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Room:Convention Hall

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Relationship between dehydroxylation reaction of clay minerals and their inner structure and frictional property

Tetsuro Hirono^{1*}, Go Honda¹, Wataru Tanikawa²

¹Osaka University, ²JAMSTEC Kochi

Transient frictional heating during earthquake slip induces dehydroxylation of phyllosilicate minerals. As this reaction is endothermic and releases H₂O, it may affect dynamic fault weakening and the energetics of earthquakes. To elucidate this question, we measured thermal property, chemical kinetic parameters, and frictional property of dehydrated clay minerals (montmorillonite, illite, and kaolinite), and observed the inner structure under scanning electron microscope. We then discuss the relationship among the reaction, structure (fabrics), and frictional property, and also argue their implications on dynamic fault weakening and energetics during an earthquake.

Keywords: clay mineral, dehydroxylation