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Abstract

We analyze electric field gradient (or quadrupole) effects in the anti-plane problem of a small, circular inclusion in polarized ceramics. An exact solution is obtained. The solutions show that, different from the classical inclusion solution from the linear theory of piezoelectricity, the electric field in the inclusion is no longer uniform. This has implications in field concentration and strength considerations and the prediction of effective material properties of composites.

Keywords

Electric field gradient, Inclusion, Polarized ceramics