

Converse piezoelectric measurements of natural rocks with atomic force microscopy (AFM)

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Preseismic and coseismic electromagnetic phenomena have been studied all over the world. An electromagnetic model of geological faults was suggested to explain most of the phenomena with a piezoelectric coefficient of rock quantitatively. The piezoelectric coefficient up to 10-15 C/N has been determined by converse piezoelectric measurements in which the strain is determined as a function of an applied field. In this study, strain induced by alternating electric field was measured by commercially available AFM and lock-in amplifier. The dielectric property can be discussed by the phase difference between the applied electric field and the displacement.

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