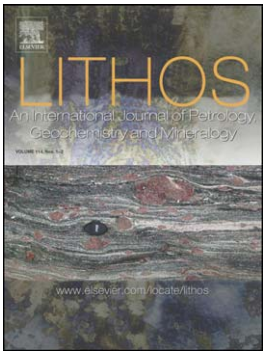

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Geochronological, geochemical and Sr-Nd-Hf isotopic constraints on the petrogenesis of Late Cretaceous A-type granites from the Sibumasu Block, Southern Myanmar, SE Asia

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ABSTRACT:

The Late Cretaceous to Paleogene granitoids occur widespread in the Sibumasu block within Myanmar (SE Asia), which show a close association with tin-tungsten mineralization. However, the precise timing, petrogenesis and tectonic significance of these granitoids are poorly constrained so far. In this study, we present a detailed study on geochronology, elemental and Sr-Nd-Hf isotopic geochemistry for the Hermyingyi and Taungphila granites in southern Myanmar, with the aim of determining their petrogenesis and tectonic implications. LA-ICP-MS U-Pb dating of zircon grains from the two granites yield ages of 69-70 Ma, indicating a Late Cretaceous magmatic event. These granitic rocks are weakly peraluminous and belong to the high-K calc-alkaline series. They are both characterized by high SiO_2, K_2O+Na_2O, $FeO^T/(FeO^T+MgO)$ and Ga/Al ratios and low Al_2O_3, CaO, MgO, P_2O_5 and TiO_2 contents, enriched in Rb, Th, U and Y, but depleted in Ba, Sr, P, Eu, suggesting an A-type granite affinity. Moreover, they display prominent tetrad REE patterns and non-CHARAC trace element behavior, which are common in late magmatic differentiates with strong hydrothermal interaction or deuteric alteration. The granites belong to A_2-type and probably formed at a high temperature and anhydrous condition. They have zircon $\varepsilon_{Hf}(t)$ values from -12.4 to -10.0 and whole-rock $\varepsilon_{Nd}(t)$ values from -11.3 to