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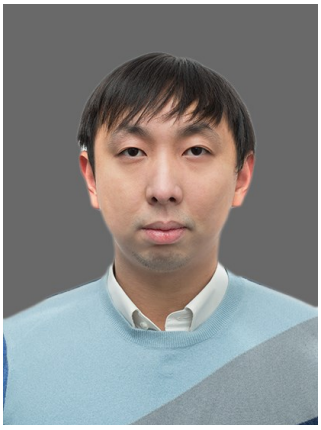

Topic of the Speech:
Mechanism of Electrocatalyzed MXene Nanoenzymes Wet-spun Fibrous Dressing for Promoting Diabetic Ulcer Healing

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Dr. Jun Song received his bachelor's degree in Textile Engineering from Soochow University in 2017, and his doctorate degree from the School of Materials, University of Manchester in 2021. He has won the National Excellent Self-funded Scholarship for international students. In 2022, he joined the Mertdicine team in the School of Life Sciences, Shanghai University, engaged in post-doctoral research, and was selected into the Shanghai Pujiang Talent Plan and the Municipal Education Commission's postdoctoral Faculty project.

He is mainly interested in the medical application and biological effects of multi-scale textile fibers. As the first author or corresponding author, he has published more than ten papers in international journals, such as Advanced Functional Materials, ACS Applied Materials & Interfaces, Journal of Materials Science & Technology, International Journal of Biological Macromolecules, Materials & Design, Journal of Materials Science & Technology, International Journal of Biological Macromolecules.

ABSTRACT SUBMISSION
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Mechanism of Electrocatalyzed MXene Nanoenzymes Wet-spun Fibrous Dressing for Promoting Diabetic Ulcer Healing

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ABSTRACT (NO MORE THAN 500 WORDS:)

Diabetic foot ulcers (DFUs) cause severe physical and psychological suffering to patients. Reducing ROS levels in the wound and removing advanced glycosylation end-products (AGEs) generated by excessive glucose accumulation on the surface are key issues to promote DFU healing. Previous studies have shown that MXene nanoenzymes can regulate ROS and in the field of electrocatalysis can achieve efficient oxidation reduction reactions. This project will utilize MXene to explore the homology congruence between electrocatalysis and nano-enzymatic biocatalysis in promoting DFU healing. Combining the applicant's research background on fibrous wound dressings and conductive fiber materials, stable interfacial impedance and high charge input will be achieved by large surface area fiber dressings loaded with MXene. The project will investigate the electrocatalytic oxidation reduction responses in oxidative stress and high glucose in vitro models and DFU in vivo models on the lowering of ROS levels, the consumption of glucose, and the promotion of the regulation of uniform endothelial cell proliferation. This project will reveal the mechanisms by which electrocatalysis enhances nanoenzymes to modulate ROS and consume glucose in biomedical applications and provide new ideas and approach to promote DFU healing using combined electrocatalysis/electrostimulation-mediated therapy.