

ABSTRACT

The geological evidence regarding the origin and tectonic setting of eastern Thailand now still be limited. In this study, I studied a *mélange* terrane in the Sa Kaeo-Chanthaburi area, and discriminated tectono-stratigraphic units there. To establish the tectonic evolution, the geochemistry of chromian spinels is applied to determine the composition and provenance of their ultramafic-mafic rocks.

Two kinds of rock assemblages are generally recognized in the Sa Kaeo-Chanthaburi area. They are a various kind of *mélanges*, and turbidite deposits. These rock assemblages are called here as the Sa Kaeo-Chanthaburi accretionary complex. It comprises five new rock units from north to south, Khao Prik, Khao Hleam, Ban Nong Bon and Soi Dao units, and Pong Nam Ron Formation. The covering sediments, Pong Nam Ron sandstones belong to the dissected arc.

In this Sa Kaeo-Chanthaburi accretionary complex, numerous detrital chromian spinels are discovered as the accessory mineral in turbiditic sandstones of the Pong Nam Ron Formation, sandstone blocks in *mélanges*, and volcanoclastic rocks. The petrographical characteristics under the microscope indicate volcanic origins. Geochemically the detrital chromian spinels from sandstone beds of the Pong Nam Ron Formation and sandstone blocks in *mélange* have wider Cr content. On the other hand, detrital spinels from volcanoclastic rock have high Cr content, and vary widely in TiO₂ content. The Fe³⁺ is consistently low in

both clastic and volcanoclastic rocks. Based upon provenance discrimination fields on the $Fe^{3+}/(Cr+Al+ Fe^{3+})-TiO_2$ diagram proposed by Arai (1992), plots of detrital chromian spinels in sandstones of the Pong Nam Ron Formation and sandstone blocks in mélanges seem to correspond to island-arc region, whereas plots of detrital chromian spinels in volcanoclastic rock can be related with spinels from intraplate basalt and island arc basalt.

The Late Paleozoic blocks in mélange of the Sa Kaeo-Chanthaburi area are characterized by basaltic pillow lava, hyaloclastite, chert, limestone, and serpentinites. These rock assemblages probably suggest oceanic plate materials (OPM) of basalt lava and overlaying chert with seamount-typed limestone. These pelagic materials were accreted to the western edge of Indochina during the Uppermost Permian, and were covered by turbidite deposits of the Pong Nam Ron Formation during the Middle Triassic. According to the geochemistry of detrital chromian spinels in volcanoclastic rocks, there were possibly two kinds of provenance of volcanic rocks. This is in accordance with the accretion of oceanic plate under the continent and the formation of magmatic arc during deposition of volcanoclastic rocks.

Key words: detrital chromian spinel, Pong Nam Ron, Sa Kaeo-Chanthaburi, accretionary complex, mélange, oceanic plate, subduction, Indochina