

## ***Clues to Cretaceous subduction initiation in South-East Asia - A geochronological and geochemical perspective from the Andaman Ophiolite***

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Magmatic and mantle rocks of suprasubduction zone ophiolites record the evolutionary history of intra-oceanic subduction, from the juvenile stages to subduction maturation. This study presents an integrated geochemical and geochronological synthesis from the Andaman Ophiolite in order to reconstruct the subduction initiation history. The Andaman Ophiolite Suite is exposed on the Andaman and Nicobar Islands in the outer arc ridge of the Sunda trench of the India-Eurasia subduction system. The Ophiolite Suite is made up of incoherent Penrose sequence including contrasting crustal (especially volcanic) and mantle rocks along with underlying metamorphic sole and mélange, and an overlying Palaeogene and younger forearc sedimentary sequence. Comparing our geochemical and geochronological data of igneous rocks to published data, two distinct geodynamic environments have been inferred for their origin. One indicates an arc magmatism with agglomerates and cogenetic plagiogranites-diorites, with U/Pb ages ranging from 98-93 Ma whereas another group clinches towards a back-arc origin. Similar geochemical and accordingly geodynamic diversity has been documented for Andaman mantle peridotites. So far, the ~95 Ma age derived from Andaman plagiogranite was correlated to ophiolites in the western Neotethyan realm. However, one U/Pb analysis (from gabbro) suggests inheritance of a ~105 Ma age, which coincides with recent Ar/Ar ages of the Andaman metamorphic sole, and with an inherited K-feldspar age from the nearby Barren island volcanics. Our new field, geochemical, and geochronological findings thus led us to speculate that intra-oceanic subduction started within the back-arc basin behind the Woyla arc, that collided in the mid-Cretaceous with Sumatra.

Keywords: Andaman Ophiolite, Agglomerate, Plagiogranite, U-Pb Zircon age, Tectonic discrimination, Subduction initiation