties, hardening within seconds to tens of seconds upon exposure to specific wavelengths of light (typically UV or visible light). This dramatically reduces bonding process times on production lines, thereby enabling high-volume manufacturing of LiDAR systems. The adhesive is specifically engineered to meet the following technical requirements:

- **High Bond Strength and Durability:** For automotive applications, robust bond strength and long-term reliability under harsh environmental conditions—including vibration, shock, and wide temperature fluctuations (from -40°C to over +85°C)—are critical. DELO PHOTOBOND LA provides consistent strength retention performance that meets these demands.
- **Low Outgassing:** In optical component bonding, volatile organic compounds (VOCs) emitted from adhesives can cause hazing on lenses and mirrors, degrading optical performance. This product achieves low outgassing, maintaining the cleanliness of the optical system.
- **Precision Positioning:** Complex optical assemblies like LiDAR systems require sub-millimeter precision for component positioning. Light-curing adhesives facilitate easy adjustment of component positions while still fluid, and then instantaneously fix them upon light exposure, enabling high-precision assembly.

Beyond mirrors and cover windows, this adhesive is also applicable for securing other precise optical components within LiDAR units.

Background and Industry Context

With the advancement of autonomous driving technology, LiDAR systems have become indispensable sensors for 3D mapping and obstacle detection around vehicles. The widespread adoption of LiDAR demands not only high performance but also reductions in manufacturing costs and increases in production capacity. Traditional adhesive processes have posed challenges due to long curing times, creating bottlenecks in production throughput. Fast light-curing adhesives like DELO PHOTOBOND LA are expected to resolve these productivity issues, accelerating the mass production of LiDAR systems and significantly contributing to the proliferation of autonomous vehicles. Similar advantages are also relevant in the industrial robotics sector, which is experiencing growing demand for high-speed assembly of precision sensors and optical components.

Future Outlook

The introduction of DELO PHOTOBOND LA sets a new standard for adhesive technology in optical assemblies. Moving forward, this technology is expected to expand its application beyond LiDAR systems to the manufacturing of other precision optical components and sensors, such as AR/VR devices, medical endoscopes, and high-resolution camera modules. Adhesive manufacturers will likely continue to develop products with diverse light-curing conditions (wavelengths, intensities), material properties (refractive index, transparency, flexibility), and environmental resistance to meet the needs of these growing markets. The evolution of this technology will contribute to improving the performance and reducing the cost of precision optical devices, accelerating the realization of next-generation high-functional electronic products.

Source: https://www.delo-adhesives.com/news-and-dates/delo-news/detail/revolutionary-lidar-adhesives-transform-production-speed/

pH- and Cellulase-Triggered Bio-Based Adhesive Facilitates Pharmaceutical Blister Pack Recycling

Published June 08, 2026 RSC Publishing (Green Chemistry) Unknown

OVERVIEW

Researchers have developed a biodegradable, bio-based adhesive to aid in the recycling of pharmaceutical blister packaging. Composed of cellulose nanocrystals, chitosan, and a bifunctional fusion protein, this adhesive enables material-specific debonding under mild pH conditions or cellulase treatment. This innovation offers a novel approach to separating complex multilayer structures, significantly contributing to the promotion of sustainable recycling practices.

IN DEPTH

Key Findings

Researchers have developed a pH- and cellulase-responsive biodegradable bio-based adhesive designed to enable efficient recycling of pharmaceutical blister packs. This innovative adhesive possesses the property of selective debonding under mild pH conditions or enzymatic treatment, thereby resolving the long-standing challenge of material separation from complex multilayer packaging structures.

