

## Molecular dynamics calculation on the electric properties of the ultra-thin water film between low quartz surfaces.

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Some plausible mechanisms of earth current and electromagnetic emissions just prior to earthquakes have been considered. Here we propose a new hypothesis that focuses on the phase transition between bulk water and ultra-thin water film. If complex dielectric constant is significantly different between bulk water and ultra-thin water film structured by the interaction with crystal surfaces, the phase transition would be associated with electric current.

Calculated total electric dipole moment of ultra-thin water film between low quartz surfaces is anisotropic and the static dielectric constant is smaller than that of bulk water. However, the interstitial fluid in the earth crust is not pure water but of high concentrations of NaCl and CO<sub>2</sub>, then their effect must be investigated.