Improving Education in Engineering Technology by Offering Hands-On Processing in a Cleanroom Laboratory for Nano-Sensor Fabrication

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Abstract

Offering a semiconductor process technology course and laboratory is certainly not the norm in a standard electronics engineering technology curriculum. However, engineering technology students should know something about semiconductor process technology since these are the future graduates that will provide the maintenance and equipment testing on the equipment used in process operations in a wafer fab manufacturing plant.

The Electronics Engineering Technology department at Southern University in Baton Rouge, Louisiana is partnering with the Electrical and Mechanical Engineering departments to develop a class 100 clean room for fabrication of nano-sensors. This laboratory is presently about 95% complete and is funded by the College of Engineering through a grant for laboratory enhancement. As a result of this laboratory, faculty and students will be able to fabricate and characterize a wide range of devices and structures within the laboratory.

In the Summer 2008, the EET department will offer engineering technology students a new course entitled " Semiconductor Device Processing". This course will include experiments that students will be able use processing equipment to fabricate nano-sensor devices in the cleanroom laboratory. The experiments are designed to help reinforce concepts taught in the lecture.

This paper will describe how this cleanroom laboratory will be used to improve engineering education in this new technology course. Students will be able to grasp the process technology better because they will see application of these concepts. In addition, this laboratory will help engineering technology students improve research skills needed for graduate school or industry.