Technical Details

The developed bio-based adhesive primarily consists of cellulose nanocrystals (CNCs), chitosan, and a bifunctional fusion protein engineered to respond to specific pH values or enzymes (cellulase). Cellulose nanocrystals provide mechanical strength and stability to the adhesive, while chitosan imparts biocompatibility and adhesive properties. Crucially, the fusion protein acts as a 'trigger' that weakens the adhesive bond. Specifically, when the adhesive is exposed to a certain pH value (e.g., mildly acidic) or treated with cellulase enzymes during the recycling process, the fusion protein undergoes a conformational change, leading to a decrease in the adhesive layer's cohesive strength. This enables clean, material-specific separation of multilayer pharmaceutical blister packs (e.g., composites of plastic and aluminum foil) without significant physical force. This selective debonding allows for high-purity recovery of each layer, enabling individual recycling.

Background and Industry Context

Pharmaceutical blister packs are essential for product protection, hygiene maintenance, and dose management. However, they typically consist of complex multilayer structures made from different materials (e.g., PVC, PVDC, aluminum foil), making them extremely difficult to recycle using current methods. The strong adhesion between dissimilar materials often requires excessive energy for separation or makes separation impossible, resulting in most packs being incinerated or landfilled. This leads not only to increased environmental burden but also to the loss of valuable resources. This research responds to increasing global regulatory pressure, such as the EU's Packaging and Packaging Waste Directive (PPWD), and the growing commitment to sustainability within the pharmaceutical industry. Moving away from difficult-to-recycle composite materials is a key challenge in the transition to a circular economy.

