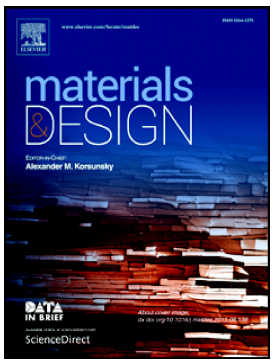

Electroless Ag-plated sponges by tunable depositio8n onto cellulose-derived templates for ultra-high electromagnetic interference shielding

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Electroless Ag-plated Sponges by Tunable Deposition onto Cellulose-derived Templates for Ultra-high Electromagnetic Interference Shielding

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Abstract: Environmental-friendly cellulose-derived sponges were employed as porous templates to achieve uniform Ag deposition *via* a facile and economical electroless plating method. SEM and BET results confirmed an Ag layer was deposited on cellulose composite sponges without damaging the porous structure. XPS and XRD analysis demonstrated substantial interactions between porous substrates and Ag particles. When utilized as electromagnetic interference (EMI) shielding materials, a 3.2 mm thick silver-plated sponge exhibited a total shielding effectiveness (SE_{total}) value of as high as 120.85 dB in the frequency range of 10-1500 MHz when the plating time was 120 min. Moreover, the conductive sponges displayed absorption-dominant mechanism to alleviate secondary radiation, making them promising candidates as high EMI shielding materials.

Keywords: Cellulose-derived sponges; electroless Ag plating; electromagnetic interference shielding