

Synplutonic basaltic dykes in the Moruya Batholith, NSW, Australia: Genetic implications

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Laporan (Report)

Professor B.J. Hensen of the Department of Applied Geology, University of New South Wales, Australia, gave the above talk to keen audience of 25 on the 20th December 1996 at the Geology Department, University of Malaya.

Abstrak (Abstract)

Folded and partially dismembered basaltic dykes occur in the Tuross Head Tonalite pluton of the Moruya Batholith. The dykes are cut by late aplite dykes at Bingie Bingie Point. Even though the dykes are clearly intrusive, locally cutting the foliation and oriented enclaves of the tonalite, and locally have chilled margins, they have been subsequently backveined and disrupted by the tonalite, which was only partly solidified when the basaltic dykes intruded.

The mineralogy of the dykes consists predominantly of hornblende and plagioclase, suggesting the basaltic liquid picked up water from the surrounding tonalite magma. The texture indicates fast cooling and subsequent minor subsolidus recrystallisation, particularly of the finer portions of the rock, in response to heating caused by crystallisation of the enveloping tonalite.

In terms of major and trace elements the basalts plot on, or close to, the well correlated variation trends for the Moruya Batholith established by previous workers and attributed to restite unmixing.

The field relationships of the dykes indicate that basaltic intrusion was coeval with the formation of the granitoids and the chemistry suggests that the basalts and the granitoids may be syngenetic. The granitoids probably represent mixtures of crustal and mantle derived magmatic components, which have undergone subsequent fractional crystallisation. This interpretation is consistent with a previously reported Sr isotope initial ratio of 0.70404–0.70408 and ϵ_{Nd} of $+3.3 \pm 4$ for the Moruya Batholith.

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