



## Profiles of Electrical Engineers and Computer Scientists



**Kathleen Kirsch**

**Member of Technical Staff  
Lucent Technologies  
Murray Hill, NJ**

### **Education:**

B.S. - Electrical Engineering, MIT  
M.S. - Electrical Engineering, MIT  
Ph.D. - Electrical Engineering, MIT

### **Job Description:**

Member of the technical staff, doing research on integrated circuit and device technology and working closely with other electrical engineers, material scientists, chemists, and physicists.

### **Advice to Students:**

"There is absolutely no question that in my field, integrated circuits and silicon technology, you do need a Ph.D."

### **Video Transcript 1:**

"I guess the environment here is extremely team oriented and I think a lot of that's because we do the integrated circuit work which, by nature, requires teams. It's not just something a person would do by themselves. There's the saying, I stand on the shoulders of giants and that's really what you have to do in integrated circuit processing. It just takes so many things to have to work together to have anything work."

### **Video Transcript 2:**

"If you really want to go to graduate school, you do it because you want to go. And, if you just convince yourself, 'Well, I'm going to get my Ph.D. so I can make lots of money,' that's just a terrible reason, and you're probably not going to get through because it's a lot of work. It's really a lot of work. And you have to be really committed to it personally. But if you are committed to it personally, you don't have to have any other reason. You don't have to explain to someone why you are doing it. If it's something that you truly want to do."

### **Interview:**

Kathleen Kirsch of Lucent Technologies is often asked what it is like to be a woman in engineering. For her, gender has never been a problem. "I didn't ever find that I was being penalized in any way for being a woman or treated differently, so it was a really friendly

environment for me [at MIT], and Lucent is the same way. There are a fair number of women who work around here, so you don't feel isolated." She realizes that her experience is not universal for female engineers and recommends that women examine the employer they are considering to see how many women work there and if it is really receptive to diversity.

Education has played a more significant role than gender in determining the nature of the work Kirsch does. She works in research and development and says, "There is absolutely no question that in my field, integrated circuits and silicon technology, you do need a Ph.D. It's a huge field. If you want to work in manufacturing, a Master's degree is sufficient possibly a Bachelor's degree. But it's a very challenging field to work in a lab. In a clean room, you really need to know a lot about a lot of different disciplines." Furthermore, a Ph.D. "makes people a lot more attractive to the companies."

But how does one decide whether to go to graduate school or not? "If you really want to go to graduate school, you do it because you want to go. And, if you just convince yourself, 'Well, I'm going to get my Ph.D. so I can make lots of money,' that's just a terrible reason, and you're probably not going to get through because it's a lot of work. It's really a lot of work. And you have to be really committed to it personally. But if you are committed to it personally, you don't have to have any other reason. You don't have to explain to someone why you are doing it. If it's something that you truly want to do."

Kirsch strongly recommends, if at all possible, that engineers concentrate on their studies and get the "whole campus experience" rather than trying to get a Ph.D. while working. She discovered that some of the most valuable aspects of graduate school were not the ones she had expected. "You don't imagine how important [your fellow students] will be. They're going through school at the same time as you but you learn so much from them, and the interactions between you and the other students are really one of the greatest parts of going to school. You learn together and you kind of bring each other up as you're learning, and then you leave and it turns out these people turn into your colleagues." Those strong, supportive, intellectual relationships have no substitute.

### **"Profiles of Electrical Engineers and Computer Scientists"**

Prepared as part of the Sloan Career Cornerstone Center ([www.careercornerstone.org](http://www.careercornerstone.org))

Source: "Careers for Electrical Engineers and Computer Scientists" © Institute of Electrical and Electronics Engineers