Solid State Electronics Alumni

The entire electronics industry, from cell phones, to MP3 players, computers, defense, automotive, avionics and others, is built on semiconductor devices, both integrated circuits and power devices. This is why solid state electronics was selected as one of five disciplines making up the Engineering Excellence program initiated at ASU in the late 1970s. The state of Arizona and industry heavily invested in this program. From its beginning, solid state electronics at ASU has grown from two professors to 14 professors with large research programs. Many students—undergraduate and graduate—have been educated in all aspects of solid state electronics. ASU’s solid state program is highly regarded by both the semiconductor industry and universities, which is why our alumni have assumed leading roles in industry and academia nationally and internationally.

The solid state program covers a wide range of disciplines from crystal growth, to process/device simulation, device physics and processing and characterization. Our laboratories are well equipped, including the type of clean room only found in a few other universities. In conjunction with facilities in the physical sciences, a vast array of processing and characterization tools coupled with extensive computational equipment is used by students in their research.

- the solid state group

John Spann
PhD 2005, advised by Prof. Trevor Thornton

Since graduating from ASU in the spring of 2005, I have been working in Albuquerque, New Mexico for Emcore Corporation. I am a senior production growth engineer in its photovoltaic division. Emcore is the world leader in high efficiency triple junction solar cells for space applications and, more recently, terrestrial programs.

Using my first-class education in solid state physics, provided by many smart and helpful professors at ASU, I quickly assumed a key role maintaining solar cell efficiency and keeping electrical yields at their highest levels. I also use the research and experimentation skills that I gained at ASU to continually improve performance, to explore and widen process windows and to troubleshoot varying defect issues.

The education I received from ASU and the guidance from my advisor, Dr. Trevor Thornton, prepared me to make an immediate impact in the performance of my department at Emcore. I have received compliments on my knowledge and work ethic from my colleagues and manager, which I attribute to my time spent at ASU.

I am especially grateful for the opportunity the professors at the Fulton School of Engineering provided me to achieve a high level of competency in my chosen discipline. It was a wonderful experience and will always be a memorable part of my life.

Stephen M. Phillips
Professor and Chair

EE is on Display

The Noble Science and Engineering Library is featuring an exhibit on the Ira A. Fulton School of Engineering to celebrate the school's 50th anniversary. EE has its own display case, which highlights the department's history and books published by the faculty.

The 50th anniversary is a significant milestone for the state of Arizona, the University and the Fulton School. The exhibit will run through August 3, 2007.

Message from the Department Chair

EE alums, It's all about you! As you can see in this newsletter, the content comes from your fellow alums, and this semester we’ve received input from former EE students in solid state electronics and power engineering. We’d like to continue the focus on what you have done since graduation and also let you know about what is happening in EE now. Our core mission encompasses discovery through research and education of engineering leaders. With this as our guide, we continue to grow our research and graduate programs while maintaining a globally and locally relevant undergraduate program. We welcome your feedback on our programs and the newsletter. Let us know what you’d like to see.

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**Jae-Eun Park,**  
*PhD 2001, Advised by Prof. Dieter Schroder*

I currently work in the microelectronics division of IBM. I am the lead engineer in the compact modeling group. My job involves characterizing all aspects of 45 nm integrated circuit technology, or beyond CMOS and RF technology, and putting them into compact models for circuit design. This may sound boring, but Playstation3, Xbox and GPS would all be brainless without the product chip design my team develops. It is ASU’s solid state program that has allowed me to enjoy this great journey.

After working in the industry for five years, it is evident that the program offered me all of the tools necessary for my career. Professor Schroder’s great characterization course and a strong device physics curriculum provided me with the fundamentals that I use on a daily basis at my job. Additionally, while in school, Professor Schroder was always available to answer my daily questions. His scribbled explanations have proved key in solving many complicated issues at work.

