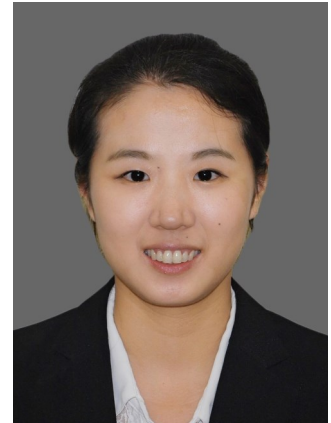**TBIS**

Topic of the Speech:
High Performance Wearable TENG Utilizing Nanofiber Membrane for Energy-harvesting

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Her research interests include three-dimensional fabrics, functional and smart textiles.

TBIS

High Performance Wearable TENG Utilizing Nanofiber Membrane for Energy-harvesting

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ABSTRACT (NO MORE THAN 500 WORDS:)

Wearable triboelectric nanogenerators (TENGs) have attracted attention owing to their ability to harvest energy from the surrounding environment without maintenance. Herein, polyetherimide–Al_2O_3 (PAl) and polyvinylidene fluoride-co-hexafluoropropylene (PVDF-HFP, PH) nanofiber membranes were used as tribo-positive and tribo-negative materials, respectively. Phytic acid-doped polyaniline (PANI)/cotton fabric (PPCF) and ethylenediamine (EDA)-crosslinked PAl (EPAl) nanofiber membranes were used as triboelectrode and triboencapsulation materials, respectively. The result showed that when the PAl–PH-based TENG was shaped as a circle with a radius of 1 cm, under the pressure of 50 N, and the frequency of 0.5 Hz, the open-circuit voltage (Voc) and short-circuit current (Isc) reached the highest value of 66.6 V and -93.4–110.1 nA, respectively. Moreover, the PH-based TENG could be used as a fabric sensor to detect fabric composition and as a sensor-inductive switch for light bulbs or beeping warning devices. When the PAl–PH-based TENG was shaped as a 5×5 cm^2 rectangle, a 33 µF capacitor could be charged to 15 V in 28 s. Interestingly, compared to PAl nanofiber membranes, EPAl nanofiber membranes exhibited good dyeing properties and excellent solvent resistance. The PPCF exhibited less than 5% resistance change after washing, bending, and stretching.