

The Remanence Variation of Rocks Stressed to Failure
and its Implication to Earthquake Prediction

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In the present study, an experiment under uniaxial pressure with 126 samples of 26 rock types is carried out. The general nature of remanence changes with stress is far more complicated than estimated hitherto.

The author suggests that these changes can be distinguished into three types. In type I and II effects, the change of remanence with stress are all regular, the former is weakly irreversible and the latter is strongly irreversible when the stress is released. In type III effect, the remanence shows a very jumbly variation with stress. According to the comprehensive study on magnetism of these rocks, the reasons for the type III effect are the dominant content in NRM and specific domain state of the magnetic minerals. It is also meaningful that in this experiment a sort of relatively high frequency variation superimposing on the general change of remanence during microcracking process is discovered. It appears to be related with the closing of existed microcracks and opening of newly-developing microcracks.

Above-mentioned 3 types of piezomagnetic effect seem corresponding to various kinds of earthquake precursors, while some sorts of tremble variation in remanence could be distinguishable in local magnetic field data. The results of this experiment imply that in order to search and understand complicated seismomagnetic effects, specific content and microscopic structure of medium in seismic regions should be noticed and hence possible piezomagnetic characteristics there might be suggested.

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