I was also able to enjoy much at ASU besides the academics—sunburn from playing golf in mid-August and total jubilation or complete frustration in the football stadium on Saturday. I made great friends at ASU, including my late brotherly friend, Alex Morgan. It has been over five years since I graduated, but I remember my student life like it was yesterday. It was one of my most pleasant experiences and I would love to repeat it.

"*After working in the industry for five years, it is evident that the program offered me all of the tools necessary for my career.*"

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**Chakravarthy Gopalan**  
*PhD 2005, advised by Prof. Michael Kozicki*

I came to ASU in 2000 with a “now what?” feeling. It was not long before Professor Trevor Thornton introduced me to microelectronics, and I knew at that point what I wanted to learn. During those years at ASU, I had the privilege of taking almost all of Professor Schroder’s classes (partly because of this persistent rumor that he would be retiring next year--I am sure that rumor still exists). The Center for Solid-State Electronics Research (CSSER) provided me with a great opportunity to learn.

After graduating, I received a job with Spansion Inc. The company is focused on non-volatile memories, which was spun out from a joint venture between AMD and Fujitsu. I am part of the Advanced Memory Research group there, and I work on new memory technologies. I have no doubt that graduate school at ASU made this job possible.

Working on Professor Kozicki’s memory research team, I performed similar tasks to what I do today. This experience diversified my knowledge. In addition to learning about science and engineering, I also learned how the business works.

I am grateful for everyone at ASU who has contributed to my professional and personal development.

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**Cynthia Ratnakumar**  
*MS 2006, advised by Prof. Michael Kozicki*

I currently work as an R&D device engineer at Cypress Semiconductor. I work on non-volatile memory technology for specific programmable system on chip applications. I have a wide range of responsibilities and am constantly interfacing with different departments. I work with the process team to develop and characterize new device materials and geometries. I work with design and modeling teams to create architectures that take advantage of specific device characteristics. And finally, I present highly technical findings to product lines who require simple functional models.

The groundwork for my career began with my work on PMC non-volatile memory with Dr. Michael Kozicki. This experience served as a bridge between academia and industry. It gave me a broad exposure to every tier of technology development including fabricating, characterizing and demonstrating a working PMC technology. The process taught me to be a good team worker, critical thinker and, most of all, it made me passionate about my work. I feel fortunate to have found a job that is very similar to my academic experience at ASU. But perhaps I should be more fortunate to have found a research experience that prepared me so well for my current position.

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**Murali Balakrishnan**  
*PhD 2006, advised by Prof. Michael Kozicki*

I recently graduated from the Department of Electrical Engineering and I currently work as a process development engineer at Cypress Semiconductor in Minnesota. My role as a R&D engineer in the non-volatile memory division demands very good knowledge of non-volatile memory testing and development. I was fortunate to get that experience at ASU by working under the able guidance of Dr. Michael Kozicki. Working with Dr. Kozicki on the novel Programmable Metallization Cell (PMC) memory technology has led me to my present role in the industry. This experience gave me the confidence to take this technology from the lab floor to the fab floor.

I was overwhelmed when I first started working at Cypress Semiconductor. There are so many acronyms used in the everyday meeting that it was challenging to even understand what people were talking about. But within a few weeks, I got the hang of the acronyms. I also started to appreciate how the styles of meeting at ASU were similar to the meetings used in my job. Everything is data driven, which is exactly how Dr. Kozicki trained me.

