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Shielding Effectiveness of Rice Husk and CNT Composites in X-Band Frequency

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Abstract : This paper presents the electromagnetic interference (EMI) shielding effectiveness of rice husk and carbon nanotubes (RHCNTs) composites in the X-band region (8.2-12.4 GHz). The difference weight ratio of carbon nanotubes (CNTs) were mix with the rice husk. The rectangular wave guide technique was used to measure the complex permittivity of the RHCNTs composites materials. The complex permittivity is represented in terms of both the real and imaginary parts of permittivity in X-band frequency. The conductivity of RHCNTs shows increasing when the ratio of CNTs mixture increases. The composites materials were simulated using Computer Simulation Technology (CST) Microwave Studio simulation software. The shielding effectiveness of RHCNTs and pure rice husk was compared. The highest EMI SE of 30 dB is obtained for RHCNTs composites of 10 wt % CNTs with 10 mm thick.

Keywords : EMI shielding effectiveness, carbon nanotube, composite materials wave guide, x-band
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