Clay minerals in fault zones

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Clay minerals in fault zones affect physical properties such as fault strength and permeability. Smectite is a major clay mineral in the Nojima fault zone, in which a host rock is granite. In the Hatagawa fault zone, where a brittle-plastic transition zone of a granitic crust is exhumed, smectite does not occur but illite and chlorite are main clay minerals. This difference mainly comes from difference in temperature. In the case of Chelugpu fault, Taiwan, illite, smectite, chlorite and kaolinite occur in the fault zone as well as the host rock (shale). Kaolinite is not present and illite crystallinity increases just at the fault core (Fujimoto et al., 2007) probably due to frictional heating (Hirono et al., 2007). The preliminary results of semi-quantitative analysis of clay minerals fraction using standard clay samples are also reported.