

Effective AC Response of Nonlinear Spherical Coated Composites

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Abstract: Under alternating current electric field, effective response of granular nonlinear composites with spherical coated inclusions is investigated in the dilute limit by using the perturbation approach. For an external sinusoidal applied field with finite frequency ω , the local fields and potentials of composites in general consist of components at all harmonics for cubic nonlinear constitutive relationships. We derive the local potentials of spherical coated composites at harmonics. Moreover, we give the formulae of the nonlinear effective AC susceptibility at the third harmonic frequency.

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Key words: nonlinear composite, coated composite, effective nonlinear response

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