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Ultra-fine amorphous particles preserved in the primary slip zone within the Arima-Takatsuki Tectonic Line

ASAYAMA, Satoru[1*] ; KANEKI, Shunya[1] ; HIRONO, Tetsuro[1]

[1]Graduate School of Science, Osaka University

Friction causes comminution and wearing of minerals in the fault, forming a fine powder that can act as a lubricant (powder lubrication). Such particles are suggested as a potential proxy for identifying the slip zone of the most recent earthquake along a fault, because they were observed only in the latest slip zone within the Taiwan Chelungpu fault that slipped at the 1999 Chi-Chi earthquake. However, the occurrence in the active faults was not fully reported, so we investigate the latest slip zone within the Arima-Takatsuki Tectonic Line.

By applying the quantitative estimation of amorphous component using halo peak area on XRD patterns, we confirmed approximately 20 weight % of the component. We also observed ultrafine particles probably attributed to the amorphous component. Therefore, such particle could be universally observed in the latest slip zone within the active fault.

Keywords: active fault, amorphization, quantitive method of amorphous