Bilkent University: Nanotechnology Research Center

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Scope

Nanotechnology Research Center at Bilkent University is dedicated to research on theoretical and experimental nanoscience and nanotechnology with strong emphasis on education and training.

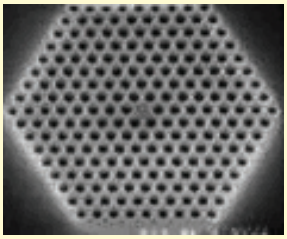
The Center is an inter-disciplinary research environment which houses the nanotechnology related research efforts in science and engineering faculties, and serves to all departments in both faculties.

Main research areas: Metamaterials, Photonic Crystals, MOCVD growth, fabrication and characterization of nanoelectronic and nanophotonic GaN/AlGaN devices, high performance near-infrared semiconductor photodetectors and lasers.

Facilities

The center has a total of 250 square meter of class-100 level clean room for sub-micron lithography along with general-purpose electrical and optical characterization measurements. A new AIXTRON RF200/4 RF-S GaN/AlGaN MOCVD epitaxial growth system has been recently installed and can be used for the growth of all GaN and related materials. The center has also supporting nanofabrication and characterization laboratories."

Sven Holmström, Optical Microsystems Laboratory, Koç University (**http://mems.ku.edu.tr/index.htm**)



Photonic Crystals

MOCVD (Metal Organic Chemical Vapor Deposition) System

METU-MET

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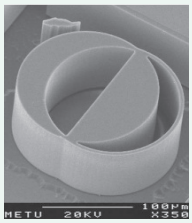
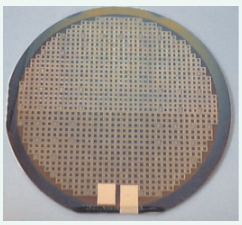
Facilities

METU-MET facilities is a microelectronics fabrication facility for 4" and 6" wafer processing. It has 1000 sq. meters of class 100 and class 1000 clean room area for fabrication and 300 sq. meters of class 10000 clean room area for electrical testing of IC's and active discrete components. The factory is constructed under the supervision of VARIOPLAN-Switzerland. The factory is operated by 22 technical personnel and supported by 14 researchers from Department of Electrical and Electronics Engineering. METU-MET Facilities are currently being used to develop a number of MEMS products for commercial applications. Maximum capacity of the factory is such that 144 wafers can be processed in one shift (8 hours) per day. Considering a 2mmx2mm die production, it is possible to produce 7 million working dies per year with one shift per day (assuming an 85% yield and a 7-mask process). Two or three shifts per day are also possible.

Scope





The technology in the factory is suitable for fabrication of various other lineer products (voltage regulators, OpAmps, etc.) and discretes (diodes, power transistors, rectifiers, thyristors, etc.). The factory has know-how packages to fabricate small signal transistors and various Analog/Linear ICs. MEMS components for commercial applications are being developed in areas such as Surface and bulk micromachining, Low cost uncooled infrared detector arrays, RF-MEMS components and Pressure- and humidity sensors.

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