



## **Exploring the characteristics of the OSL properties of quartz from Taiwan**

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The island of Taiwan is dominated by a high mountain area attaining almost 4000m in altitude. Situated in East Asia at the transition from the subtropical to the tropical zone, the landscape is experiencing intense weathering and erosion. Despite the high erosion rates and the rapid transport of clastic sediments along the sediment cascade especially throughout excessive rainfall events in the course of tropical storms and typhoons, a broad range of sedimentary archives has been preserved. This provides the opportunity to reconstruct the chronology of both, tectonic and climatic events by applying luminescence dating techniques.

The depositional environment is of highly dynamic nature, which implies a high probability of the occurrence of incomplete resetting of the OSL signal before deposition. Therefore, coarse grained quartz would be the mineral of choice for OSL dating: The luminescence signal of quartz bleaches more rapidly than that of feldspar and the single aliquot regenerative (SAR) dose protocol for the dating of quartz provides a well proven tool for the determination of reliable ages even for incompletely bleached sediments when small aliquots or as possible single grains are used for dating.

However, previous studies have revealed a number of issues, which in many cases prevent the use of coarse grained quartz from Taiwan as a reliable dosimeter. This includes, for example, generally low signal intensities, bad performance in dose recovery experiments, occurrence of significant feldspar contamination and massive sensitivity changes. Still, until now a detailed study of the OSL characteristics of quartz from Taiwan is not available.

In this study, we therefore investigated the luminescence signal properties of coarse grained quartz from the Shuang-Hsie river catchment in north-eastern Taiwan. The sediment sources in this catchment primarily comprise sedimentary rocks (sandstones) and some occurrences of volcanic rocks. We compared the OSL signal properties of quartz from young fluvial sediments with those of quartz derived directly from the surrounding bedrock. Among other analyses, LM-OSL measurements were conducted in order to clarify whether a fast component suitable for dating could be detected.