

## Effect of friction and comminution on the optically-stimulated luminescence of quartz grains

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Optically-stimulated luminescence(OSL) dating is considered to be applicable for fault dating owing to its instability even for short-time heating such as frictional heating. However, fault zone material may experience not only heat but also friction and comminution with coseismic faulting. If the OSL signal becomes small or disappear due to friction and comminution that is also accompanied by stable sliding (fault creep), OSL signal zeroing in natural fault zone can not be simply attributed to earthquake event. Here we report an increment of OSL signal of quartz during a low- to intermediate-velocity frictional sliding. The increments of OSL signal intensities were found from finely ground recovered sample ( $<75 \mu\text{m}$ ). We also recognized an increment of fast to medium component of OSL with increasing sliding velocity. These results can be explained by (1) trapping of electron on newly-formed mineral surface, (2) rate-dependent emission of electron, such as triboemission, at asperity contact.

[Acknowledgements] This work was supported by grants from the Nuclear Regulation Authority (FY 2015–2018).

Keywords: Optically stimulated luminescence, Friction experiment, BET specific surface area, Triboluminescence