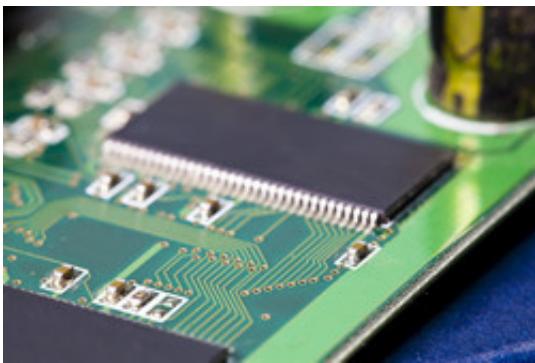


Cost-effective silicon photonics production to benefit EU industry

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Researchers have taken key steps towards building a European-based silicon photonics supply chain and speeding up industrialisation of the technology.

Partners involved in the EU-funded PLAT4M [project](#) have developed new technologies to achieve the mass production of [silicon photonics](#), which can be used to build complementary metal–oxide–semiconductor (CMOS) circuits.

The idea is to use [silicon](#), patterned with sub-micrometre precision, as an optical medium in these micro components. CMOS circuits offer high noise immunity and low static power consumption, and potential end users include telecom applications and microelectronics manufacturers.

Indeed, the widespread use of silicon has already brought CMOS microelectronics to mass-market applications such as Smartphones, sensors and other devices.

The concept behind the PLAT4M project, launched in October 2012, is that developing new cost effective means of producing silicon photonics will lead to a similar revolution in the photonics sector. Silicon photonics has been identified as a means of achieving optical interconnects, which provide faster data transfer both between and within microchips. As a result, the concept has been actively researched by many electronics manufacturers in recent years as well as by academic research groups.

However, most research into silicon photonics has so far focused on the elementary building blocks, rather than on fabricating complete photonic integrated circuits. In order to tap into larger markets, the PLAT4M team realised that it was necessary to demonstrate that cost effective development and manufacture of complete photonic integrated circuits was possible. This is where the project believes it can make a difference and boost the commercial potential of silicon photonics.

Silicon photonics expertise and excellent photonics R&D facilities already exist in Europe, and enabled the PLAT4M project to bring together leading R&D institutes and CMOS companies along with key industrial players and end-users from different application fields. To date, the four-year project has upgraded a number of existing silicon photonics platforms. In particular, design and process flows have been streamlined and consolidated in view of industrial requirements concerning design robustness, process variability and integration constraints.

The ultimate objective of the project is to establish a European supply chain for silicon photonics that appeal to different application fields, and to enable the setting up of industrial integration platforms for different

levels of volume manufacturing. Scheduled for completion at the end of September 2016, the PLAT4M project will therefore continue to develop processes designed to support mass production and will validate each platform with application-driven tests. These demonstrations will be carried out that represent a diverse range of application fields, from telecoms and gas sensing to light detection and vibrometry (vibrometers are instruments used to carry out rapid non-contact measurements and imaging of vibrations. The project could also lead to important applications for physics researchers).

The project will prepare a roadmap for performance evolution, and for assessing production scalability. In this way, the PLAT4M project hopes to bring existing silicon photonics research to a level that will enable its seamless transition to industry, benefiting numerous end users in both industry and academia.

More information: For further information please visit the PLAT4M project website: plat4m-fp7.eu/

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