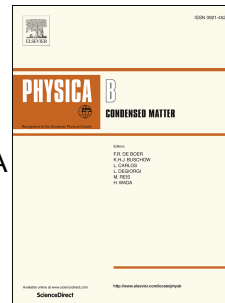


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Size dependent flexoelectric and mechanical properties of barium titanate nanobelt: a molecular dynamics study

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Abstract

This study focuses on the size dependent flexoelectric effect of Barium Titanate Oxide (BaTiO_3) and its mechanical property. The an-harmonic core-shell model is employed to study the cross-sectional size dependent properties of the BaTiO_3 nanobelt. Flexoelectricity describes the relationship between the induced electrical polarization and the applied strain gradient. Molecular dynamics involved core-shell interatomic potential model predicts the electrical polarization by allowing the ion shell to react freely to the electrostatic environment induced polarizability. The competing and opposite trends of longitudinal and transverse shear flexoelectric parameters with increased sizes is found in the present study. The elastic modulus decreases with the increase in cross-section size. In both cases, the material parameters

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