
Chemical patterns and evolution of the batholiths of the Main Range Province, Peninsular Malaysia

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Minor and trace element variations in the granitoid batholiths of the Main Range Province are examined using available data with particular attention given to the relatively immobile elements such as Ti, Zr, P, Nb, Y. A number of distinctive granitic suites are identified on the basis of the inter-element relationships and their variation patterns. These suites are not equivalent to or the same as the plutons/suites delineated in the Main Range Province by earlier workers.

Each suite is a genetic unit comprising a group of rocks formed primarily by crystallization-differentiation of a parental magma batch. Most of the suites appear to have evolved along broadly parallel paths from different batches of magmas representing different crustal melt fractions. Inter-suite chemical differences reflect the initial compositional differences of respective parental magmas due primarily to differing degrees and conditions and partial melting.

The suites are at different stages of evolution, and the extent of differentiation varies from suite to suite. A group of suites define a common evolutionary trend implying a direct genetic link. During magmatic evolution Ti, Zr, V, Sr behaved as compatible elements while P, Rb, Nb, Y, Sn behaved differently in different suites.

There is no systematic spatial variation in the chemical characteristics of the suites, and also compositionally similar suites occur in geographically separated areas suggesting a common crustal source.