

OPN


Optics &
Photonics
News

Integrated Silicon Photonics

A Roadmap for
Metamaterials

First Fibers
to Homes

Metamorphosis
of Transistors
into Lasers



This silicon transmitter chip contains integrated hybrid silicon lasers along with other silicon photonic devices to send up to 50 Gb of data each second.

Courtesy of Intel Corp.

Optical interconnects will become a game changer if we can combine the high data rates, reach and integration of photonic channels with practical pricing.

[COVER STORY]

24 Integrated Silicon Photonics: Harnessing the Data Explosion

With the digital universe expanding at an exponential rate, silicon photonics is poised to bring fiber optics to a much broader array of data transport applications. Researchers at Intel Labs describe a fully integrated optical data link that assembles all the core technologies needed to develop high-volume, low-cost fiber-optics.

Sean Koehl, Ansheng Liu and Mario Paniccia

30 A Roadmap for Metamaterials

Metamaterials have rapidly advanced over the past few years—from being a paradigm for engineering unique electromagnetic properties to forming a material base for functional devices with tuneable, switchable and nonlinear capabilities. In the future, they will allow for dynamic quantum-effect-enabled systems.

Nikolay I. Zheludev

36 The First Fibers to Homes

Thirty-five years ago this month, Japan's Ministry for International Trade and Industry announced plans to build the world's first fibered city. A two-way fiber-optic network called the Highly Interactive Optical Visual Information (Hi-OVIS) was far ahead of its time.

Jeff Hecht

44 The Metamorphosis of the Transistor into a Laser

The transistor put us on the path to semiconductor electronics research. It led to the integrated circuit, optoelectronics, light-detecting devices, diode lasers, LEDs, and now further to the transistor laser—a true laser and three-terminal photonic transistor active element.

Milton Feng and Nick Holonyak Jr.

COVER PHOTO: An optical fiber connection is held up to the transmit module of Intel's 50 Gbps silicon photonics link. Courtesy of Intel Corp.



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Enterprise Ireland

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Spacetime cloak could hide events; stimulated Raman scattering improves video of living tissue; 3-D self-assembling point-source microlasers; optical lift could steer solar sails.

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