

CAMECA and IMEC Collaborate on Tomographic Atom Probe Characterization of Semiconductor Structures

IMEC, Europe's leading independent nanoelectronics and nanotechnology research institute, and CAMECA, a leading supplier of solutions for elemental composition analysis using Tomographic Atom Probe (TAP) Secondary Ion Mass Spectrometry (SIMS) and Electron Probe Micro-Analysis (EPMA) techniques, signed a collaboration agreement with the aim to develop applications in the field of semiconductors for the atom probe technique.

Atom Probe is a promising technology for the characterization challenges brought about by the development of future semiconductor devices. It is notably applicable for quantitative modelling of clustering, 3D dopant distribution and analysis of ultra-shallow junctions.

In this project, IMEC acquired CAMECA's leading-edge technology Laser Assisted Wide Angle Tomographic Atom Probe (LA-WATAP), which it will use for precise and quantitative 3-dimensional elemental mapping of chemical heterogeneities in materials at the atomic scale. CAMECA's Atom Probe technology has already been adopted by 13 organizations.

Under the agreement, IMEC and CAMECA will investigate:

- Routine fabrication of samples suited for Atom Probe analysis;
- Evaluation of Atom Probe for 3D-profiling;
- Use of Atom Probe in process and materials development.

In this tomographic atom probe technology, single atoms are field-evaporated from the sample surface and projected toward a position-sensitive detector. Atoms are chemically identified by the Time Of Flight Mass Spectrometry technique. The LA-WATAP technology offers the largest analysis surface with high mass resolution and the highest acquisition rate in quantitative mode. This new tool has been specially designed to receive a femto-laser for true evaporation without thermal artefact.

About IMEC

IMEC is a world-leading independent research center in nanoelectronics and nanotechnology. Its research focuses on the next generations of chips and systems, and on the enabling technologies for ambient intelligence. IMEC's research bridges the gap between fundamental research at universities and technology development in industry. Its unique balance of processing and system know-how, intellectual property portfolio, state-of-the-art infrastructure and its strong network of companies, universities and research institutes worldwide position IMEC as a key partner for shaping technologies for future systems.

As an expansion of its wireless autonomous microsystems research, IMEC has created a legal entity in the Netherlands. "IMEC-Nederland" runs activities at the Holst Centre, an independent R&D institute that develops generic technologies and technology platforms for autonomous wireless transducer solutions and systems-in-foil.

IMEC is headquartered in Leuven, Belgium, and has representatives in the US, China and Japan. Its staff of more than 1450 people includes more than 500 industrial residents and guest researchers. In 2005, its revenue was EUR 197 million. Further information on IMEC can be found at www.imec.be.

About CAMECA

With an installed base of over 900 active instruments, CAMECA is the recognized world leader in the designing, manufacturing, and servicing of ion and electron probes. Cameca provides a range of tools to the semiconductor industry for both in-line and off-line metrology applications. CAMECA's most recent semiconductor metrology tool, the Shallow Probe, already adopted by the biggest Chip and Memory manufacturers, is a fully automated process control system designed to measure both elemental composition and thickness of thin films, a major metrology requirement at the 90nm node and beyond. In addition, the company offers the largest available range of instruments for research applications in the earth, planetary sciences, materials and nuclear sciences, and biology. Additional company and product information is available at www.cameca.com.