## Study of the stress induced current in MgO ceramics

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Anomalies of total electron content (TEC) in the ionosphere were reported just before the 2011 off the Paciffic coast of Tohoku Earthquake by Heki(2011). Such TEC anomalies before earthquakes were found more than 11 Eqs > M8 since 1994. Although, most of TEC anomalies were caused by solar activity, TEC anomalies just before earthquakes are occurred locally above the epicenter and can be distinguished by temporally and spatially.

A hypothesis of physical mechanism for this event is electromagnetic phenomena caused by tectonic stress, which affect the distribution of electrons in ionosphere. For example, hole-excitation at peroxy linkage in silicate is considered as the source of stress-induced charges in the ground(Freund, 2006). In this study, we used highly-pure MgO ceramic samples, which were known as a good electric insulator, to know the hole-excitation process in a different material.

As a result, electric current through the sample at pico-ampere level was observed at the uniaxial stress of 10 MPa under the room temperature. We will discuss the obtainded results for silicate rocks and MgO ceramics and also the possible relationship to the TEC anomalies before Earthquakes.

Keywords: TEC anomalies, peroxy linkage, MgO ceramic