

On the Market: The World's First Plasmonic-Organic Hybrid Devices Available

NLM and Polariton Technologies announce partnership, technological advancements, and devices ready for commercialization

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Seattle, Washington, USA and Zurich, Switzerland — Optical communications are getting upgraded to plasmonic-organic hybrid modulators as Polariton Technologies Ltd. announces their first product. These plasmonic-organic hybrid modulators combine plasmonic waveguiding with organic electro-optic materials to deliver unprecedented performance. This technological advancement means bandwidths of hundreds of gigahertz — greatly exceeding current bandwidths — with potential for much faster internet connections, data center networks, test and measurement equipment, sensing, quantum computers, wireless and optical communications, LiDAR, and customized applications.

NLM's organic electro-optic material, HLD, is one of the key components of this technology, providing high electro-optic performance in the modulators incorporated on-chip. This material delivers high electro-optic activity, over 10x the capacity of standard telecommunication modulator material lithium niobate. HLD also delivers high thermal stability exceeding Telcordia long-term storage specifications, with stable operation demonstrated at temperatures above 120°C. This stability provides a crucial operational backbone in data centers, vehicles, telecom systems, high-performance computing, and other challenging environments.

The two companies began partnering together two years ago. In that time, they've worked on fine-tuning their technology for commercial applications and viability. "NLM materials are proof of the benefits of organic electro-optics. They allow for a record switching speed, and the processing is much easier than with standard lithium niobate," said Dr. Claudia Hoessbacher, Polariton CEO. "Initially, we were afraid that the materials would not fit into our tiny plasmonic waveguides. Later, we realized that their efficiency was much higher than what we had expected, and thanks to the NLM material, we could fabricate shorter devices and reduce the losses."

"The Polariton team are pioneers in plasmonic hybrid technologies. We look forward to translating our established and fruitful research collaboration towards driving the future of communications and computing. Polariton's latest devices build on a long string of performance records to deliver ultrafast modulation in an impressive form factor," says Dr. Lewis E. Johnson, NLM co-founder and Chief Scientific Officer.

[Polariton Technologies Ltd.](#) designs and manufactures the world's fastest and smallest electro-optic modulators, thus creating a solution that overcomes the interconnect bottleneck in optical communications. Follow us on LinkedIn [@polariton-technologies](#) and visit us at [polariton.ch](#)

[Nonlinear Materials Corporation](#) is a pioneering materials platform company working on solutions for optical computing, quantum computing, and networking based in Seattle, WA. Follow us on LinkedIn [@nonlinear-materials-corporation](#) and visit us at [nonlinearmaterials.com](#).

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