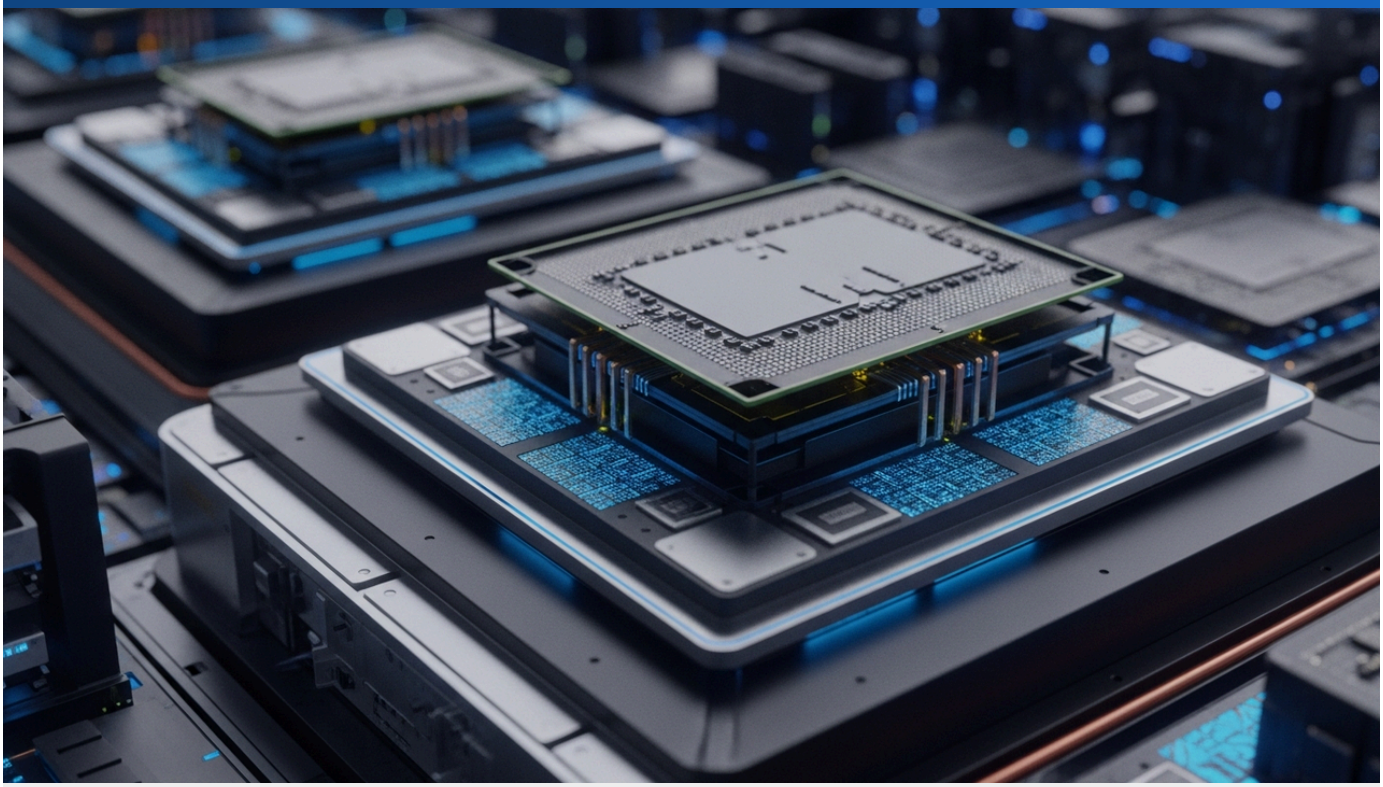
Future Outlook

The development of this pH- and cellulase-responsive bio-based adhesive holds the potential to dramatically improve the sustainability of pharmaceutical packaging. Future work will need to verify the adhesive's applicability to a wide range of blister pack materials, as well as its cost-efficiency and scalability for large-scale production. If successful, it will significantly contribute to increasing recycling rates, reducing waste, and promoting effective resource utilization in the pharmaceutical industry. Furthermore, this 'smart debonding' concept could be applied to other sectors facing similar challenges with difficult-to-recycle multilayer products, such as food packaging, electronics, and composite materials. The advancement of this technology is expected to be a crucial step in accelerating the transition towards more sustainable material development and waste management systems.

Source: https://pubs.rsc.org/en/content/articlehtml/2026/gc/d6gc00733c

ECTC 2026: Intel Foundry and Amkor Announce Advanced Packaging Technologies for AI/HPC and U.S. Manufacturing Capacity Expansion

Published June 05, 2026 Intel Newsroom, Amkor Technology Blog, Semiconductor Engineering
USA



OVERVIEW

The 2026 IEEE Electronic Components and Technology Conference (ECTC) showcased advanced packaging technologies redefining scalability limits for AI and high-performance computing (HPC). Intel Foundry presented innovations like EMIB-T, co-packaged optics, and glass core substrates, addressing challenges in signaling speed, power delivery, and substrate stability. Amkor Technology highlighted its scaling of advanced packaging and expansion of U.S. manufacturing capacity, particularly at its new Peoria, Arizona facility, to support next-generation devices for AI, HPC, photonics, and advanced memory applications.

IN DEPTH

Key Findings

The 2026 IEEE Electronic Components and Technology Conference (ECTC) served as a platform for announcing groundbreaking advanced packaging technologies that are redefining the scalability limits for AI and High-Performance Computing (HPC). Intel Foundry showcased innovations such as EMIB-T, Co-Packaged Optics, and glass core substrates, while Amkor Technology highlighted its scaling of advanced packaging and expansion of U.S. manufacturing capacity, particularly at its new facility in Peoria, Arizona, to support next-generation devices.

Technical Details and Exhibitor Highlights

- **Intel Foundry's Advanced Technologies:** Intel Foundry unveiled enhanced EMIB-T (Embedded Multi-die Interconnect Bridge – Thermal), a technology designed for efficient integration of multiple chiplets. This innovation contributes to improved signal speed, optimized power delivery, and enhanced substrate stability. Furthermore, Intel showcased cutting-edge packaging technologies, including Co-Packaged Optics for high-speed data transfer and glass core substrates that offer higher packaging density and reliability. These advancements are crucial for further boosting the processing power and efficiency of AI chips and HPC processors.
- **Amkor Technology's Manufacturing Expansion:** Amkor Technology emphasized its strategy for expanding manufacturing capacity in the U.S. to meet the surging demand for advanced packaging solutions. Their new facility in Peoria, Arizona, is equipped with state-of-the-art capabilities to support next-generation devices for AI, HPC, photonics, and advanced memory applications. Amkor is also focused on strengthening collaboration across the ecosystem and enhancing supply chain resilience, driving industry growth through the scaling of advanced packaging technologies.

