



PRESS RELEASE

SurFunction and ZEISS Enter Strategic Partnership

Functional Metasurfaces Become Industrial Reality

Saarbrücken, 16 July 2026: SurFunction GmbH, Saarbrücken, and the technology company **ZEISS** have formally concluded and contractually executed a comprehensive **strategic partnership**. Together, they are advancing the industrial scaling of functional metasurfaces – a new technological category with the potential to fundamentally redefine industrial surface engineering. The foundation of the partnership is **SurFunction's patented ELIPSYS® platform**, based on the Direct Laser Interference Patterning (DLIP) process.

Functional Metasurfaces: A New Dimension of Innovation

Surfaces are the interface between material and world. Friction, wear, light guidance, wettability, contact resistance – none of these phenomena originate in the bulk of a material, but at its surface. **Functional Metasurfaces** take this a decisive step further: rather than generating properties through coatings or chemical treatment, they are created by precisely programmed geometric structures at the micro- and nanometer scale directly within the base material – permanent, chemistry-free, multifunctional, and inspired by nature.

The prefix “Meta” does not denote an absolute size regime, but a scale-relative structural organization: the characteristic structural dimensions lie below the relevant physical interaction length of the target phenomenon – be it the wavelength of light, the contact geometry of a tribological pair, or the dimensions of a microorganism. Function arises from geometry – not from material properties.

Until now, functional metasurfaces remained largely an academic subject: manufacturing processes such as lithographic systems **are complex** and often prohibitively expensive for broad industrial application. **SurFunction solves this problem**. The ELIPSYS® technology makes the deterministic generation of functional metasurfaces at industrial speeds and quality levels possible for the first time, opening an entirely new dimension of industrial product development and process optimization.

ELIPSYS®: Light as the Tool of Surface Programming

The technological core of SurFunction is Direct Laser Interference Patterning (DLIP): multiple coherent laser beams are superimposed; the resulting interference pattern writes periodic micro- and nanostructures directly into the material surface – maskless, reproducible, material-independent. The structural period is precisely determined by wavelength and interference angle.



With **ELIPSYS® (Extended Laser Interference Patterning System)**, SurFunction has evolved DLIP into a complete industrial platform: interference-based optics, process control, quality assurance, and integration modules combined into a scalable overall system. Unlike point-by-point laser processes, structuring is performed area-simultaneously – achieving correspondingly high throughput and industrial reproducibility.

“With our globally leading ELIPSYS® platform, we make light the decisive tool of surface programming. We offer a powerful 'Surface Operating System' for the generation of functional metasurfaces“

- Dr. Dominik Britz, CEO SurFunction

ZEISS Partnership

The collaboration combines complementary world-class capabilities: SurFunction contributes the ELIPSYS® platform and its technological IP; ZEISS brings systems expertise, technology infrastructure, quality assurance, and global market access. ZEISS has identified DLIP and ELIPSYS® as strategically relevant technologies for future product generations in areas including:

- Precision optics and photonics
- Medical technology and life sciences
- Metrology and industrial automation
- Consumer optics and automotive sensor technology
- Semiconductor environment

The partnership envisages the joint further development of the ELIPSYS® platform in relevant application fields, its integration into production lines, and its commercialization in the market.

„The combination of interference-based laser structuring on the basis of DLIP with our systems and technology expertise opens new degrees of freedom in optical and functional surface design.“

**- Dr. Kai Wicker, Head of ZEISS Innovation Hub Dresden
& Head of Innovation Management Beyond at ZEISS**



Broad Industrial Application Fields - Global Potential

Functional metasurfaces address a wide range of industrial challenges that have historically been solved through coatings, chemistry, or material substitution – frequently at the cost of environmental risk, durability limitations, and cost disadvantages. ELIPSYS® opens alternatives via structural geometry:

- **Optics & Photonics:** Anti-reflection, light guidance, and wavelength selectivity without thin-film coatings
- **Tribology:** Friction and wear reduction in mechanical engineering, drivetrain technology, and precision manufacturing
- **Wettability Control:** Hydrophobicity, hydrophilicity, anti-fouling – as a PFAS-free alternative
- **Electrical Contacts:** Contact optimization for connectors, sensors, and power electronics
- **Thermal Management:** Efficiency gains through structure-optimized heat transfer
- **Medical Technology:** Antimicrobial effect and biocompatibility through geometry rather than chemistry

The approach – surface functionality through geometry rather than material properties or chemistry – is gaining considerable strategic significance in the context of tightening regulation (e.g., PFAS bans, REACH) and global sustainability objectives. Functional metasurfaces are resource-efficient, durable, and in principle integrable into any industrial production line.

