

Merck KGaA, Darmstadt, Germany and Electroninks Partner for Next-Gen BSM Solutions in Advanced Semiconductor Packaging

Product will address the industry's thermal management challenges on both wafer and large panels

AUSTIN, TX, UNITED STATES, August 4, 2025 /EINPresswire.com/ --

[Electroninks](#), the leader in metal organic decomposition (MOD) inks for additive manufacturing and advanced semiconductor packaging, today announced that [Merck KGaA, Darmstadt, Germany](#) and Electroninks expanded on the companies' strategic collaboration to now develop and introduce an innovative Backside Metallization (BSM) solution tailored for advanced semiconductor packaging. This new deal expands on the existing collaboration for Electroninks' cost-efficient and highly effective EMI shielding solution. The

new, next-generation BSM technology announced today offers a highly elegant solution to traditional sputtering and plating processes, addressing the reliability, warpage, and increasing thermal management challenges in hybrid bonding, wafer and Panel Level Packaging (PLP) metallization.

As AI chips and high-performance computing devices continue to push the limits of processing power, thermal density has risen significantly, making efficient heat dissipation more critical than ever. Reliable bonding between semiconductor packages and Thermal Interface Materials (TIM) is essential for effective heat transfer. However, conventional BSM methods—such as sputtering and plating—pose challenges related to cost, equipment requirements, scaling at larger panels,

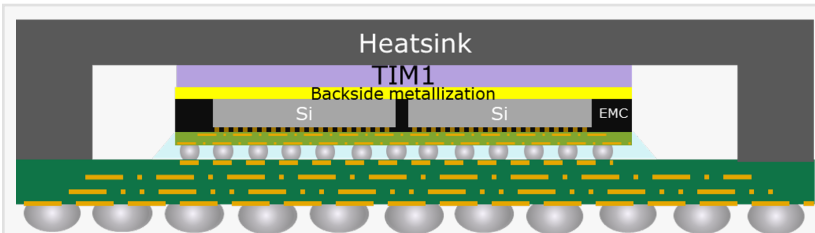


Fig1 : Advanced Packaging Thermal Management Structure

Process		Structure
Existing	PVD	Au (0.1umt)
		NiV (0.3umt)
		Ti (0.1umt)
		Al (0.2umt)
		Si & EMC
MOD ink	Additive process <ul style="list-style-type: none">• Spin• Spray• Slit• Ink Jet	Ag-MOD ink (>3umt)
		Si & EMC

Fig 2: BSM Structure Comparison

and environmental impact.

By leveraging Merck KGaA, Darmstadt, Germany's expertise in semiconductor coating processes and Electroninks' Metal-Organic Decomposition (MOD) Ink technology, this collaboration aims to redefine the standards for BSM in advanced semiconductor packaging.

Key Features and Benefits of the New BSM Solution:

1) High-Uniformity Backside Metallization with Reliable TIM Compatibility

- Merck KGaA, Darmstadt, Germany and Electroninks have advanced spin-coating techniques to enable uniform metal layer formation, even on large-area WLP and PLP substrates.

- The solution ensures high-reliability bonding with TIM and solder materials for optimized heat dissipation.

2) Environmental and Production Efficiency Benefits Over Traditional Methods

- Eliminates the need for large-footprint vacuum equipment, improving manufacturing scalability.

- MOD Ink significantly reduces waste liquid disposal compared to conventional wet processes, aligning with lean manufacturing goals.

3) Enhanced Thermal Management for Next-Generation Devices

- MOD Ink technology provides excellent compatibility with various interface materials, eliminating the need for multi-layer BSM structures (such as Au/Ni-alloy/Ti).

- Ensures superior thermal conductivity and reliability necessary for supporting the high-performance needs and size of AI and computing devices.

Merck KGaA, Darmstadt, Germany and Electroninks remain committed to advancing their strategy and commercial offerings in advanced packaging. With the commercialization of this

