

Illite crystallinity of the borehole samples penetrating the Nobeoka thrust, Miyazaki prefecture, SW Japan

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A borehole penetrating the Nobeoka thrust was drilled at Nobeoka city, SW Japan as analogue of NanTroSEIZE project. The Nobeoka thrust is a fossilized OOST in the Shimanto belts, Cretaceous and Paleogene accretionary complex in SW Japan. Total drilling length was 255m and continuous core samples were recovered. The borehole runs through the Nobeoka thrust at the depth of 41.7m. The hangingwall is Kitagawa group mainly consist of phyllite and the footwall side is melange of Hyuga group (Kondo *et al.*, 2005).

In the present study, we present preliminary results of X-ray diffraction analysis of the fragmented core samples. Constituent minerals are mainly quartz, plagioclase, illite, chlorite and calcite. The mineral assemblages are almost the same from the top to the bottom. We determined illite crystallinity (illite crystallinity, IC), one of the indicator of paleotemperature, using oriented samples.

IC values in the hangingwall range from 0.163 to 0.185°, those in the main thrust zone range from 0.678 to 0.701°, and those in the footwall ranges from 0.369 to 0.550°. The IC values show clear difference among the hangingwall, the main thrust zone and footwall. The paleotemperatures, calculated after the conversion formula (Mukoyoshi *et al.*, 2007), are 315-319°C in the hangingwall, 209-213°C in the thrust zone and , 240-277°C in the footwall. Vitrinite reflectance analyses indicate that the maximum temperatures of the hanging wall and footwall are approximately 320and 250°C, respectively (Kondo *et al.*, 2005), which agree to our results.

On the other hand, the samples in the main thrust zone indicate a larger IC values and lower paleotemperatures. The later faulting and alteration under lower temperture probably affected only on the main thrust zone, though the mineral assemblages do not show remarkable change.

Keywords: Fault, Borehole core, Accretionary Complex