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Topic of the Speech:

Preparation, Characterizations and Application of Auxetic Functional and Smart Textiles based on Nanocomposites

Professor Zhaoqun Du

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Professor Zhaoqun Du is a full Professor and Ph.D. supervisor in College of Textiles, Donghua University, China. Zhaoqun Du obtained his B.S.Degree in Textile Materials and Engineering from Zhongyuan University of Technology in 2001. He obtained his PhD in Textile Materials and Design from College of Textiles, Donghua University in 2006. Then, he was an associate professor in College of Textiles, Donghua University from 2008 and to be a supervisor for both MSc and PhD from 2014; after that, he was a professor from 2014, when he pursued in Development, Characterization and Modelling of Structure and Behaviour of Textile Materials, and Design, Formation and Characterization of Functional and Smart Textiles.

He has taught various courses at undergraduate and postgraduate levels including Textile Materials, Physics of Textiles, Quality Analysis of Textile Products, Textile Measurement, Testing Principle of Fibre and Its Products, Textile Measurement, Nanocomposite Science and Technology. He has over 100 scientific publications, including more than 80 SCI/EI papers. He has been authorized over 70 patents, including New Method to Structure and Properties of Textile Materials, New Structure and Materials for Functional and Smart Textile Products, and Innovative Testers for Behaviour of Textile Products. Some of the achievements are awarded by Fujian provincial government and China National Textile Industry Association, National Excellent Doctoral Dissertation Nomination Award Shanghai Excellent Doctoral Dissertation Award, Shanghai Municipal Education Commission and Shanghai Education Development Foundation.

He has been undertaken and completed over 20 projects from National Natural Science Foundation of China, Fok Ying Tung Education Foundation, and Ministry of Education of China, State Commission of Science and Technology for National Defense Industry, the Fundamental Research Funds for the Central Universities, the National Key Research and Development Program of China. By acquiring substantial research funding and obtaining funding support from government funding bodies and industry, he established Comprehensive Handle Evaluation System For Fabrics and Yarns, Theoretical Analysis of Mechanical and Heat/Mass Transferring Behaivour of Fiber Assembly, Finite Element Analysis and Simulation of Mechanical Deformation of Textile Products, Characterization and Modeling of Structure and Behaviour of Textile Materials, and Design and Characterization of Functional and Smart Textiles, Deformation Mechanism of Textile Materials with Negative Poisson's Ratio.

ABSTRACT SUBMISSION
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Preparation, Characterizations and Application of Auxetic Functional and Smart Textiles based on Nanocomposites

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ABSTRACT (NO MORE THAN 500 WORDS:)

Nanomaterials are widely used in energy, drug delivery, environmental protection, information and communication, etc. because of their unique properties such as surface and interface effects, macroscopic quantum tunneling effects, quantum size effects, and small size effects. Especially, transitional metal nanomaterials have more beneficial properties including electronic and thermal conductivities, which are more potential for intelligent textiles.

We will present our recent activities on synthesis of silver nanomaterials and two-dimensional carbides (MXene), studying their air stability in wearable applications. Especially, we try to prepare wearable heating, pressuring, and highly sensitive devices by weaving composite fibers, yarns and fabrics. For further characterization, we try to use CHES-FY textile style evaluation system to testify the feasibility and wearability of our functional and smart textiles.