



Electric charge measurements on marble samples subjected to stress up to fracture

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Laboratory experiments in order to investigate electric emissions from geomaterials when subjected to temporal stress variation up to the fracture were conducted. This experimental methodology is rendered under the term Pressure Stimulated Current (PSC) technique and the emitted electric current is known as PSC. In this work marble samples were subjected to temporal stress variation, with constant rate up to fracture and the released electric charge $Q(t)$ was correlated with the deformation $\varepsilon(t)$. The experimental results show a linear relation between the electric charge $Q(t)$ and the deformation $\varepsilon(t)$ when the material suffers stress that activates microcrack generation and propagation processes. When the applied stress becomes high enough to cause severe damages in the bulk of the material and the fracture plane is formed then the relation between $Q(t)$ and $\varepsilon(t)$ deviates linearity. This deviation notices the upcoming event of fracture.

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