- **3D-IC Verification Challenges:** The conference also addressed the increasing complexity of verification as the semiconductor industry transitions from 2D to 2.5D and 3D-IC configurations. The necessity of multiphysics analysis to tackle challenges in thermal management, mechanical stress interactions, and reliability verification requirements was highlighted, with detailed analyses on how die-attach materials, underfill properties, and package substrates influence assembly-level stress distribution and device characteristics.

Background and Industry Context

The rapid evolution of AI and HPC continues to push the performance boundaries of semiconductor chips, reaching limits that conventional 2D integrated circuits can no longer address. Consequently, advanced packaging technologies that efficiently integrate multiple chips have become key to next-generation computing. Major players like Intel and Amkor are focusing on building chiplet ecosystems and accelerating heterogeneous integration, combining diverse modalities (logic, memory, optics) to achieve both performance and cost efficiency. The expansion of manufacturing capabilities in the U.S., in particular, is viewed as a crucial strategic investment to mitigate geopolitical supply chain risks and strengthen the regional semiconductor ecosystem.

Future Outlook

The advanced packaging technologies unveiled at ECTC 2026 form the foundation for future innovations in the AI and HPC sectors. Technologies like EMIB-T, Co-Packaged Optics, and glass core substrates are poised to dramatically enhance the performance of data centers, cloud infrastructure, and edge AI devices, enabling the creation of new applications. Amkor's U.S. manufacturing expansion will play a significant role in bringing technological innovations to market swiftly and generating local employment. As these technologies mature and become standardized, their adoption across a wider range of industries is expected to accelerate, contributing to the overall growth and technological leadership of the semiconductor industry.

Source: https://semiengineering.com/packaging-technologies-redefine-ai-and-hpc-scalability-limits-at-

ectc-2026/

AI Theme Propels Nikkei 225, Driving Significant Gains for Advanced Packaging Material Companies like Resonac and Mitsui Kinzoku

Published June 10, 2026 IG Japan

OVERVIEW

The latest Nikkei 225 analysis highlights the significant impact of the AI theme on the market, showing substantial gains for chemical manufacturers like Resonac, a global leader in advanced packaging materials and epoxy molding compounds (EMC) for semiconductors, and Mitsui Kinzoku, a copper foil supplier for high-end packaging substrates. This trend reflects a structural re-rating of companies critical to the AI hardware buildout, underscoring AI-related technologies as a primary driver of the Japanese stock market.

IN DEPTH

Key Findings

According to the latest Nikkei 225 market analysis, AI-themed stocks have strongly driven the overall market, with Japanese chemical manufacturers providing essential advanced packaging materials for semiconductor production recording significant stock price increases. This indicates an ongoing structural re-evaluation of foundational technology companies supporting AI hardware development.

Technical and Operational Details

Among the companies that garnered market attention is Resonac (formerly Showa Denko Materials), which holds a dominant global market share in epoxy molding compounds (EMC) and other advanced packaging materials for semiconductors. EMC plays a critical role in protecting semiconductor chips from the external environment and mitigating mechanical stress. As AI chips become more powerful and stacked, EMCs with superior thermal characteristics, low stress, and high reliability are essential, and Resonac is meeting this demand with its technological expertise.

Mitsui Kinzoku, a supplier of high-quality copper foil for high-end packaging substrates, also saw a substantial increase in its stock price. In advanced packaging, particularly for high-density interconnects and chiplet technologies, extremely fine and reliable copper traces are required for improved signal transmission speed and reduced power loss. Mitsui Kinzoku's copper foil technology contributes to the performance enhancement of AI semiconductors by meeting these demands.

The surge of these companies suggests that the evolution of AI is profoundly impacting not only software and cloud services but also the underlying hardware, especially semiconductor materials and packaging technologies.

