

Studies of electromagnetic emission during rock fracture in laboratory experiments: instruments, techniques, results

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Abstract. Results of development of instruments and techniques for registration of electromagnetic emission (EME) generating of rock samples under loading in laboratory experiments are presented. Results of the experiments with the instruments developed are described. The instruments and techniques made it possible to measure electromagnetic emission reliably and improve the measurement sensitivity in comparison to previous experiments. High correlation of the time moment of EME generation and changes of its parameters with the changes in the reactive resistivity of sample rock and seismoacoustic emission activity is revealed. It is shown that EME occurs and reaches its maximum on the decreasing graph branch of polarizability of rocks under the sample fracture.

Keywords: earthquake modeling, laboratory experiment, rock fracture, electromagnetic emission, induced polarization, instruments, techniques, results.