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## **TODAY, PICOSUN'S KAI-ERIK ELMERS DEFENDS HIS PhD THESIS ON ALD**

**HELSINKI, Finland** – November 18, 2008 – Today at noon Finnish time Kai-Erik Elers, Technical Applications Manager of the leading Atomic Layer Deposition (ALD) systems manufacturer Picosun Oy presents and defends his PhD thesis “Copper Diffusion Barrier Deposition on Integrated Circuit Devices by Atomic Layer Deposition Technique” at the Department of Chemistry of the Faculty of Science of the University of Helsinki.

Elers' dissertation studies the feasibility of new diffusion barrier processes for copper metallization and decreasing feature size of integrated circuit devices.



Copper metallization comprises an entirely new process flow with new materials such as low-k insulators and etch stoppers, which are making the diffusion barrier integration demanding. Atomic Layer Deposition technique is one of the most promising techniques to deposit copper diffusion barrier for future devices.

“Motivation for my dissertation was based on possible business opportunities in the metallization market. When I started working on my thesis, it was expected that diffusion barrier processes used by the IC industry at the time were becoming inadequate. In 2006, Intel introduced the use of the ALD method for high volume manufacturing of transistors with high-k material. Evidently, the ALD technique had established its position in the IC production making it easier for new ALD processes to establish themselves.” Kai-Erik Elers says.

“My goal was to study one specific area of ALD for possible integration into industrial manufacturing processes. ALD represents a feasible diffusion barrier process as an alternative to the existing choice of industry (Physical Vapour Deposition). However, aspect ratio requirements have remained moderate in copper metallization making it possible to extend the use of current technology. It will be interesting to see in which application ALD barriers for the copper metallization will be used first,” Elers says.

Kai-Erik Elers' dissertation can be downloaded from <http://ethesis.helsinki.fi>

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