Background and Industry Context

As global investment in AI technology accelerates, the demand for semiconductor devices that support the computational power required for AI model training and inference has exploded. AI accelerators, such as NVIDIA's GPUs, when combined with HBM (High Bandwidth Memory), are manufactured using highly advanced packaging technologies (e.g., CoWoS). In such advanced packaging, materials like epoxy molding compounds and copper foil are crucial for extracting chip performance and ensuring reliability. Japan's chemical industry has long maintained a strong global competitive edge in these high-performance material sectors, and the structural shift brought by AI has reaffirmed this strength.

Future Outlook

The structural changes in the Japanese market driven by the AI theme are expected to continue. Fundamental material suppliers like Resonac and Mitsui Kinzoku will gain further growth opportunities as AI technology evolves and semiconductor packaging becomes more complex. Since the performance improvement of AI hardware directly depends on innovations in materials and packaging technology, these companies are expected to provide next-generation AI semiconductor material solutions through continuous R&D investment. This will contribute to strengthening the competitiveness of Japan's advanced technology industries and further elevating Japan's crucial role in the international AI supply chain.

Source: https://www.ig.com/en/news-and-trade-ideas/nikkei-june-2026-analysis-260610

Collected: June 12, 2026 | Automated Research System (Gemini API)

Chase Corporation Acquires Sheldahl from Flex, Strengthening High-Reliability Material Portfolio for Aerospace and Medical Applications

Published June 09, 2026 Chase Corporation USA

OVERVIEW

Chase Corporation announced the acquisition of Sheldahl from Flex, significantly expanding its engineered materials portfolio. Sheldahl specializes in designing and manufacturing coated films, laminates, and flexible circuit technologies for aerospace, automotive, industrial, and medical markets. This strategic acquisition enhances Chase's offerings, particularly in advanced thin-film technologies, for high-reliability applications.

IN DEPTH

Key Findings

Chase Corporation announced the acquisition of Sheldahl from Flex to significantly bolster its engineered materials portfolio for high-reliability applications. This strategic move expands Chase's capabilities in advanced thin-film technologies and composite materials, targeting demanding markets such as aerospace, automotive, and medical.

Technical and Operational Details

Sheldahl is renowned for its long-standing expertise in designing and manufacturing coated films, laminates, and flexible circuit technologies. Its products are highly regarded in fields requiring lightweight, high durability, electrical performance, and environmental resistance. For example, in the aerospace sector, Sheldahl provides high-performance insulation films and shielding materials used in satellites, aircraft, and space probes. In the medical field, it develops materials for flexible biosensors and implantable devices.

Through this acquisition, Chase Corporation gains Sheldahl's proprietary technologies, manufacturing processes, and specialized human capital. This enables Chase to complement and strengthen its existing product lineup in the following areas:

- **Advanced Thin-Film Technologies:** Sheldahl's expertise expands Chase's portfolio of electrical insulation, protective coatings, and adhesives.
- **Flexible Circuits:** New opportunities arise to address demand in wearable devices, medical sensors, and automotive electronics.
- **Innovation in Materials Science:** The integration of both companies' R&D capabilities will accelerate the development of next-generation high-functional materials.

This integration will allow the provision of a broader range of high-performance solutions to customers, establishing market leadership especially in applications requiring reliability under harsh conditions.

Background and Industry Context

In modern industry, product miniaturization, lightweighting, and enhanced functionality are accelerating, demanding exceptionally high performance and reliability from the materials used. Sectors such as aerospace, automotive, and medical are particularly critical, as material failures can lead to severe consequences, making cutting-edge engineered materials indispensable. Chase Corporation has long contributed to these markets through its adhesives, sealants, and specialty coating products. The acquisition of Sheldahl reinforces its entry into the high-growth advanced thin-film and flexible circuit markets, further solidifying its market position. This is a classic example of a company strategically expanding its business portfolio and meeting market needs through technological innovation.

