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Title

Geometric resonances in far-infrared reflectance spectra of PbTiO₃ ceramics

Source

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Abstract

The complex dielectric permittivity of PbTiO₃ ceramics in the THz frequency range has been investigated theoretically and by a far-infrared reflectance technique. Besides the well-known polar modes of bulk PbTiO₃, the experiment reveals several additional modes identified as geometrical resonances (i.e., extraneous hybrid excitations created by inhomogeneous depolarization fields). A comparison of the experiment and model calculations suggests that the strong geometrical modes located near 300 and 500 cm⁻¹ are associated with the presence of 90degree ferroelectric walls. (12 References).