FEATURES

# Power Profile: Nanotechnology Guru

**Zhong Lin Wang**
Founding director of the Georgia Institute of Technology's Center for Nanoscience and Nanotechnology (CNN) and director of its Center for Nanostructure Characterization (CNC)

PhD, 1987 Arizona State Univ.
ISI top 25 researchers in nanotechnology, 2005, 2001 S.T. Li prize for Outstanding

There is little doubt that the field of nanotechnology has generated big buzz over the past decade. From medicine to military, space to skin creams, nano- is indeed big. But with this explosion of activity has come just as many challenges. Researchers in government, industry, and academia have now only begun to move their nanoscale technologies/devices off lab benches and into the commercial market. How these products will ultimately fair, what environmental affects, if any, they pose, and what future applications might they impact will rest upon a firm understanding of the fundamental science that govern their behavior. Enter Dr. Zhong Lin (ZL) Wang.

As founding director of the Georgia Institute of Technology's Center for Nanoscience and Nanotechnology (CNN) and director of its Center for Nanostructure Characterization (CNC), Wang and his team are working steadily to solve some of these issues. "Our current research is focusing on understanding the various nanostructures we have fabricated as well as the fundamental mechanism that govern the formation of nanostructures," says Wang.

Wang himself has offered the world his own breed of nanotechnology with the creation of nanobelt structures in 2001. These tiny ribbon-like structures, with their semiconducting and piezoelectric properties, marked the first time since the discovery of carbon nanotubes in 1991, that a family of structurally controlled nanomaterials had been successfully synthesized. The impact of which could eventually lead to nanobelt integration into microelectromechanical systems (MEMS) or as means to fabricate sensors for biomedical applications, such as a force or blood flow sensor.

The discovery was so groundbreaking, in fact, that the paper reporting their existence has been cited nearly 1000 times to date, becoming the second most cited paper in all of chemistry in the period from 2001-2003.

This exposure, along with his more recent discoveries of nanosprings, nanocombs, and nanobows, has undoubtedly contributed to the Institute of Scientific Information's (ISI) selection




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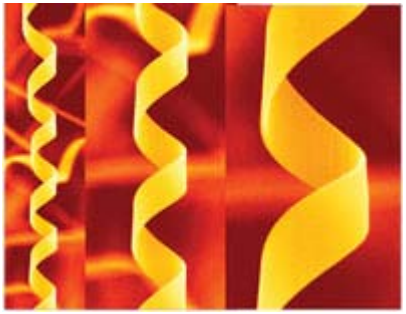
Contribution in Nanoscience and Nanotechnology, 2000 and 2005 Georgia Tech Outstanding Faculty Research Author Awards, 1999 Burton Medal from Microscopy Society of America, 1998 US NSF CAREER award, and 1998 China-NSF Oversea Outstanding Young Scientists Award.

of Wang as one of the world's top 25 researchers in nanotechnology.

Accolades aside, Wang remains the consummate scientist, remaining active in nanotechnology as well as in areas beyond. In 1999, under Dr. Wang's leadership, the Georgia Tech Electron Microscopy Center was established, linking numerous research programs and groups across Georgia Tech's campus. Wang also chairs the Dept. of Energy's Oak Ridge National Laboratory-Georgia Tech collaboration programs, and continues to serve as a referee for numerous journals, including Nature, Science, Nature Materials, Advanced Materials, HJ. Am. Chemical Soc.

Even still, if asked what technological advance he would like to see realized in the next five years, Wang's response centers around his passion—nanotechnology. "Within the next five years, we will work on nanobelt structures for improving the performance of MEMS and nanoelectromechanical systems or NEMS. We would then like to use these materials for in-situ, real-time non-destructive and remote monitoring and detection of cancer cells at a sensitivity of a single cell," says Wang. Perhaps the only obstacle blocking his progress in this effort will be something a lot less complex—money. "In order to help us do a better job, we need sufficient grants to support our ongoing research activities. I spend quite a lot of time writing research proposals," adds Wang. It's a wonder where he finds the time!



Scanning electron microscopy images of the semiconucting and piezoelectric zinc oxide nanohelix. (Courtesy: ZL Wang)

**—Jeannette Mallozzi**

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