

Mantle feldspar from the Noring granite, north Peninsular Malaysia: petrography and chemistry

AZMAN A. GHANI

Department of Geology
University of Malaya
50603 Kuala Lumpur

The Noring pluton formed the Stong complex with other two granite plutons i.e. Kenerong microgranite and Berengkat tonalite and is located closed to the Central Belt of the Peninsular Malaysia. Mantle feldspar found in the Noring granite, have been investigated in terms of their petrography and geochemistry. The size of the texture ranges from several mm to 3 cm. The thickness of the plagioclase rim varies from 1 mm to 10 mm. The K-feldspar core also varies in size, from 2 mm to 2 cm across.

Petrographically the mantle feldspar consists of whitish plagioclase rim mantled the pinkish K-feldspar core. The K-feldspar core consists of a single crystal or several crystals usually showing simple twinning. Occasionally, it contains euhedral hornblende, magnetite and biotite inclusion. Small irregular outline plagioclase inclusions occur in the K-feldspar core being most abundant near the contact with plagioclase rim. The texture suggests that the K-feldspar core replacing and enclosing relicts of plagioclase rim. Plagioclase rim is generally composed of numerous euhedral to subhedral plagioclases with the size usually less than 1 mm. In places the plagioclase rim consists of a single crystal about 2 mm thick. Despite well developed euhedral growth zones, many of the crystals have ahedral irregular inner margin indicating continued growth

to late stage. Common growth zones are normal and oscillatory types. Fine mymerkite intergrowth sometimes occur along the K-feldspar core and plagioclase rim contacts indicating late stage intergrowth. Twinning according to albite, polysynthetic and Carlsbad-albite law are common. Hornblende, biotite and sphene can be seen associated with plagioclase at the margin of the texture.

Geochemistry of the plagioclases in the Noring granite shows that the those from the mantle feldspar have restricted composition compared to the individual plagioclase. In term of An %, the former ranges from An₃₈ to An₄₄ compared to An₂₈ to An₅₀ of the latter. This may suggests that the plagioclase rim probably precipitated from a different magma type to the Noring magma possibly of andesitic in composition. Variations in melt composition as a consequence of magma mixing and/or mingling can produce the mantled feldspar. The K-feldspar that has crystallised in the Noring magma act as a substrates for the growth of plagioclase, producing the mantles texture. The aggregates of individuals crystals that have floated together in the magma attached to the K-feldspar as in synneusis model of Vance (1969). Once this nucleation takes place there is relatively straight forward process of crystal growth yielding the mantled texture (Hibbard, 1981). Other evidences that may support the magma mixing process in the Noring rocks are (i) occurrence of small rounded mafic inclusion (hornblende ± biotite) usually 1 to 2 mm in size and (ii) discontinuous nature of plagioclase zoning and irregular shapes of the cores.
