# Press release

Hennigsdorf, 05.11.2024

## Laser- and photodiodes DIE bonding in optoelectronics

**In the dynamic world of optoelectronics, where light and electronics come together, connection technology plays a crucial role for the performance and lifespan of laser diodes (LD) and photodiodes (PD). Tresky GmbH, as a leading manufacturer of DIE bonding systems, offers customized solutions that are specially tailored to the requirements of DIE bonding of laser- and photodiodes.**

Optoelectronic components are used in a wide range of applications, from telecommunications to medical technology and industrial automation. The quality and reliability of these diodes depend to a large extent on the DIE bonding technology used. DIE bonding, also known as DIE attach, refers to the process by which DIEs (semiconductor chips) are bonded to a carrier substrate. “This connection is essential to ensure the functionality of devices such as laser diodes, photodetectors, VCSELs and other optoelectronic components,” explains Daniel Schultze, Managing Director of Tresky GmbH.

Laser- and photodiodes are highly sensitive optoelectronic components that require precise placement and connection to their carrier substrates. With DIE bonding, the diodes can be mounted stable and highly precise on the substrate. Since a faulty connection can lead to power loss, signal distortion and inefficient light emission, the quality of the DIE bonding is crucial for the overall performance of the diodes. “The use of advanced DIE bonding technologies is therefore essential,” says Schultze.

Laser diodes generate significant heat during operation. This heat must be efficiently dissipated to prevent overheating and the damage that can result. DIE bonding therefore plays an important role in thermal management, as it ensures effective heat transfer between the diode and the substrate as a result of good bonding. Good thermal contact extends the lifespan of the diodes and improves their reliability. The mechanical stability of the connection is also essential for the long-term functionality of laser- and photodiodes. Vibrations, temperature fluctuations and other environmental influences can damage the diodes if the DIE bonding is not sufficiently stable. High-quality eutectic connections ensure that the diodes function reliably even under extreme conditions.

In advanced applications, laser- and photodiodes are often part of complex optoelectronic systems. Tresky's DIE bonders enable the integration of these diodes into modules that perform multiple functions, such as signal processing and light emission. “Precise DIE bonding is crucial to ensuring the interoperability and efficiency of these systems,” Schultze continues, adding:” Our DIE bonders support various DIE bonding technologies, including eutectic bonding, epoxy bonding, UV bonding, ultrasonic bonding and more. This flexibility allows our customers to choose the method best suited to their specific applications.”

Tresky continuously invests in research and development. The aim is to further optimize the technologies developed in-house and to bring innovative solutions to the market. Progress in DIE bonding makes it possible to open up new applications and push the boundaries of photonics. “Our goal is to stay at the forefront of these developments. We want to offer our customers innovative products and solutions that meet the increasing demands,” emphasizes Schultze. As a leading manufacturer of DIE bonding systems, Tresky is proud to make a significant contribution to the DIE bonding of laser- and photodiodes in photonics. “Our innovative solutions ensure the quality and reliability of these critical components and help our customers take their products to the next level,” says Schultze.

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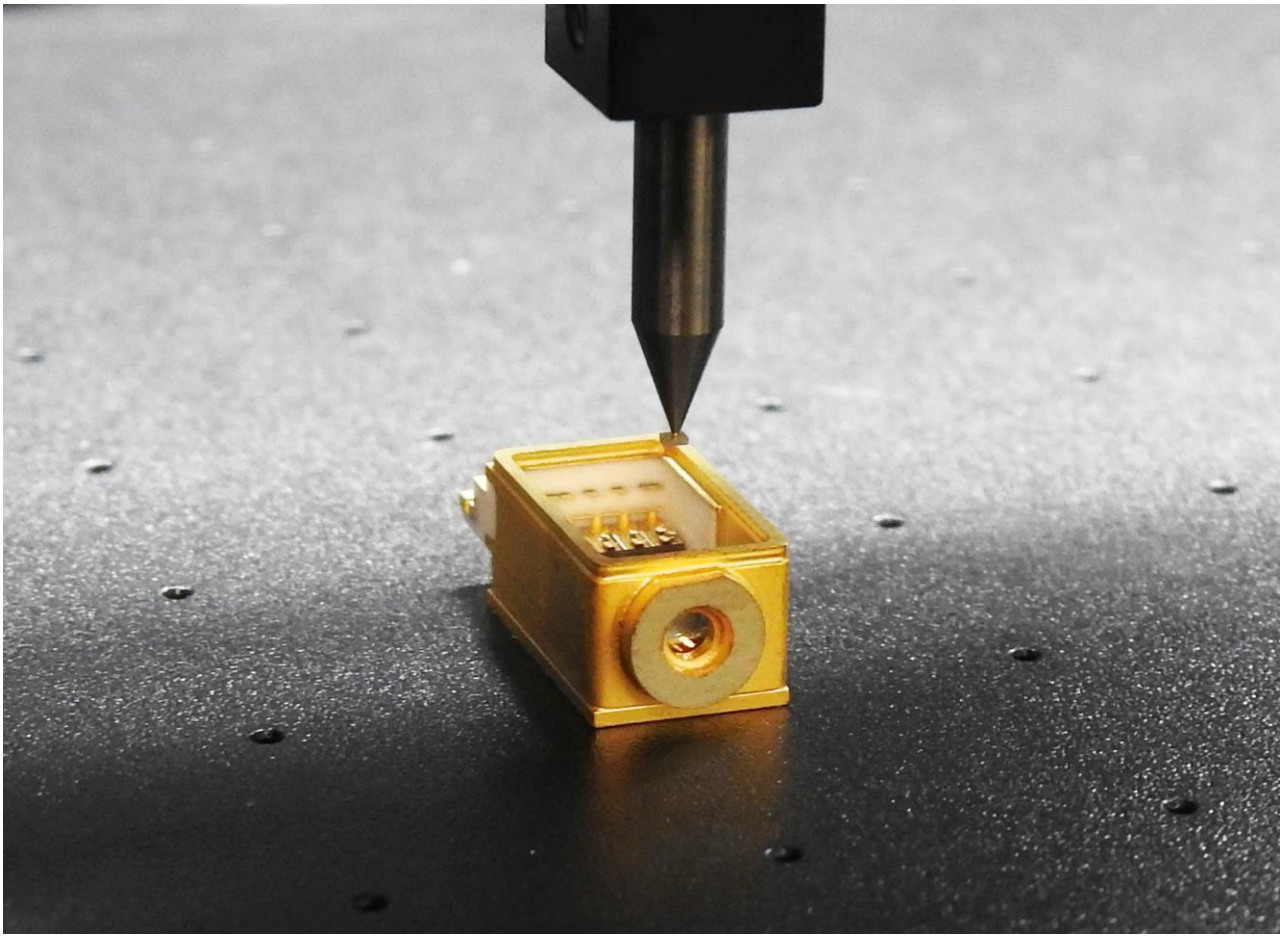
**About Tresky**

