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Topic of the Speech:
Advanced Functional Fiber Materials: Research Progress and Future Development

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Academician Professor Meifang Zhu, member of the Chinese Academy of Sciences, TWAS Fellow. She obtained her Ph.D degree on Materials Science in 1999 from Donghua University (DHU, Shanghai). Currently, she is the dean for 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. She also serves as the vice-president for Chinese Materials Research Society (C-MRS), for Chinese Association of Women Scientific Workers, and for China Textile Engineering Society, as well as the editor-in-chief of Advanced Fiber Materials.

Prof. Zhu has long been engaged in the research of functional fibers, nanofibers and intelligent fiber materials, organic /inorganic hybrid materials. She is renowned for both her fundamental and technological contributions to the design and development of polymer-based nanocomposites and their fiber processing. She published more than 500 papers in peer-review journals, 10 books (chapters), as well as authorized more than 300 National Invention Patents. She received many honors and awards, including Second Prize of National Award for Technological Inventions (2020), Second Prize of National Award for Progress in Science and Technology (2006), National Innovation Competition Award (2017), First Prize of Shanghai Natural Science Award (2018), the Cheung Kong Scholars (2013), Award for Chinese Youth Woman Scientist (2010), Scientific and Technological Youth Innovation Award of the Ho Leung Ho Lee (2009), Shanghai Science and Technology Elite (2011), etc.

ABSTRACT SUBMISSION
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Advanced Functional Fiber Materials: Research Progress and Future Development

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ABSTRACT (NO MORE THAN 500 WORDS:)

Fibers have been closely related to the human civilization ever since the origin of mankind. They were initially used to keep warm and shelter from wind and rain for humans and have been developed to be used in all different areas, including but not limited to the smart wearable fabrics, biomedical area, aerospace and military usage, energy and environmental area. Nowadays, with the integration of physics, chemistry, biology, medical science, and information technology, fiber science has fully grown into a multidisciplinary research frontier, targeting to develop multifunctional, high-performance, intelligent and sustainable materials. At the same time, fiber technology has become an essential part in affecting and guiding the directions of modern industry. This talk will introduce how we construct functional fibers via organic-inorganic hybrid strategy in our group. Through the design and in-situ construction of functional units, the regulation of surface/interface properties of the organic and inorganic materials, as well as the development of the fiber forming techniques for multi-phase polymer systems, we realized the uniform distribution of inorganic nanomaterials in organic polymer matrix and created fiber materials with sophisticated structures and functionalities, such as carbon-based fibers for energy conversion and storage, thermal insulation fiber materials that can be used in extreme environments, high-efficiency antibacterial and antiviral fibers, hydrogel fibers targeting for life and health applications, and bio-based green fibers that help the chemical fiber industry achieve dual-carbon goals, etc. These fibers are showing their vast potential as smart and highly functional materials and undoubtedly are making a better future for us. The application prospects, challenges and future directions of the advanced functional fibers will also be discussed briefly.