**The effect of water to electrical potential during rock failure by laboratory simulation**

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**Abstract**

Electrical potential (EP) is a type of pre-earthquake signals, the potential of surface have unusual change before earthquake wave arrive, analysis from a solid state physics perspective, when crust is stressed will produce **positive hole**($h^{•}$) due to **piezoelectricity** of the silicon in rock. Hole carrier transmission to the surface of earth before the main strike because the velocity of positive hole is faster than earthquake wave. The conductivity of material is very important for electrical phenomenon, many factor will change it , there consider the effect of water and **structure of rock:** porosity and permeability. In experiments, first to decide the water is effective for transmission of charge hole, then we used five rock type to follow the relation between porosity and strain, and study the different EP of some rock type but dry and wet. We study the underlying physical process by laboratory simulation, these experiment result will help us to understand the unusual signal in real earthquake event.

References

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