The semiconductor industry might be overwhelming for all new college graduates, but your research experience really comes in handy. University research is an integral part of the whole system, and I still feel very proud of my research experience at ASU. Even the leaders in the memory industry are amazed by the technology that we developed at ASU. I consider myself very fortunate to have worked under the supervision and guidance of the great advisor, Dr. Michael Kozicki.
Ishtiaq Ahsan  
MS 2001, advised by Prof. Dieter Schroder

I came to the U.S. in 1999 in pursuit of higher education. ASU was the school of choice primarily because of its strength in solid state physics. However, coming from a tropical country like Bangladesh, the first sight of the arid Arizona plains almost gave me a heart attack. As the days passed, I slowly became accustomed to the heat and the workload of full-time classes. I was fortunate enough to get the opportunity to work for Professor Schroder as a research assistant. My work under him helped me to understand the dynamics of the semiconductor manufacturing industry. It also developed my interest in the field. When the opportunity came to work in the Semiconductor Research and Development Center at IBM, New York, I did not want to miss it. I completed my MS degree from ASU in 2001 and joined IBM in the semiconductor characterization department. I am now the lead characterization engineer of my group.

I consider my education at ASU a great asset that helped me attain my current position in the company. However, even after working for some years in a leading semiconductor-technology development fab, I still feel the urge and thirst for higher education. That is why I am currently pursuing my PhD degree from ASU under Professor Schroder as a part-time student. I still enjoy being a sun devil student just as much as I did years ago. ASU still has a lot to offer for my career development.

"The electrical engineering EM program at ASU provided me with great training. Without it, I couldn’t undertake such cutting-edge research projects."

Meisong Tong  
PhD 2004, advised by Dr. G.W. Pan

After graduating from ASU, I became a postdoctoral research associate at Professor W.C. Chew’s group at the University of Illinois at Urbana-Champaign (UIUC). With the help of Professor Chew, I have developed a new Nyström method for electromagnetic (EM) applications funded by the U.S. Air Force. This work is used to enhance our two famous EM solvers: FISC and FASTANT. I have also participated in the simulation and design work for a car-roof antenna package supported by General Motors. Currently I am working on the mitigation of artillery blast noise, an elastodynamics research project, for the U.S. Army. This is a very challenging topic due to the high energy and low frequency of the noise and the prohibition against the use of barriers and shelters. I have presented my research work at several conferences and seminars. I also serve as a regular reviewer for three journals.

The electrical engineering EM program at ASU provided me with great training. Without it, I couldn’t undertake such cutting-edge research projects. I am so thankful to the faculty and staff in the EE department for their valuable teaching and support while I was there. In particular, I want to express my sincere gratitude to my advisor Professor G.W. Pan for his continuous encouragement and patient instruction.

Mark Stapp  
BSEE, 1991

I graduated from ASU in 1991 with a BSEE. Shortly after, I began my employment with Tucson Electric as an electrical engineer in distribution engineering. A few years later, I transferred to distribution planning. However, I had always intended to relocate back to my home state of Texas—you know, you can take the boy out of Texas, but you can’t take the Texas out of the boy. In 1998 I accepted an electrical engineer II position with Greenville Electric Utility System, Greenville, Texas. Over the next couple of years, I was promoted to engineering supervisor and engineering manager. Being employed at a small utility, I enjoy how my job functions vary greatly. Additionally, I am married and have three young children.

While at ASU, I thoroughly enjoyed taking Professor Farmer’s class. His expertise and guidance in power engineering were the main reasons why I pursued a career in the power field. I appreciate Professor Farmer’s hard work, the time that he made available for students and his ability to put up with a bunch of whiners.

New Program:  
MBA/MSE EE  
(Dual Degree)

The Department of Electrical Engineering would like to announce a new dual degree program that allows students to receive two degrees: the W.P. Carey MBA and the MSE in Electrical Engineering from the Fulton School of Engineering. For more information, visit the MBA site at http://wpcarey.asu.edu/mba/online/mse.cfm or the Ira A. Fulton School of Engineering Center for Professional Development site at http://cpd.asu.edu/mbamse

The deadline for applications for the July 2007 start period is May 1, 2007.
Support Electrical Engineering

In celebration of the Ira A. Fulton School of Engineering's 50th Anniversary, we invite you to celebrate your EE alumni status with ASU. To make a gift to support EE students and the department:

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Great things are happening in the EE department and we hope you stay involved.