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Press Release

STMicroelectronics Leads European Research Project to Develop Next-Generation Optical MEMS

Extension to a project launched in 2013 builds on current efforts to enable technologies for next-generation applications

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STMicroelectronics (NYSE: STM), a global semiconductor leader serving customers across the spectrum of electronics applications, has revealed its leadership of Lab4MEMS II, an extension that builds on the continuing success of the existing Lab4MEMS project, announced in April 2013. Lab4MEMS II focuses on Micro-Opto-Electro-Mechanical Systems (MOEMS) that merge MEMS¹ with Micro-optics to sense or manipulate optical signals using integrated mechanical, optical, and electrical systems, while the original project maintains its emphasis on developing a pilot line for next-generation MEMS devices augmented with such advanced technologies as piezoelectric or magnetic materials and 3D packaging. Like its sister project, Lab4MEMS II is being launched by the European Nanoelectronics Initiative Advisory Council (ENIAC) Joint Undertaking (JU), a public-private partnership in nanoelectronics.

Lab4MEMS II is a €26 million (\$30 million) project with 20 industrial, academic, and research partners spread across nine European countries. Building on the established foundation and successes of the first Lab4MEMS project, the extension features ST as the coordinating partner, offering its complete range of manufacturing, technical, and organizational competencies to guide Europe's efforts to secure leadership in high-potential MOEMS.

With almost 1000 MEMS-related patents, more than eight billion devices shipped, and extensive in-house production capabilities currently producing more than 4 million MEMS devices per day, ST is an ideal leader for Europe's MEMS research initiatives. The Lab4MEMS II project focuses on designing, fabricating, and testing a variety of devices that include optical switches, arrays of micro-mirrors, optical cross-connects, lasers, and micro lenses using micro-optics and standard micromachining technologies to miniaturize and build advanced optical systems. MOEMS is the perfect platform for future valuable commercial products, such as optical switches, micro-mirror devices and dynamic displays, bi-stable devices, and optical shutters useful in micro-projectors, laser micro-scanners, new-generation Human Machine Interfaces, and micro-spectrometers. One goal of the project is to optimize the production of dual single-axis mirrors as well as to research the possibilities for the development of the dual-axis single mirror.

Lab4MEMS II is a Key Enabling Technology (KET) Pilot-Line project contracted by the ENIAC JU to develop technologies and application areas with substantial societal impact. "The ENIAC JU research agenda is perfectly aligned with ST's values and commitment to augmenting peoples' quality of life," said Roberto Zafalon, European Programs Manager, R&D and Public Affairs, STMicroelectronics. "MOEMS is a promising multi-feature technology for miniaturization of critical optical systems that will benefit society, consortium members, and stakeholders, including ENIAC member states by creating valuable knowledge-based employment opportunities, increasing long-term prosperity, and enabling products that benefit society."

The Pilot Line for Lab4MEMS II will expand ST's operational 200 mm-wafer manufacturing facility in Agrate Brianza for even higher volumes, while adding optical technologies to the mix. Moreover, it would increase the know-how on those strategic enabling technologies while combining scientific skills and the ability to design and manufacture a wide range of smart micro- and nano-systems on silicon. Even so, the project will evaluate the potential benefits and impact of a future move to 300mm wafers.

The ENIAC JU is a public-private partnership involving ENIAC member states, the European Union, and the Association for European Nanoelectronics Activities (AENEAS). It is currently contributing some €1.8 billion towards the costs of numerous R&D projects, which it selects through a competitive process assessing responses to its Calls for Proposals. The Lab4MEMS II project, coordinated by ST,

was selected for funding in Fall 2013 and work began in November 2014.

In addition to ST, partners in the Lab4MEMS II project are: the Politecnico di Torino and di Milano; Consorzio Nazionale Interuniversitario per la Nanoelettronica; CNR-IMM MDM; Commissariat A l'Energie Atomique Et Aux Energies Alternatives; ARKEMA SA; University of Malta; Okmetic Oyj; MURATA Electronics; VTT Memsfab Ltd; Teknologian tutkimuskeskus VTT; Aalto University; KLA-Tencor ICOS; University POLITEHNICA of Bucharest - CSSNT; Instytut Technologii Elektronowej; Warsaw; Stiftelsen SINTEF; Polewall AS; and Besi Austria GmbH.

About STMicroelectronics

ST is a global leader in the semiconductor market serving customers across the spectrum of sense and power and automotive products and embedded processing solutions. From energy management and savings to trust and data security, from healthcare and wellness to smart consumer devices, in the home, car and office, at work and at play, ST is found everywhere microelectronics make a positive and innovative contribution to people's life. By getting more from technology to get more from life, ST stands for life.augmented.

In 2014, the Company's net revenues were \$7.40 billion. Further information on ST can be found at www.st.com.

¹MEMS = Micro-Electro-Mechanical Systems



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