



Topic of the Speech:

Ti₃C₂T_x Coating on Cotton Fabric for Electromagnetic Interference Shielding

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Dr. Ronghui Guo is an associate professor at Sichuan University, China. She is a member of the steering committee on China textile and apparel of the Ministry of Education and member of the council for textile dyeing and finishing, China. Her research areas are functional textile materials, textile dyeing and finishing and novel fiber materials.

She has over 120 scientific publications including more than 70 SCI papers and she owns more than 10 patents. Her teaching activities include subjects based on functional textiles, high performance fibers, textile materials, industrial textiles and textile comfort etc. She is awarded as excellent teacher by Textile Industry Federation of China. Her design works have been exhibited in many countries and regions such as the United States, Britain, France, Hong Kong and Beijing, etc.

ABSTRACT SUBMISSION



-For invited speaker only

Ti3C2Tx Coating on Cotton Fabric for Electromagnetic Interference Shielding

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ABSTRACT (NO MORE THAN 500 WORDS:)

Electromagnetic interference (EMI) shielding fabric is widely used to deal with radiation pollution. However, the traditional EMI shielding fabrics are limited by their reflection-dominated shielding mechanism, large loading and poor shielding performance. Herein, Ti3C2Tx coated cotton fabrics with low Ti3C2Tx loading (1.5 to 2.6 mg/cm²) were prepared through a facile vacuum filtration process. Ti3C2Tx coated cotton fabric exhibits excellent electrical conductivity (up to 1570S/cm), EMI SE (up to 48.9dB) and superior shielding efficiency (up to 2969 dB·cm²/g) with a low Ti3C2Tx loading (2.6mg/cm²) in the frequency of 2-18GHz. Especially, Ti3C2Tx coated cotton fabric shows high ratio of absorption shielding efficiency (SEA) / reflection shielding efficiency (SER) (>9) in the frequency of 2-13.5GHz, indicating that the dominant shielding mechanism of Ti3C2Tx coated cotton fabrics are microwave absorption to EM radiation. Additionally, the Ti3C2Tx coated cotton fabric exhibits a high tensile strength (up to 70N) and fracture elongation (up to 18.3%). The result suggests that the Ti3C2Tx coated cotton fabric is superior absorption-dominated EMI shielding material. The Ti3C2Tx coated cotton fabric with low loading, robust, and highly conductive properties can be regarded as an alternative electromagnetic wave absorbing material.