

NLM Photonics and LIGENTEC Build the First Silicon Nitride Organic Hybrid Modulators on a Commercial Platform

Designed in collaboration with Spark Photonics, proof-of-concept devices demonstrate the viability of organic hybrid SiN devices.

SEATTLE — September 17, 2026 — [NLM Photonics](#), the leader in the development of organic electro-optic (OEO) technology, has partnered with [LIGENTEC](#) to produce the first Silicon Nitride Organic Hybrid (NOH) modulators on a commercial photonics platform.

Silicon absorbs light in the visible and near-visible spectrum, confining silicon photonics to telecom wavelengths. Silicon Nitride (SiN) has a much wider transparency window that extends into the visible spectrum, making it suitable for applications including visible wavelength sensing and quantum photonics. It also provides record low propagation losses in all wavelength regions from visible to 2.5µm. However, SiN is a passive platform: active devices such as lasers, modulators, and detectors require integration with other materials. These proof-of-concept modulators, designed in collaboration with [Spark Photonics](#) and built using NLM's OEO materials, demonstrate a new path for heterogeneous integration on SiN platforms.

To develop these proof-of-concept devices, NLM partnered with LIGENTEC for fabrication and Spark for layout. NLM developed processes needed for SiN/OEO integration, including metallization, OEO deposition, and poling, adapted for the unique considerations of the nitride platform.

"This collaboration is a key milestone in developing commercial NOH PICs," said Dr. Lewis Johnson, co-founder and CTO of NLM Photonics. "Now that we have established that NOH modulators are possible, we can optimize designs to enable compact, efficient devices for the next generation of quantum and sensing applications."

The Next Steps Toward Commercial NOH Devices

OEO materials exhibit high electro-optic efficiency and can be tuned to suit the demands of target applications. A supplemental metal layer and the OEO film are applied to the SiN platform as back-end-of line steps, enabling integration into mature existing SiN manufacturing processes. As NOH designs are optimized, this technology will form a scalable foundation for active SiN devices.

"LIGENTEC is building the future of photonics," said Michael Geiselmann, co-founder and CCO of LIGENTEC. "NLM's NOH modulator technology advances the state of the art, expanding the range of modulator technologies available on nitride. We are excited by initial progress on our low-loss SiN platform."

“Spark Photonics has worked with NLM on silicon-organic hybrid modulator design on multiple foundry platforms,” said Kevin McComber, CEO, Spark Photonics. “Now, we are jointly advancing integrated photonics once again. This collaboration significantly lowers the barrier to entry for building efficient, high-speed active devices at wavelengths where traditional silicon cannot compete.”

Lewis Johnson will be available to discuss NLM’s proof-of-concept NOH modulator at ECOC 2026, taking place September 21-23 in Malaga, Spain. Join Dr. Johnson in the LIGENITEC booth (#1368) on Tuesday, September 22 at 1 PM CEST or learn more at nlmphotronics.com.

About NLM Photonics

NLM Photonics is architecting the future of photonic communications. Enabled by NLM’s Selerion™ family of organic electro-optic material and leveraging standard silicon photonic manufacturing, NLM has created a blueprint for building energy-efficient, high-bandwidth photonic interconnects for data centers, AI infrastructure, and quantum networking. For more information, visit nlmphotronics.com or follow us on LinkedIn at nlm-photronics.

About LIGENITEC SA

LIGENITEC, headquartered in Switzerland, is a leader in advanced photonic integrated circuit (PIC) technologies, providing high-performance silicon nitride (SiN) and silicon-on-insulator (SOI) platforms with heterogeneous integration of different materials. Through its industrial process-design-house model, LIGENITEC provides a scalable path from design to volume manufacturing for quantum technologies, optical communications, and precision sensing. The company operates subsidiaries in France and Belgium and is ISO 9001:2015 certified.

About Spark Photonics Design

Spark Photonics Design (Spark Photonics) is a leading provider of PIC solutions, offering component, circuit, tile, and full-reticle design, layout, and PDK services across all material platforms. The company also sells and supports PIC design software from Luceda Photonics and provides PIC Kits designed for education, training, and measurement validation. For more information, visit sparkphotronics.com or follow Spark on LinkedIn at spark-photonics.

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