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Double-layer structure combined with FSS design for the improvement of microwave absorption of $BaTiO_3$ particles and graphene nanoplatelets filled epoxy coating

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Abstract: Graphene nanoplatelets (GNPs) and $BaTiO_3$ particles filled epoxy coating with wide microwave absorption bandwidth were designed and investigated in the frequency range of 2–18 GHz. The microstructures of these coatings exhibit a uniform dispersion of GNs and $BaTiO_3$ particles in the matrix. The double-layer structure and frequency selective surfaces (FSS) design were used to improve their microwave absorption of such coatings. A bandwidth of reflection loss (RL) ≤ −8 dB with 13.9 GHz (from 4.1 to 18 GHz) can be obtained for the double-layer coating combination of FSS structure. The microwave absorption of such double-layer absorber with FSS structure also depended on the incidence angles and polarization model, and higher RL performance is maintained under wide oblique incidence for both TE and TM polarization.

Keywords: Coating materials; Complex permittivity; Reflection loss; Graphene nanoplatelets

1. Introduction

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