



Dr. DAVID EAGLESHAM

David Eaglesham is a world-renowned scientist dedicated to bringing the promise of solar energy to fruition.

From his early days in the United Kingdom, he has made discovery his passion. Along the way, he has conducted ground-breaking research, shared his knowledge with current and future scientific pioneers and continues to push the envelope of solar technologies.

Eaglesham's academic achievements began at Bristol University, where he earned a Bachelor of Science degree in chemical physics and a doctor of physics degree while graduating with honors. As a lecturer in the department of materials science at the University of Liverpool, he became the youngest tenured faculty member in the U.K.

He arrived at Bell Labs in Murray Hill, N.J., as a young researcher with a reputation for foresight and innovation. His research teams delved into technologies that would eventually form solid foundations for the future of solar research.

In 2002, Eaglesham reported to Lawrence Livermore National Laboratory as chief technologist and deputy associate director of chemistry and materials science. As the head of more than 500 scientists, he formed partnerships with industry and academic institutions, which continued in his position of director of advanced technologies at Applied Materials.

Currently, Eaglesham is vice president of technology and chief technology officer at First Solar in Perrysburg.

His extensive achievements in scientific research evolved, in part, from his ability to harness effective relationships with outside organizations. The synergy between The University of Toledo and First Solar has led to several initiatives that continue to advance solar energy as a viable and cost-effective means of energy production.

Eaglesham is a fellow and current member of the American Physical Society, a current member of the Institute of Electronic and Electrical Engineers and past president and current member of the Materials Research Society. He also has served on numerous national advisory panels.

U Toledo Commencement Address

Thank you very much for the introduction. It is a great honor and an enormous pleasure to be here.

- I am honored because I am a great admirer of this university, which I think has become a rising star and one of the forces in the local economy.
- I am delighted because I am proud of the links that my own company First Solar has with this University.

So I am proud and delighted but I was struggling to think what I would say. The old-fashioned Commencement Address went as follows: “congratulations on your degree. You have now learned everything you will ever need to know. Now please show up on time every morning until you retire.”

These days it’s a bit more complicated. Technological innovation means that whatever field you are in it will change out of all recognition. Probably every few years. And whatever you know now you will have to relearn every few years for the rest of your life. And globalization means we all have to compete with our counterparts in India and China. And the energy problem means we will have to re-invent most of our industrial infrastructure. Oh and by the way there’s a worldwide recession that threatens many of our traditional industries.

So this is clearly not an easy time to graduate.

But in the big scheme of things this is not just a tough time: it is, as the Chinese say, an “interesting time”. And by and large interesting times are when interesting things happen. Which means this is a great time to graduate. Not an easy time. But a great time.

I want to start with a random fact from Wikipedia..

In Wikipedia’s list of the 10 richest people in 4,000 years of history, there is one Pharaoh, one Roman banker, Queen Elizabeth I, and 5 Americans who were born within a few years of each other. Rockefeller, Carnegie, Mellon, Ford, Vanderbilt. Richer than anyone else before or since. Inflation-adjusted wealth 10 times that of Bill Gates. All born within a few years of each other. Coincidence? Obviously not.

These guys belonged to a generation that had an extraordinary opportunity handed to them. The industrial revolution was remaking the world and they just happened to be there.

The economy has always been about using energy to transform objects and add value to them. This was true of the first stone tools and is still true today. But the industrial revolution was when we learned to eliminate the use of human energy and transform objects by burning fossil fuels. The industrial revolution gave us the car, electricity, glass, heating, air-conditioning, agricultural machinery.

In large part, the industrial revolution gave us Toledo. The growth of the city is rooted on the Findlay gas find and the industries that were drawn to the area in the wake of that find. Glass, rail, cars, lighting.

And the people who lived in Toledo in those days changed the world by innovations that allowed foods to be preserved, that allowed houses to be lit, allowed windows to be insulated. Libby, Owens, Ford, Willy, Jones. This generation of Toledoans also eliminated child labor, reduced poverty, and improved transportation and sanitation. The world got better and the people of Toledo made it happen. This was not an easy time either. But it was a great time.

Because this was much more than a handful of people becoming eye-poppingly rich. The industrial revolution changed our lives profoundly and generally for the better. This was the opportunity for the US to move untold millions of people out of poverty and hunger. It changed the class structure of America forever. It gave us washing-machines, drying machines, vacuum cleaners, ovens and replaced human labor with fossil fuel energy. It gave women a place in the workplace. And the vote. It eliminated child labor. It paid for a revolution in healthcare. It laid the foundations for most of the country's major educational institutions.

So socially, economically and intellectually, the industrial revolution handed this astonishing opportunity to the people of a single generation born in the mid-19th century. They were able to achieve virtually anything because the older order was being remade.

But it turns out that the industrial revolution is a do-over.

There is broad and general scientific consensus that burning fossil fuels is changing the climate, and that this change is very undesirable and should be averted.

Even the people who don't believe in global warming would by now agree that change is coming. Over the coming decades the world will re-invent the way we generate, store, and transform energy. So we in the US can choose to lead this revolution. Or we can choose to let others lead, & be passed by countries that re-invent faster than we do. If we want to maintain our standard of living we need to embrace this future because the rest of the world has embraced it already.

But this is also about more than just economic pragmatism. I believe that one day we will tell our grandchildren stories about the way we used to live in 2009 and they will say:
"What were you thinking?"

And the way we respond to this crisis will dictate whether we'll have a decent answer.

This is a huge undertaking. Just the classic fossil-fuel industries represent almost a third of our economy. That's got to change. And the entire manufacturing sector that consumes most of that energy. That's got to change too. And travel. And heating. And construction. And waste-management. And medicine.

So everything we do is going to change. It will change with us or without us, but it's going to change.

So the generation in this room are like Carnegie's generation. The world is going to change around you. Our industries, our transportation, our healthcare, and our educational infrastructure are all going to change. You will get to be the generation that will re-shape the energy sector. And travel. And heating. And construction. And waste-management. And medicine. And the entire manufacturing sector.

Now that is a great time to graduate.

Not Easy.

So you are not going to punch the clock for the next few decades. It is going to be tough. There will be intense competition, and the winners are far from clear.

Whatever you just learned how to do, it is probably going to change out of all recognition within 10 years. It will change because of globalization, or because of technology innovation, or because of the re-making of the industrial revolution. It will change because of inventions made by other people in this room.

But remember, your experience here at University of Toledo has taught you more than facts. The most important thing you have learned in your time here is how to learn.

So today I want to congratulate everyone here on your new degrees and the fact that you are now equipped to meet what I think is an astonishingly interesting time. Because interesting times are when interesting things happen. The old order changeth. And you are the new order.