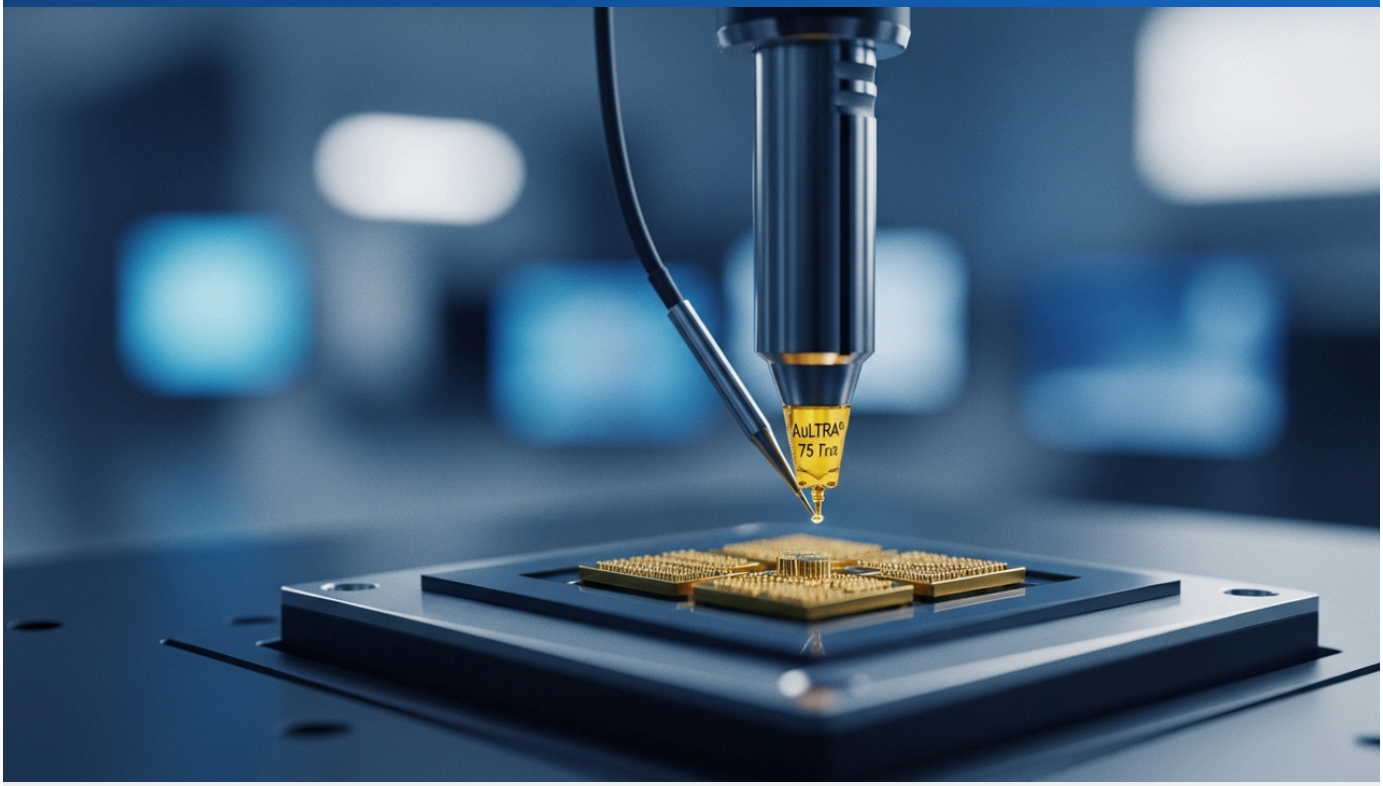
Future Outlook

The integration of Chase Corporation and Sheldahl is expected to synergistically enhance both companies' technological capabilities and market reach, creating new growth opportunities, particularly in the high-reliability materials market. Moving forward, the combined R&D teams will accelerate the development of even more innovative material solutions for next-generation aerospace, medical, automotive, and industrial applications. This will ultimately help customer companies develop and launch higher-performance and more durable products. Furthermore, through supply chain optimization and the provision of more sustainable material solutions, Chase Corporation is expected to further increase its corporate value.

