

Wafer Processing

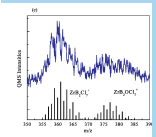
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Product Briefings

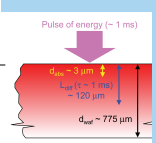


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Plasma-surface interactions in patterning high-*k* dielectric materials

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Millisecond annealing techniques for ultra-shallow junction formation



R&D NEWS FOCUS

European R&D effort takes aim at 45nm node and beyond

To keep Europe at the forefront of semiconductor technology, the European Commission will seed-fund an Integrated Project called NANOCMOS. The project aims to develop the necessary materials, processes, device architectures, and interconnections to keep pushing the limits of semiconductor performance and density.

Participants in the project will be charged with demonstrating the feasibility of 45nm CMOS logic technology in 2005 leading to full CMOS process integration in 2007 and a demonstration of feasibility of a 32nm CMOS logic process as early as 2007.

"Because of its ambitious objectives and committed resources that are mobilized for a common goal, NANOCMOS represents a unique opportunity for Europe to become the leading center for Nanoelectronics, while supporting academic research and helping its indigenous industrial players to hone their competitive edge," stated Guillermo Bomchil, leader of the NANOCMOS Project.

The first phase of the NANOCMOS project is expected to last 27 months and mobilizes a large research potential. In addition to the €24M support from the European Commission, the partners will also invest advanced research resources to achieve the objectives of the project.

The partners will submit a proposal for the second phase of the NANOCMOS project, starting in 2006, to the European Commission. This phase will aim to demonstrate the feasibility of the 32 and 22nm nodes. Additionally, the consortium will make a proposal to the MEDEA+ organization to start, in 2006, on the integration and validation of the 45nm technology node in an industrial 300mm wafer manufacturing facility, currently expected to be the Crolles2 facility, which is jointly shared by Motorola, Philips, and STMicroelectronics. These two upcoming project proposals have been integrated in the whole NANOCMOS strategy and discussed with European Commission and MEDEA+ officials.

The partners in the project are: Europe's three largest semiconductor companies – Infineon, Philips and STMicroelectronics; the two largest European Technological Research Institutes – CEA Leti (France) and IMEC (Belgium); three research laboratories coordinated by the FhG (Germany); eight research laboratories coordinated by the CNRS (France); one research laboratory from the Technical University of Chemnitz (Germany); three companies – Ion Beam Services (France), ISILTEC (Germany) and Magwel (Belgium); and ACIES Europe (France), which will undertake some management aspects of the project.

In addition to NANOCMOS, the European Commission has agreed to sponsor the SINANO 'Network of Excellence'. This 'Network' is highly complementary to NANOCMOS and gathers most of the European Public Research Laboratories working in the field of novel devices. The SINANO programs are intended to bring forward work done in academia that can be commercialized much quicker than has traditionally occurred.

Key institutions involved include, CEA Leti (Commissariat à l'Energie Atomique Laboratoire d'Electronique de Technologie de l'Information), CNRS (Centre National de la Recherche Scientifique, FhG (Fraunhofer-Gesellschaft) and the Technical University of Chemnitz.