

# Stretchable Power Sources for Flexible Electronics

Bingqing Wei

*Department of Mechanical Engineering, University of Delaware, Newark, DE 19716, USA*

*Email: [weib@udel.edu](mailto:weib@udel.edu), web site: [http://www.me.udel.edu/research\\_groups/wei/index.html](http://www.me.udel.edu/research_groups/wei/index.html)*

Electricity storage is a growing challenge among a broad range of renewable energy sources. The development of high-energy storage devices has been one of the research areas of top most importance in recent years and rechargeable batteries and/or electrochemical capacitors (supercapacitors) are anticipated to be the primary sources of power for modern-day requirements in portable electronic devices, satellites, and electric vehicles. In the meantime, flexible/stretchable electronics have attracted considerable attention very recent years and have opened the door to many important applications that current, rigid electronics cannot achieve. In order to accommodate these needs, power source devices must be flexible and stretchable in addition to their high energy and power density, light weight, miniaturization in size, and safety requirements. Utilizing nanomaterials and nanostructures such as carbon nanotubes (CNTs) for various energy storage applications such as electrodes in lithium ion batteries and supercapacitors and as catalyst supports in fuel cells are under close scrutiny because of the promising electrochemical performance of such nanomaterials. In this presentation, I will report our research efforts in assembling 2-D CNT macrofilms using CVD method and their applications for stretchable supercapacitors.

## ***Biography***

**Dr. Bingqing Wei (B. Q. Wei)** received his Bachelor degree (1987), M.S (1989), and Ph.D. (1992) in Mechanical Engineering from Tsinghua University, Beijing, China. His research expertise lies in nanomaterials and nanotechnology. He is currently a Tenured Professor in the Department of Mechanical Engineering at the University of Delaware, USA. He was an Assistant Professor in the Department of Electrical & Computer Engineering and Center for Computation & Technology at Louisiana State University from 2003 to 2007. He had worked as a Post-doctorate Research Associate at Rensselaer Polytechnic Institute, Department of Materials Science and Engineering and Rensselaer Nanotechnology Center from 2000 to 2003. Dr. Wei was a visiting scientist for Max-Planck Institut für Metallforschung, Stuttgart, Germany in 1998 and 1999. He was a faculty at Tsinghua University in Beijing from 1992 to 2001.

Prof. Wei is a member of The Materials Research Society (MRS), The Electrochemical Society (ECS), The International Society for Optical Engineering (SPIE), The American Chemical Society (ACS), and The American Society of Mechanical Engineering (ASME). His scholarly achievements in the field of nanomaterials and nanotechnology and, particularly in the research of carbon nanotubes are fully reflected from his 195 papers published in refereed international journals, including *Nature* and *Science*, more than 100 scientific conference presentations and 120 plus invited talks and seminars in academia and industry worldwide. His research work has been cited more than 8800 times by peer scientists with *h*-index of 48 and has also been highlighted many times in scientific journals, web journals and public media. His recent research focuses on controllable synthesis of macroscale nanotube architectures with 1-, 2-, and 3-dimensions; physical, chemical, electrochemical and mechanical property characterizations of nanotubes; and nanotube device applications.