Source: https://chasecorp.com/news

Indium Corporation Unveils AuLTRA® 75 Gold-Based Die-Attach Preforms for 5G, Military, and Aerospace GaN Devices at IMS

Published June 05, 2026 Industrial Electronics USA



OVERVIEW

Indium Corporation announced it will feature its high-reliability, gold-based precision die-attach preforms at the International Microwave Symposium (IMS). A highlight is AuLTRA® 75, an off-eutectic AuSn preform solution specifically designed for GaN dies in high-frequency RF power amplifier devices for 5G, military, and aerospace communications. The AuLTRA product line aims to enhance intermetallic reliability, wetting, and voiding, contributing to the performance advancement of next-generation communication infrastructure.

IN DEPTH

Key Findings

Indium Corporation unveiled its new line of high-reliability, gold-based precision die-attach preforms at the International Microwave Symposium (IMS). Among these, the off-eutectic AuSn preform, AuLTRA® 75, specifically optimized for GaN (gallium nitride) dies used in high-frequency RF power amplifiers for 5G, military, and aerospace communications, garnered significant attention for its superior bonding characteristics and reliability.

Technical Details

AuLTRA® 75 is a precisely formed preform made from a gold-tin alloy, designed to achieve robust and thermally stable bonds for GaN dies to SiC (silicon carbide) substrates or other packaging materials. Its off-eutectic composition (75% gold) is specifically engineered to optimize intermetallic compound (IMC) formation at the joint, enhancing reliability compared to traditional eutectic (80% gold) AuSn solders. IMCs are compounds formed when dissimilar metals join, and controlling their growth is critical for ensuring the joint's durability against thermal cycling stress.

The main technical advantages of this preform include:

- **Improved Intermetallic Reliability:** The optimized composition suppresses excessive growth of brittle IMCs, maintaining the mechanical stability and electrical performance of the joint over extended periods.
- **Excellent Wettability:** Precisely controlled alloy composition and clean surface treatment ensure high wettability to GaN dies and packaging substrate surfaces, facilitating the formation of a uniform bond layer.
- **Suppression of Void Formation:** Good wettability and an appropriate reflow profile minimize the risk of voids forming within the bond layer. Voids increase thermal resistance and can cause device hot spots, making their suppression critical for device performance and reliability.

These characteristics are essential for GaN devices to efficiently dissipate the high heat generated during operation and to stably transmit high-frequency signals.

Background and Industry Context

Sectors such as 5G communications, radar systems, satellite communications, and electronic warfare systems demand higher power, greater efficiency, and broader bandwidth RF power amplifiers. GaN semiconductors, with their high electron mobility and bandgap, are emerging as ideal materials to meet these requirements and are being rapidly adopted. However, GaN devices generate high thermal density during operation, making excellent thermal management and high-reliability die-attach technologies critical factors determining performance and lifespan. Particularly in military and aerospace applications, where extremely high reliability is required under harsh environmental conditions, there is a growing demand for precise gold-based die-attach materials like those offered by Indium Corporation.

Future Outlook

Advanced gold-based die-attach preforms such as Indium Corporation's AuLTRA® 75 are indispensable for further enhancing the performance and reliability of GaN RF power amplifiers. Moving forward, this technology will support the development of GaN devices for even higher frequency bands and higher power outputs. Furthermore, as the application range of GaN devices expands to areas like automotive radar and LiDAR, and industrial high-frequency heating, the demand for these precision bonding materials is also expected to grow. Indium Corporation will continue to contribute to the evolution of next-generation communication infrastructure and high-reliability electronics through ongoing material development and technical support.

Source: https://electronics360.globalspec.com/article/23870/indium-corporation-to-feature-precision-gold-based-die-attach-preforms-at-ims