

## Professor Evelyn L HU

### Citation

A boundary-breaking applied physicist and electrical engineering researcher and educator, Prof Evelyn L Hu has brought her singular worldview and interdisciplinary brilliance to the cutting-edge field of nanoscience and technology, an infinitesimally small realm but one with huge impact for our lives in the future. Equally significant, she has served over the past four decades as a wonderful role model for aspiring and established women scientists everywhere, showing how to make a difference at the peak of her chosen field as well as encourage others to join her.

Working within the nano world – where the head of a pin is about one million nanometers across – is particularly challenging with its wide-ranging requirements for minds equipped with understanding of basic, engineering and information sciences. It is also incredibly exciting, given its enormous potential for applications in areas ranging from biotechnology to computers to medicine to aerospace. Prof Hu has provided pioneering contributions to highly sophisticated nanofabrication technology, including nano-scale optical devices and lasers, and gleaned fresh insights from the organic and biological worlds to form novel electronic and photonic materials.

Illustrating the outstanding reach of her work, she has been elected to both the US National Academy of Engineering and National Academy of Sciences, with such dual membership a significant accolade. She is also a fellow of the IEEE, the American

Physical Society and the American Association of the Advancement of Science.

Current interests with her research group at Harvard's School of Engineering and Applied Sciences are materials science for energy and environmental technologies and nanophotonics, which could eventually lead to energy-efficient optical sources and quantum computing, raising the prospect of far more powerful machines than are currently available.

Born in New York, Prof Hu has credited her liberal arts education as the foundation for her broad vision, with her curiosity in science fostered through weekend physics courses at school, a variety of pre-college summer programs ranging from mathematics and computer science to biology, and her Chinese immigrant parents' regard for the impact that science can have on the development of a country. "Their heroes were scientists," she has said previously.

As an undergraduate, she attended Barnard College, a prestigious women's liberal arts institution, graduating in physics but keeping open many different avenues of thought. Her master's and PhD, both in physics, were undertaken at Columbia University, where another amazing woman scientist, Prof Chien Shiung Wu, became her doctoral supervisor. China-born Prof Wu, known as the "First Lady of Physics", was the first female President of the American Physical Society and a particular icon for the Hu family.

Perspicacious, dedicated, and ever ready to persevere in problem solving, Prof Hu worked at Bell Labs from the mid-1970s to mid-1980s, developing microfabrication and nanofabrication techniques to assist the study of superconducting and semiconducting devices and circuits. This was followed by 25 years at the University of California, Santa Barbara, where she explored compound semiconductors and shared her insight into the tremendous possibilities of electrical engineering and the nano field as a respected, inspiring and beloved teacher. Responding to a question about women working in the hard sciences, she has said: “You have to ask yourself: why would you think it’s not the right thing for you?”

Always looking to the wider view, Prof Hu has actively encouraged and demonstrated the importance of building links between academia and industry to enable discoveries to be applied. She has directed two major research centers: QUEST, a National Science Foundation (NSF) Science and Technology Center for Quantized Electronic Structures; and Nanotech, part of the original National Nanofabrication Users Network. In addition, she has co-founded companies, including Cambrios Technologies Corporation with her former post-doctoral fellow Angela Belcher, now a professor at MIT. The company has developed transparent conducting materials using silver nanowires, with applications for liquid crystal displays, OLED devices and thin film photovoltaics, among others.

Since moving to Harvard in 2009, Prof Hu has been instrumental in initiating a new working partnership with HKUST to boost undergraduate engineering connections. After visiting HKUST in 2012 and being impressed by the University

and Hong Kong, she wrote a proposal for a grant from Harvard. The aim is to provide opportunities for HKUST students and those from Harvard to work on innovative engineering projects together, including visits to each other’s campus. Earlier this year, she also became a HKUST Institute for Advanced Study visiting professor.

The small details of life are not only important in Prof Hu’s work. Despite her packed schedule, she will handwrite notes of thanks for the help of others. She will refuse to take additional positions simply for the name, only accepting if she believes she can fulfill the commitment required of the role. And she generously gives time to students, remaining a friend, mentor and model long after they build careers of their own.

Mr Council Chairman, on behalf of the Council of the Hong Kong University of Science and Technology, I have the high honor of presenting to you, Prof Evelyn L Hu, Tarr-Coyne Professor of Applied Physics and Electrical Engineering at Harvard University, for the award of Doctor of Engineering *honoris causa*.