

News Release

Leti Demonstrates Fully CMOS-Compatible Laser Source Coupled to a Silicon Waveguide

*Results of WADIMOS Project Milestone Will Be Presented
At SPIE Photonics Europe 2010*

GRENOBLE, France – April 9, 2010 – Leti announced today that it has demonstrated a fully CMOS-compatible laser source coupled to a silicon waveguide, a major milestone toward the WADIMOS project's goal of fabricating an optical interconnect network on a chip in CMOS foundries.

WADIMOS is an EU-funded research project to demonstrate a photonic interconnect layer on CMOS. Leti's partners in the project, which is coordinated by imec, include STMicroelectronics, MAPPER Lithography, Lyon Institute of Nanotechnologies (INL) and the University of Trento.

Working with a circuit design from INL and imec, Leti completed the specific process studies for the laser source to adapt and modify standard III-V materials process steps that would comply with a CMOS environment. Leti replaced gold-based metal contacts with a Ti/TiN/AlCu metal stack. The circuits have been processed on 200mm wafers in Leti facilities.

WADIMOS partners will present the results at SPIE Photonics Europe 2010 in Brussels, April 12-16.

The enormous computing power of multi-processor systems and manufacturing tools being considered will require data transfer rates of more than 100Terabit/s. These data rates may be needed on-chip, e.g. in multi-core processors, which are expected to require total on-chip data rates of up to 100TB/s by 2015, or off-chip, e.g. in short-distance data interconnects, requiring up to 100TB/s over a distance of 10-100 meters. Optical interconnects are the only viable technology for transmitting these amounts of data.

Besides a huge data rate, optical interconnects also allow for additional flexibility through the use of wavelength division multiplexing. This feature may help realizing more intelligent interconnect systems such as the optical network-on-chip system that the WADIMOS project also is studying.

WADIMOS, which is an abbreviation for Wavelength Division Multiplexed Photonic Layer on CMOS, will build a complex photonic interconnect layer incorporating multi-channel microsources, microdetectors and different advanced wavelength routing functions directly integrated with electronic driver circuits. It also will demonstrate the application of the electro-photonic ICs in an on-chip optical network and a terabit optical datalink. For more information about the project, see <http://wadimos.intec.ugent.be/>

About CEA-Leti

CEA is a French research and technology public organisation, with activities in three main areas: energy, technologies for information and healthcare, and defence and security.

Within CEA, the Laboratory for Electronics & Information Technology (CEA-Leti) works with companies in order to increase their competitiveness through technological innovation and transfers. Leti is focused on micro and nanotechnologies and their applications, from wireless devices and systems, to biology and healthcare or photonics. Nanoelectronics and microsystems (MEMS) are at the core of its activities. As a major player in MINATEC excellence centre, Leti operates 8,000-m² state-of-the-art clean rooms, on 24/7 mode, on 200mm and 300mm wafer standards. With 1,200 employees, Leti trains more than 150 Ph.D. students and hosts 200 assignees from partner companies. Strongly committed to the creation of value for the industry, Leti puts a strong emphasis on intellectual property and owns more than 1,400 patent families. For more information, visit www.leti.fr.

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