Since 1980 the name TRESKY stands for the highest quality, unmatched flexibility with maximum reliability.
Tresky GmbH is one of the world's leading machine manufacturers for placement systems in the high-precision sector offering more than 40 years of experience in the semiconductor industry. The company is headquartered in Hennigsdorf near Berlin, in the middle of a technology park that is home to numerous highly specialized companies from the automation, electrical engineering, communications technology and life science sectors. Quality "Made in Germany" - Tresky develops, produces and sells Die Bonders from its headquarters in Hennigsdorf.
More information: www.tresky.de/en

**Pictures:**



**Picture captions:**
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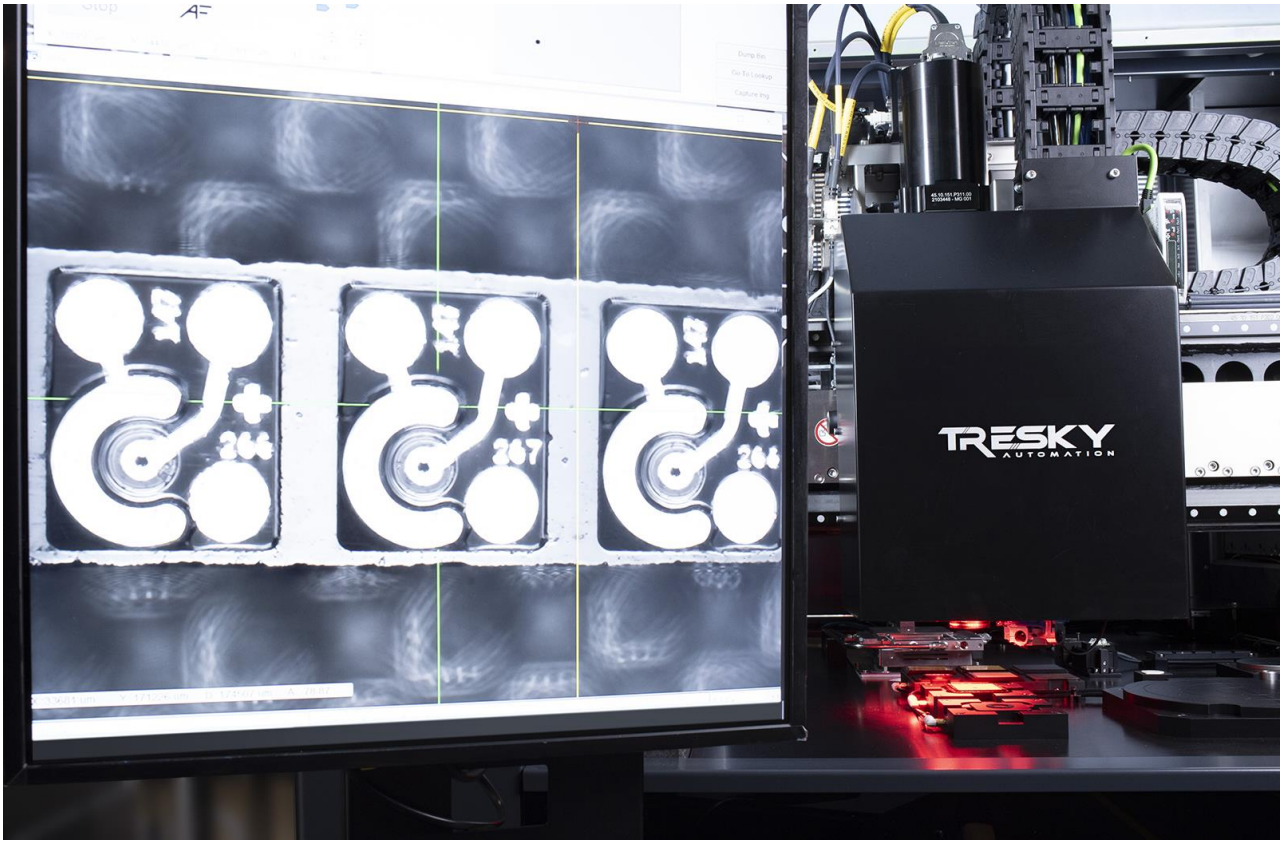


**Bildunterschrift:**
Vertical-cavity surface-emitting laser (VCSEL) under the camera of the Photonics Bonder from Tresky

**Deeplinks:**
Tresky Photonics Bonder

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