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Picosun's ALD technology gives a boost to GaN devices

ESPOO, Finland, and HSINCHU CITY, Taiwan, 6th July, 2017 – Picosun Oy, the leading supplier of advanced industrial Atomic Layer Deposition (ALD) solutions, the National Chiao Tung University (NCTU, Taiwan), and Atom Semicon Co. Ltd. (Taiwan), have started a joint collaboration on the improvement of GaN (gallium nitride) devices with Picosun's ALD technology. The collaboration was announced by Mr. Xiaopeng Wu, CEO of Picosun Asia, and Professor Hao-Chung Kuo from the Institute of Electro-Optical Engineering of NCTU, in the 3rd ALD Taiwan workshop arranged 23rd June 2017 by Picosun, NCTU, and Atom Semicon.

The demand for greener technology and smaller energy consumption of electrical devices are strong initiatives for semiconductor manufacturers to develop alternatives to conventional silicon-based microelectronics. GaN-based components, for example HEMTs (high electron mobility transistors), show immense potential in this. They have superior efficiency, low energy consumption, fast response, high reliability, and they enable notable chip size miniaturization with high integration and smart circuit design. These features are a significant asset especially in wireless communication and sensing systems. GaN-components are already widely used for example in power amplifiers for mobile base stations and radars. Other applications include power conversion, electric transportation, photovoltaic power conditioning, and sensor systems for IoT (Internet of Things) and various fields of industry.

The three-way collaboration between Picosun, NCTU, and Atom Semicon aims to directly support the manufacturers working with GaN technology. Intelligent ALD solutions improve the performance and reliability of the devices and speed up the R&D phase of novel components. This shortens the time-to-market of the products and provides competitive edge to the manufacturers.

"Picosun is our long-term, trusted partner in ALD. We have used our PICOSUN™ ALD equipment for years to develop state-of-the-art GaN technology. Globally, Taiwan is a key hub for semiconductor manufacturing and our close contacts with the prominent industries in the field facilitate short ramp-up times for novel innovations. Picosun's ALD technology supports this with its upscalability and the leading variety of equipment from R&D phase to fully automated, large scale production," states Professor Hao-Chung Kuo of NCTU.

"We are very excited to cooperate with NCTU on GaN devices. These devices are crucial when energy consumption and size of the power module have to be minimized. Picosun's goal is to provide comprehensive, production-proven ALD solutions to the manufacturers to improve the efficiency, reliability, and operating life of their devices, to enable cleaner technology for everyone," continues Dr. Kevin Lin, CTO of Picosun Asia.

"The collaboration between NCTU and Picosun has always been a success regarding novel, industrial applications of ALD. It's quite important to leverage this to create new value for Taiwan's semiconductor industry. And now we are on the right track. I am positive that we will soon see yet more breakthroughs in reliable GaN HEMT technology," summarizes Mr. Bob Lin, Vice President of Atom Semicon.

Picosun provides the most advanced ALD thin film coating technology to enable the industrial leap into the future, with turn-key production solutions and unmatched expertise in the field. Today, PICOSUN™ ALD equipment are in daily manufacturing use in numerous major industries around the world. Picosun is based in Finland, with subsidiaries in Europe, North America, Singapore, Taiwan, China, and Japan, and a world-wide sales and support network. For more information please visit www.picosun.com.

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