

ABSTRACT SUBMISSION



-For invited speaker only

Ti3C2Tx Coating on Cotton Fabric for Electromagnetic Interference Shielding

Liang Geng^{1,2}, Pu-Xin Zhu¹, Yu-Jun Wei^{1,2}, Rong-Hui Guo^{1*}, Cheng Xiang¹, Ce Cui¹, Ying Li^{1,2}

¹ *College of Light Industry, Textile and Food Engineering, Sichuan University, No.24 South Section 1, Yihuan Road, Chengdu, China*

² *School of Textile Engineering, Chengdu Textile college, No.186 Taishan South Street, Chengdu, China*

*Presenter's email: ronghuiguo214@126.com

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.