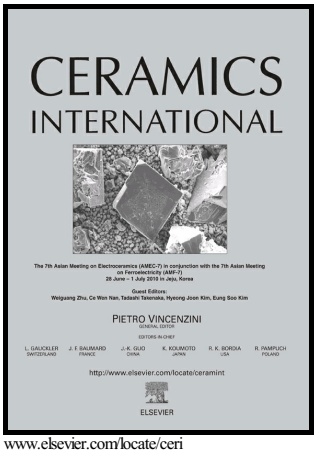

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Theoretical prediction and experimental verification on EMI shielding effectiveness of dielectric composites using complex permittivity

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Abstract The evaluation and optimization of EMW absorbing properties have been widely studied, but little research focused on EMI shielding properties predicted by complex permittivity. Based on the transmission-line theory, shielding effectiveness (SE) of a dielectric composite was evaluated by the reflection coefficient (Γ) and transmission coefficient (T) which were calculated by the complex permittivity. SiC_f/SiCN composites containing different content of CVI SiCN matrix are attractive for their tunable dielectric properties, which may vary from EMW absorption to EMI shielding. Therefore, SiC_f/SiCN composites are typical dielectric composites used for experimental verification, and the results indicate that the dielectric composites without CVI SiCN phase have good EMW absorbing properties, while they exhibit good EMI shielding effectiveness with CVI SiCN phase. This work builds a relationship between the EMI shielding effectiveness and the complex permittivity, and obtains the optimized complex permittivity for excellent EMI shielding effectiveness.

Keywords: Complex permittivity, EMI shielding effectiveness, EMW absorption properties, Dielectric composites

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