

Merck Brings Material Solutions to the Automotive Industry

- Merck is offering a broad portfolio of solutions in the semiconductor chip manufacturing and packaging to meet the needs of the automotive industry
- With 350 years of experience, the material provider aims to become the material solution partner to enable future autonomous car.

Munich, Germany, November 14, 2017– Merck, a leading science and technology company, is offering material solutions to the next generation automotive applications. Future automotive requires different features from current electronic devices, such as heat resistance, safety and long-lasting functionality chips. As materials plays a key role in the performance and reliability of advanced IC chips, Merck is offering a broad portfolio of solutions in the semiconductor chip manufacturing and packaging to meet the needs of the automotive industry.



According to IHS Market's Luca De Ambroggi during his presentation at SEMICON West 2017, a high-end car will contain more than \$6,000 worth of electronics in five years, driving a \$160 billion automotive electronics market in 2022.^[1] Advanced IC chip packages, power systems, microcontrollers, sensors, camera, analog devices and application processes are driving the greatest adoption of semiconductor technology. Further, automotive has additional requirements regarding redundancy and specific chip packaging, as well as minimum requirements for performance, reliability and operation for more than 10 years under harsh conditions (e.g., high temperature).^[2]

Electric vehicles and autonomous driving are key drivers for electronics' continued growth in semiconductor sector, representing a new frontier for automotive electronic packaging and safety features. Future artificial intelligence platform applications will require ongoing collaboration with chipmakers and the automotive industry to understand their specific needs.

"Merck is providing a broad range material solutions specifically for the automotive industry," said Benedikt Ernst, head of Business Field Semiconductor Packaging Solutions at Merck. "Merck can build on 350 years of experience in chemistry, premium product quality and technology. We have a strong expertise in semiconductors, opto-electronics, display and industry sectors. Based on our close cooperation with the automotive OEMs we are confident to become the premium material solution partner to enable future autonomous car."

Merck's automotive materials for the semiconductor chips include:

- Turnkey atomic layer deposition material for producing extremely powerful graphics chips, AI chips and processors
- Spinfil® spin-on dielectric material offers an essential component for automotive memory chips

^[1] "[\\$6,000 of Electronics in Car by 2022](#)," Paula Doe, SEMI, June 27, 2017

^[2] "[How to Make Autonomous Vehicles Reliable](#)," Ann Steffora Mutschler, Semiconductor Engineering, Sept. 11, 2017

- Innovative liquid-type photoresists for sensors and advanced packaging applications to achieve the narrowest and most conformal feature lines
- Lead-free sintering paste material offering low interfacial resistance, high thermal conductivity and adaptive process techniques for power chips and system-in-package modules able to operate in very high temperatures

Merck Performance Materials is very active in the automotive segment. Besides the semiconductor material solution, Merck's automotive platform provides various innovative solutions for the industry, including liquid crystal(LC)/OLED lighting, LC window, smart antenna, effective pigments, etc..., aiming to bring safety, functionality and infotainment to future automotive experience.

To learn more about how Merck is advancing the automotive industry, please visit them in Booth B1-169 during SEMICON Europa. The show will take place Nov. 14-17, 2017 in Munich.

About Merck

Merck is a leading science and technology company in health care, life science and performance materials. Approximately 50,000 employees work to further develop technologies that improve and enhance life—from biopharmaceutical therapies to treat cancer or multiple sclerosis, cutting-edge systems for scientific research and production, to liquid crystals for smartphones and LCD televisions. In 2015, Merck generated sales of €12.85 billion in 66 countries.

Founded in 1668, Merck is the world's oldest pharmaceutical and chemical company. The founding family remains the majority owner of the publicly listed corporate group. Merck, Darmstadt, Germany, holds the global rights to the Merck name and brand. The only exceptions are the United States and Canada, where the company operates as EMD Serono, MilliporeSigma and EMD Performance Materials.

¹ ["\\$6,000 of Electronics in Car by 2022,"](#) Paula Doe, SEMI, June 27, 2017

² ["How to Make Autonomous Vehicles Reliable,"](#) Ann Steffora Mutschler, Semiconductor Engineering, Sept. 11, 2017