

SCG059-P16

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## Optical dating of quartz from hydrothermal sites in Middle and southern Okinawa Trough

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The Okinawa Trough is a 1200 km long, northeast-trending basin behind the Ryukyu Arc (Ishibashi et al. 1988). Since it is a back-arc basin in early spreading, modern submarine hydrothermal activity and mineralization have many characteristics which have aroused wide attention. The long-term change of hydrothermal activities is of interest in respect not only of ore formations but also of evolution of biological communities supported by the hydrothermal activities. Submarine hydrothermal fluids from the Okinawa Trough tend to be strongly influenced by interaction of the hydrothermal fluids with organic matter in the sediment resulting in high alkalinity and NH<sub>4</sub><sup>+</sup> concentrations of the fluids (Glasby and Notsu, 2003). The fluids also contain high concentrations of CO<sub>2</sub> of magmatic origin. A systematic geochronological study of hydrothermal activities has not been possible due to the lack of methods which cover the age ranges of interest.

This paper presents initial results of feasibility studies to date quartz grains from two cores collected from Tarama Knoll, and the Izena Cauldron in the Middle and Southern Okinawa Trough. We extracted quartz from both core samples using standard chemical procedures, and subsequently used the SAR (single-aliquot regenerative) method for estimating the OSL (optically stimulated luminescence) equivalent dose. Preliminary results indicate an equivalent dose of ~6 Gy for the 1108-MB sample from the Tarama Knoll. For the core sample from Izena Cauldron, equivalent doses have been observed to have a bimodal distribution, and the average equivalent dose based on 9 aliquots is ~40 Gy. Dose-rates were estimated from K, U and Th measurements using a low background pure germanium gamma ray detector. The presentation will highlight OSL methodologies, and present preliminary ages of hydrothermal activities in the Middle and Southern Okinawa Trough at the above two sites.

### References:

- G. P. Glasby and K. Notsu, 2003, *Ore Geology Reviews*, 23, 299.  
J. Ishibashi et al., 1988, *Geochemical Journal*, 22, 107.

Keywords: Okinawa Trough, dating, OSL, quartz, hydrothermal activity