New Opportunities for Industry

The partnership between SurFunction and ZEISS sends a clear signal: functional metasurfaces are no longer a vision of the future – they are becoming industrial reality now. With a globally recognized technology leader such as ZEISS as a strategic partner, the ELIPSYS® platform is being systematically introduced into markets with global reach.

For industrial customers and prospective partners, this step marks the transition from technological maturity to active market development. SurFunction operates as an IP-first, license-driven platform provider – scalable and unconstrained by the limitations of traditional manufacturing companies. Within the framework of the collaboration, both companies pursue the goal of establishing functional metasurfaces as an industrial standard in Europe and beyond - as a new technological category with the potential to become relevant in virtually every market requiring technically demanding surfaces.

[Media Kit](#)



Contact & Enquiries

Press Contact Nadja Schorr SurFunction GmbH Tel. +49 (0)681-30270540 info@surfunction.com	SurFunction GmbH Campus A1.1 D-66123 Saarbrücken www.surfunction.com
--	--

BACKGROUND

About Functional Metasurfaces

Surfaces are more than boundaries between materials - they are the site where technical systems interact with their environment. Whether a surface generates or minimizes friction, whether liquids adhere or bead off, whether heat and energy are transferred or light is reflected: all of this is determined at the surface. Nature has perfected this principle over millions of years. The lotus uses microstructures for self-cleaning; the shark owes its skin structure to low flow resistance; the butterfly produces colors not through pigments but through nanometrically fine structures that cause light to interfere.

Functional metasurfaces translate this principle into industrial manufacturing: through the targeted introduction of micro- and nanostructures, properties are generated that the base material does not naturally possess - without chemicals, without foreign coatings, through geometry alone. The prefix "Meta-" stands for properties beyond the material itself. The application fields are broad: tribology and friction reduction, optics and photonics, medical technology, electronics, energy, and mobility. The global market for functional surface technologies is estimated at a value in the high billions and is growing - driven by rising demands for efficiency, sustainability, and miniaturization across virtually all industrial sectors. Functional metasurfaces address this growth market.

About ELIPSYS®

The industrial translation of functional metasurfaces long failed due to a lack of scalability. Based on Direct Laser Interference Patterning (DLIP), ELIPSYS® (Extended Laser Interference Patterning System) now enables precisely this translation and provides the physically robust foundation: multiple coherent laser beams generate a periodic intensity pattern through interference, which inscribes micro- and nanostructures directly and masklessly into the material surface - reproducible, material-independent, and area-simultaneous. The underlying DLIP technology foundations were originally researched over more than 25 years by Prof. Frank Mücklich and Prof. Andrés Lasagni at Saarland University and TU Dresden.



About SurFunction

SurFunction GmbH (Saarbrücken) has created with ELIPSYS® a leading industrial platform for functional metasurfaces. It enables a new technological category of material functionalization with modular optics, integrated process control, industrial quality assurance, and flexible integration interfaces. The deterministic generation of functional micro- and nanostructures is performed at industrial speeds. As an IP-first and license-driven platform and integrated systems provider, SurFunction transfers this technology into industrial production lines for partners, addressing applications in optics, photonics, precision manufacturing, medical technology, electronics, energy, and mobility. The goal is the broad establishment of functional metasurfaces as a scalable industrial key technology - resource-efficient, reproducible, and globally deployable.

www.surfunction.com

About ZEISS

ZEISS is a globally leading technology company in the optical and optoelectronic industry. Across its four divisions - Semiconductor Manufacturing Technology, Industrial Quality & Research, Medical Technology, and Consumer Markets - the ZEISS Group most recently generated annual revenues of approximately €12 billion (30 September 2025).

ZEISS develops, manufactures, and distributes highly innovative solutions for industrial metrology and quality assurance, microscopy solutions for life sciences and materials research, as well as medical technology solutions for diagnostics and therapy in ophthalmology and microsurgery. ZEISS is also synonymous with the world's leading lithography optics used by the semiconductor industry for the production of chip components. ZEISS branded products such as ophthalmic lenses, camera lenses, and binoculars are sought after worldwide and set industry trends.

With a portfolio focused on future growth fields such as digitalization, health, and Industry 4.0, and with a powerful brand, ZEISS shapes technological progress and advances the world of optics and adjacent fields with its solutions. The foundation of ZEISS's success and continued expansion of its technology and market leadership are the consistently high levels of investment in research and development. ZEISS invests 15% of its revenues in R&D - expenditures with a long tradition at ZEISS and simultaneously an investment in the future.

With more than 46,600 employees, ZEISS is active in around 50 countries with more than 60 sales and service locations, around 40 research and development sites, and 30 production locations worldwide (30 September 2025). The headquarters of the company, founded in Jena in 1846, is Oberkochen, Germany. The sole owner of the parent company, Carl Zeiss AG, is the Carl Zeiss Foundation, one of Germany's largest foundations for the promotion of science.