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W.M. Keck Professor of Energy at Massachusetts Institute of Technology Angela Belcher Receives the 2013 Lemelson-MIT Prize

Angela Belcher, one of the world's leading scientists in the field of nanotechnology has been awarded the \$500,000 Lemelson-MIT Prize for her revolutionary inventions in biological engineering. Belcher, who takes inspiration from the way nature creates materials, alters the DNA in bacterial viruses to create materials for practical human use by exposing them to a wide variety of inorganic elements in the periodic table. Her groundbreaking work has resulted in "self-assembled" materials that may be used as components in electronic devices such as environmentally-friendly batteries, solar cells and display screens as well as clean transportation fuel and medical diagnostics.

A University of California, Santa Barbara alumna, Belcher was originally fascinated by the shell of the abalone sea snail, which she studied as a graduate student in the lab of Dan Morse, then Professor of Molecular Genetics and Biochemistry and later the Founding Director of the Institute for Collaborative Biotechnologies (ICB). Abalone shells are 3,000 times stronger than their component parts which are 200% stronger than the toughest high-tech ceramics. She believes that if organic and inorganic materials can combine in nature to produce exquisite structures such as these, similar processes can be used to create useful materials in the lab. Belcher completed her Ph.D. in inorganic chemistry at UCSB in 1997 and then went on to serve as an Assistant Professor in the Chemistry and Biochemistry Departments at the University of Texas at Austin before joining the faculty at the Massachusetts Institute of Technology. She is currently the W.M. Keck Professor of Energy in Materials Science and Biological Engineering at MIT, a faculty member and MIT coordinator at the Institute for Collaborative Biotechnologies and a member of the faculty of the David H. Koch Institute for Integrative Cancer Research.



Photo: Jason Grow

One of her latest targets is improving the efficiency of solar cells used to power hybrid cars. "My dream is to be able to drive a virus-powered car", says Belcher. Her research is highly interdisciplinary and brings together the fields of inorganic chemistry, materials chemistry, biochemistry, molecular biology and electrical engineering. "The full implications of Angela Belcher's work are only beginning to be realized and yet the applications already appear to be far-reaching," said Evelyn Hu, co-founder of Belcher's two companies and the Gordon McKay Professor of Applied Physics and Electrical Engineering at Harvard University. "Her inventions are always linked back to her profound passion and compassion for society, and her desire to improve the quality of life for others."

Belcher is planning to allocate a portion of her award money to the development of outreach programming focused on getting others, especially youth, excited about science – a lifelong cause. "We applaud Dr. Belcher for her progressive yet environmentally-sensitive inventions,

which are based on the miracles of the natural world. However, it is her commitment to teaching and supporting our next generation of American students in the areas of science, technology, engineering and math that deserves our deepest thanks," said Lemelson Foundation Chair Dorothy Lemelson. Belcher has spoken widely and tirelessly to student groups around the world about science.

Among Belcher's many awards and honors, *Rolling Stone* magazine named her as one of the top 100 people changing the country in 2009, *TIME* magazine called her a climate-change hero in 2007 and *Popular Science* as one of the Top 10 Brilliant Scientist in 2002. Belcher has also co-founded two companies: San Francisco's Siluria Technologies, which is using modified viruses to turn natural gas into oil, and Cambrios Technologies, which makes transparent coatings for touchscreens and received a \$5 million investment from Samsung's venture capital arm in late January 2012.

Professor Belcher will accept the prestigious Lemelson-MIT award at the Massachusetts Institute of Technology during the Lemelson-MIT Program's seventh-annual EurekaFest, a multi-day celebration of the inventive spirit, June 19th - 22nd, 2013. Belcher will present a master class highlighting her research and technologies and give her acceptance speech, which will include her approach to invention. Both will take place on Friday evening, June 21st.

The Lemelson-MIT Prize is awarded annually to outstanding mid-career inventors dedicated to improving our world through technological invention and innovation, who have developed a patented product or process of significant value to society, which has been adopted for practical use, or has a high probability of being adopted. By recognizing and funding younger, mid-career inventors, the prize is designed to spur inventive careers and provide role models for future generations of inventors.

Material from the Lemelson-MIT Program press release was incorporated into this story.