Microcracking During Quasi-static Fault Growth in a Brittle Rock Under Triaxial Compression

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http://www.aist.go.jp/GSJ/~lei/lei00.htm

We investigated the spontaneous growth of fault in an intact brittle rock, based on triaxial compression experiments that utilize acoustic emission (AE) events to monitor faulting process. In our experiment, fault initiated at one site with slight preceding damage, and then propagated into the unfaulted rock with a process zone of intense microcracking. Self-exciting model and b-value were examined to investigate the interaction of microcracks. Our results suggested that interaction between microcracks was enhanced following the growth of fault nucleation and increase of microcrack density. We also found that tensile microcracking was dominant in the process zone, but shear mode was dominant in nucleation zone.