Industry Insider: Micron Technology, Inc.

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Micron Technology, Inc., founded by Ward Parkinson, Joe Parkinson, Dennis Wilson, and Doug Pitman in 1978, stands as one of the leading international providers of advanced semiconductor solutions, producing various semiconductor devices. Such devices include DRAM (dynamic random access memory) components, flash components, and CMOS (complementary metal oxide semiconductor) image sensors. With a strong focus on materials research, Micron continues to create next generation digital technology, pushing the boundaries of new imaging technology. In fact, Micron continues to hire recent graduates from around the country in materials related fields including chemical, electrical, computer, and materials engineering, as well as physics, and with their help, created one of the industry's first 1.7 micron-pixel image sensors.

In the late 1990s, Robert W. Hendricks, Professor of Electrical and Computer Engineering (ECE) at Virginia Tech, spearheaded a collaborative effort between the Departments of ECE, and Materials Science and Engineering (MSE), along with Micron of Manassas, VA. This effort led to the creation of the Center for Microelectronics, Optoelectronics, and Nanotechnology (MicrON) at Virginia Tech, of which Hendricks was the first Director. MicrON—not to be confused with Micron Technology, Inc.—is now comprised of laboratories, which focus on research in electronic materials, electronic and photonic devices, biotechnologies, and micro- and nano-electromechanical systems (MEMS and NEMS). This facility is used to enhance education in science and technology at Virginia Tech. In recent years, Dr. Hendricks has focused more on teaching, and on the creation of a microelectronics minor in the College of Engineering, along with the creation of the Micron Scholars Program. According to this program, juniors and seniors from the Departments of Chemical Engineering (ChE), ECE, and MSE receive substantial scholarships and are required to complete the microelectronics minor. The goal of this cooperation is to educate more students in microelectronics. Louis Guido, Associate Professor of MSE and ECE as well as the current Director of the MicrON laboratories, said, "The two things that attracted Micron to invest in Virginia Tech were the collection of faculty and the fact that we are trying to build this area." Growing dramatically since its beginnings, MicrON now includes 9 faculty members, 17 graduate students, and approximately 13 undergraduate students from the Departments of ECE, MSE, Mechanical Engineering, and Physics. The MicrON laboratories at Virginia Tech are comprised of 2,450 ft^2 housing advanced processing and characterization equipment for use by faculty and students. Some of the most sophisticated systems include a contact mask aligner for sub-1-μm lithography, an inductively coupled plasma etcher, a deep silicon reactive ion etcher, a plasma-enhanced chemical vapor deposition system, and a surface profilometer, as well as a well-equipped cleanroom facility. With these facilities at their disposal, students are able to manufacture and test a broad range of cutting edge materials and devices.

Micron Technology, Inc.'s Manassas, Virginia facility

Micron encourages co-ops, internships, and undergraduate research at several partner high schools and universities. As an example, many students work at the Manassas facility, gaining valuable experience in the microelectronics field. Dr. Guido said, "One of the reasons they [Micron] partnered with Virginia Tech is the good experience they've had with Tech students in the past. The feeling was that if they had more of a presence on campus, this would foster broader awareness and increase student interest. That's something that they're very interested in continuing—students doing internships in the summer, and even co-ops, because ultimately they want to hire these students." One such student is Ethan Lavery, a VT-MSE alumni and 2006 president of Materials Engineering Professional Societies (MEPS). When asked what a typical day at Micron entails, Ethan said, "I interpret data to find defect trends in silicon wafers so that I can diagnose the issue and recommend solutions to the affected areas of the fab. The data can come from SEM [scanning electron microscopy] and optical images, wafer maps, and SPC [statistical process control] charts." In terms of the overlap between the concepts and skills he learned at Virginia Tech and his current responsibilities, Ethan said, "Since I deal with defects, understanding the mechanics of why these defects occur is critical in diagnosing them. Often, these defects involve chemical properties of crystals and stress concentrations." Virginia Tech and Micron have established a strong bridge that serves as a model relationship between academia and industry.