The Microelectronic-Photonics (µEP) Graduate Program at the University of Arkansas, Fayetteville, is an interdisciplinary graduate program started in 1998 that offers both MS and PhD degrees. The µEP program is designed to expand a student's knowledge beyond the boundaries of traditional departmental based graduate programs. Students in µEP will participate in cross-departmental research, will take applications-intensive classes from multiple engineering and science departments, and will develop workplace productivity skills in a simulated industrial environment.

The outcome of a student's graduate education in this interdisciplinary environment is knowledge of advanced materials, processing, and devices at the micro and nano scale; of applications in electronics, photonics, and chemical/biological systems; and of the economics that affect successful introduction of these devices and systems into industry and society.

Mission

The educational objective of the µEP Graduate Program is a program graduate fully prepared to drive the development and commercialization of micro and nano scale materials and devices for the good of society.

A rigorous interdisciplinary graduate technical education, including soft skills training, will be used to accomplish this mission.

Operations

Students in the µEP program report directly to both their major research professor and to the µEP director, Rick Wise. Dr. Wise has extensive experience as both a researcher and an engineering manager at Texas Instruments, a leading multinational semiconductor company. He brings more than 30 years of experience in the microelectronics industry to the µEP program director position.

He leads and directs µEP students as an industry-like team, with focus on achieving the common goal of each student’s individual educational success. Each year's students are grouped into a Cohort, a natural work group who share common needs, experiences, and training.

Student Research

The students who enter µEP come from rigorous engineering or science programs such as Chemical, Biomedical, Mechanical, or Electrical Engineering, Materials Science, Math, Chemistry, Physics, or Optics.

Upon entering the µEP program, a customized interdisciplinary science, engineering and business curriculum is created to support each student’s career interests. The students work with faculty from almost any science or engineering department, with over half of the µEP students doing their research project with faculty from a department different from the student's prior traditional departmental degree.

Research laboratories on campus include advanced semiconductor materials in the molecular beam epitaxy facilities in the NANO and Physics building; advanced chemical processing in the Chemistry Research building; and photonic materials in the Physics and EE Departments’ processing and analytical labs. In these facilities students create and observe atomic to microscopic interactions between materials and the environment around them.

Research can also be pursued in HiDEC (High Density Electronics Center), a world-class full flow processing and packaging facility including a 6,500 square foot clean room facility for processing 150 mm wafers. The techniques and materials developed here allow the integration of photonic and electronic devices into miniaturized solid state systems that support ultra-fast communications, intricate sensor applications, and many other complex devices and systems.
µEP Graduates

The µEP program produced its first MS µEP graduates in August 2000, and has now graduated 78 PhD students and 160 MS students, with many of the MS graduates continuing their studies toward a PhD µEP degree. Most graduates have taken positions at major technology companies, but several graduates have joined early- to mid-stage technology startup companies or accepted academic positions. Several MS and PhD graduates work with research-based companies in Fayetteville.

Fellowships

The µEP program’s students can compete for Distinguished Doctoral Fellowships (DDF) and Doctoral Academy Fellowships (DAF) at $22K and $12K per year, respectively, to support highly qualified PhD students for up to four years. These fellowships are in addition to the graduate assistantship stipends (of at least $18K per year) which are assured for DDF/DAF recipients.

Research Commercialization

The µEP graduate program includes specific required coursework and training in both project management and research commercialization. Graduates from this program are well equipped to start up their own company based on their own research or to become early stage technology intrapreneurs in large multinational corporations driving product development.

µEP Faculty

**Professor**
Simon Ang  Electrical Engineering
Juan C. Balda  Electrical Engineering
Salvador Barraza-Lopez  Physics
Mourad Benamara  Chemical Engineering
Robert Beitle, Jr.  Physics
Laurent Bellaiche  Chemistry/Biochemistry
Hassan Beyzavi  Chemistry/Biochemistry
Jingyi Chen  Chemistry/Biochemistry
Zhong Chen  Electrical Engineering
Hugh Churchill  Physics
Robert Coridan  Chemistry/Biochemistry

Russell DePriest  Comp Science/Comp Eng
Jia Di  Electrical Engineering
Magda El-Shenawee  Chemistry/Biochemistry
Ingrid Fritsch  Physics
Huaxiang Fu  Chemical Engineering
Lauren Greenlee  Physics
William Harter  Chemistry/Biochemistry
Colin Heyes  Chemical Engineering
Jamie Hestekin  Mechanical Engineering
Adam Huang  Mechanical Engineering
David Huitink  Mechanical Engineering
Morten Jensen  Biomedical Engineering
Jin-Woo Kim  Biological/Agricultural Engineering
Pradeep Kumar  Physics
Matt Leftwich  Chemical Engineering
Jiali Li  Physics
Yanbin Li  Biological/Agricultural Engineering
Alex Lostetter  Adjunct Faculty
Ajay Malshe  Mechanical Engineering
Bothina Manasreh  Physics
Omar Manasreh  Electrical Engineering
Alan Mantooth  Electrical Engineering
Roy McCann  Electrical Engineering
Paul Millett  Mechanical Engineering
Mahmoud Moradi  Chemistry/Biochemistry
Timothy Muldoon  Biomedical Engineering
Arun Nair  Mechanical Engineering
Hameed Naseem  Electrical Engineering
William Oliver, III  Physics
Ed Pohl  Industrial Engineering
Errol Porter  Electrical Engineering
Greg Salamo  Physics
Surendra Singh  Physics
Panneer Selvam  Civil Engineering
Shannon Servoss  Chemical Engineering
Ranil Wickramasinghe  Chemical Engineering
Woodrow Shew  Physics
Julie Stenken  Chemistry/Biochemistry
Zhengrong Tian  Chemistry/Biochemistry
Steve Tung  Mechanical Engineering
Ken Vickers  Adjunct Faculty
Yong Wang  Physics
Morgan Ware  Electrical Engineering
Uche Wejinya  Mechanical Engineering
Jie Xiao  Chemistry/Biochemistry
Min Xiao  Physics
Fisher Yu  Electrical Engineering
Wenchao Zhou  Mechanical Engineering
Min Zou  Mechanical Engineering

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