

**Topic of the Speech:**

1D, 2D and 3D Electroactive Nanofiber-based Materials for Wearable Energy Storage

**Prof. Meifang Zhu**

Donghua University  
China



**Professor Meifang Zhu** obtained her Ph.D degree on Materials Science in 1999 from Donghua University (DHU, Shanghai, China) with a joint study experience in Technical University of Dresden, Germany. She got her B.S. and M.S. in 1986 and 1989, respectively, from China Textile University (now named DHU). Currently, she is the dean of the College of Materials Science and Engineering in DHU, and the director of the State Key Laboratory for Modification of Chemical Fibers and Polymer Materials (SKLFPM, China). She has served as the vice-President for Chinese Materials Research Society (C-MRS) since 2016. From 2005 to 2009, she was the vice-President of Donghua University, with responsibility for the university development and international collaboration.

Prof. Zhu has long been engaged in the research of functional fibers, nanofibers and intelligent fiber materials, organic /inorganic hybrid materials, as well as the fiber formation and theoretical research. She has made significant contributions to both fundamental and application-oriented research related to fiber materials and organic-inorganic hybrid materials and is widely recognized for her contributions to the design and development of polymer-based nanocomposites and their fiber processing. She published more than 300 SCI papers in *Nat. Commun.*, *Adv. Mater.*, *Energy Environ. Sci.*, *Macromolecules*, *Polymer*, *Chem. Commun.* and other peer-review journals, 10 books (chapters), as well as authorized more than 150 Chinese Invention Patents. She has received many honors and awards in her career, including the National Innovation Competition Award (2017), First Prize of Shanghai Nature Science Award (2018), First Prize of Shanghai Award for Technological Invention (2015), the Cheung Kong Scholars (2013), Shanghai Science and Technology Elite (2011), etc.

## ABSTRACT SUBMISSION



-For invited speaker only

### **1D, 2D and 3D Electroactive Nanofiber-based Materials for Wearable Energy Storage**

Sheng-Yuan Yang, Mike Tebyetekerwa, Fatemeh Zabihi, Mei-Fang Zhu\*

*State Key Laboratory for Modification of Chemical Fibers and Polymer Materials, International Joint Laboratory for Advanced Fiber and Low-dimension Materials, College of Materials Science and Engineering, Donghua University, Shanghai 201620, China*

\*Presenter's email: zhurf@dhu.edu.cn

#### **ABSTRACT (NO MORE THAN 500 WORDS:)**

The predicted boom in flexible and wearable electronics will require these devices to be powered by new kind of flexible energy systems with higher energy and power density. Conducting polymers and carbon-based materials are some of the spotted materials. Via nanoscale electro-fabrication of these materials, novel nanomaterials with high surface area, various working domains (1D, 2D and 3D-nanoachitectures), porous structures and fine flexibility can be realized. Herein, we provide a strategy to obtain 1D, 2D and 3D morphologies originating nanofibers for wearable energy storage applications: the 2D electrospun nanofibers membrane were produced via electrospinning. To fabricate the 3D hetero-nanosponges, electrospinning and electrospraying nozzles were varied at different spacing. The 1D nanofibers coated yarns (NCY) were further obtained via a templated modified electrospinning technique. The resultant materials showed efficient electron conductivity, pliability and flexibility fitting for next-generation wearable power supply to miniature electronics.