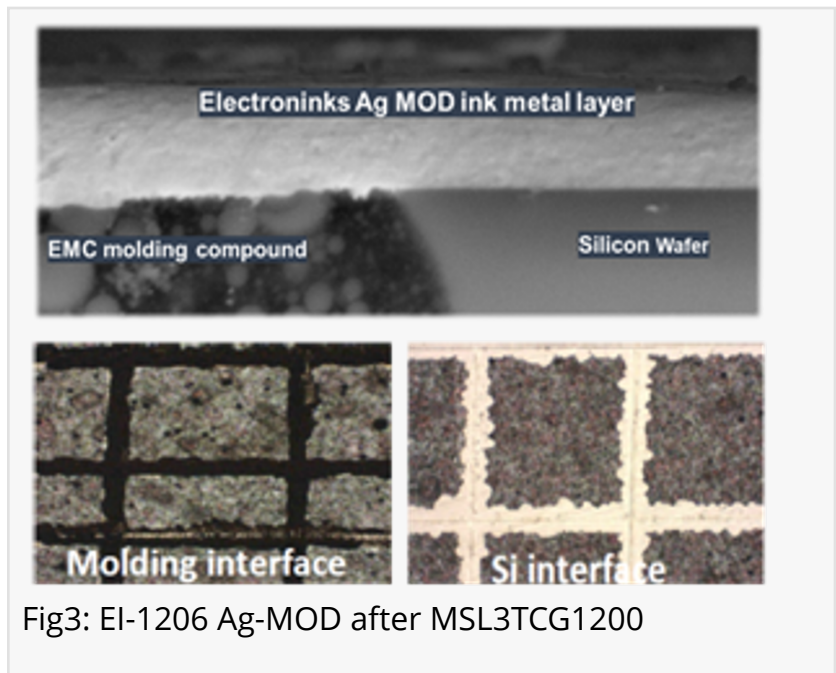


Fig3: EI-1206 Ag-MOD after MSL3TCG1200

pioneering BSM technology, which is now underway at customer sites globally, they aim to contribute to the advancement of high-efficiency, more sustainable semiconductor packaging solutions on silicon wafer, as well as panel-level processing where limited solutions exist today.

The companies plan to develop and market this technology together to customers in the near future, with on-site technical support in the US and APAC.

For more information on Electroninks' expanded portfolio and technical capabilities, visit www.electroninks.com.

###

About Electroninks

Electroninks Incorporated is a world-leader in the commercialization of advanced materials for electronics and semiconductor packaging. We have developed a full suite of proprietary metal complex conductive ink solutions and complimentary material sets, thus accelerating time to market for both new innovations and drop-in manufacturing breakthroughs.

Electroninks' metal complex inks – including silver, gold, platinum, nickel and copper – deliver higher conductivity, manufacturing flexibility, and cost-effectiveness. The company's conductive inks provide reliable solutions for applications in printed circuit board (PCB) manufacturing, semiconductor packaging, consumer electronics, wearables, medical devices and more. We also partner closely with best-in-class equipment and integration partners to provide customers with a total ink and process solution with the ultimate goal to reduce the manufacturing costs and complexity.

To learn more visit: www.Electroninks.com

Contact@Electroninks.com

512-766-7555

About Merck KGaA, Darmstadt, Germany

Merck KGaA, Darmstadt, Germany, a leading science and technology company, operates across life science, healthcare and electronics. More than 62,000 employees work to make a positive difference to millions of people's lives every day by creating more joyful and sustainable ways to

live. From providing products and services that accelerate drug development and manufacturing as well as discovering unique ways to treat the most challenging diseases to enabling the intelligence of devices – the company is everywhere. In 2024, Merck KGaA, Darmstadt, Germany, generated sales of €21.2 billion in 65 countries.

The company holds the global rights to the name and trademark “Merck” internationally. The only exceptions are the United States and Canada, where the business sectors of Merck KGaA, Darmstadt, Germany, operate as MilliporeSigma in life science, EMD Serono in healthcare and EMD Electronics in electronics. Since its founding in 1668, scientific exploration and responsible entrepreneurship have been key to the company’s technological and scientific advances. To this day, the founding family remains the majority owner of the publicly listed company.

All Merck KGaA, Darmstadt, Germany, press releases are distributed by e-mail at the same time they become available on the EMD Group website. In case you are a resident of the USA or Canada, please go to www.emdgroup.com/subscribe to register for your online, change your selection or discontinue this service.

Nicolia Wiles
PRIME | PR
+ +1 512-698-7373
[email us here](#)

This press release can be viewed online at: <https://www.einpresswire.com/article/836255554>

EIN Presswire's priority is source transparency. We do not allow opaque clients, and our editors try to be careful about weeding out false and misleading content. As a user, if you see something we have missed, please do bring it to our attention. Your help is welcome. EIN Presswire, Everyone's Internet News Presswire™, tries to define some of the boundaries that are reasonable in today's world. Please see our Editorial Guidelines for more information.

© 1995-2025 Newsmatics Inc. All Right Reserved.