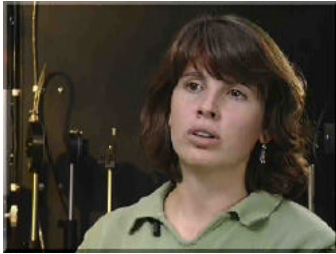




## Profiles of Physicists



**Clara Asmail**

**Physicist**

**National Institute of Standards and Technology  
Optical Technology Division, Physics Laboratory**

**Education:**

B.S. -- Physics; Fordham University

M.S. -- Physics; Tulane University

M.D. -- Optics; University of Arizona

**Job Description:**

Physicist, using a bidirectional scattering metrology system, measuring light scatter from surfaces.

**Video Transcript 1:**

"I measure light scatter from surfaces, from any kind of surface, whether it be a mirror, as I had intended it when I first developed the instrument or whether it's a window or a silicon wafer. It doesn't really matter. I'm able to characterize the distribution of scatter from the surface and from that measurement can infer conditions on the surface. For example, the micro-roughness, the topography of the surface as well as any particular contamination on it or subsurface damage in it. And that's crucial for the yields in IC manufacturing fabs where they spend a lot of money and time on processing silicon wafers that come in."

**Video Transcript 2:**

"I work part-time. I work three days a week and that's unique. Before children, I used to spend all my time on the design of an instrument, the assembly of the instrument and getting the lab ready. I was full time and I worked on average 10 to 12 hours a day. And I came in many times on the weekends. I traveled a lot more then, than I do now. Now I, I have to think fifteen times before I accept an invitation to a meeting. There's a lot more planning involved because it's not just get up and go with my view graphs and all my notes, it's, you know, making sure that I have the baby sitter set up and I cook all the dinners in advance and all that stuff."

**Video Transcript 3:**

"I love coming into work. When I got out of school, it was at a time when optics was raging and there were many opportunities to go work for places where I could have made a lot more money than as a civil servant. But it wouldn't have been as fun. The thing about working at NIST is that we are impartial. We're an honest broker for industry and we can help in a real way, not just for the sake of making a buck but for improving the U.S. economy and making the

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U.S. industries more competitive on a global scale. And it sounds so big -- and it is, it truly is. We're only 4,000 people here but I truly believe that we do have an impact on the U.S. economy."

#### **Video Transcript 4:**

"When you're all psyched and you've got an experiment in mind that you want to get accomplished by the end of the day or by the end of the week and you're all set, you've designed it, you've got it all aligned, and then you turn on a switch and it fails. You know, the laser stops lasering, you don't why. Or pump on your vacuum stops. Or you know, somebody had been borrowing something and you need it back and they say oh, I'm sorry, I can't, I'm in the middle of a calibration right now and I just can't give it back to you. Something always goes wrong. You can always count on something going wrong."

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