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Geochemistry of Bangka Granites, Bangka Island, Sumatera Indonesia

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This study will provide new petrography and geochemical data of the granites from Bangka Island, Indonesia. The Bangka island is located just east of Sumatera, Indonesia. Bangka is famously known to be south extension of Peninsular Malaysia Main range granite and also a producer of Tin. The Peninsular Malaysia Main Range granite province was known to have dominated by S –type collisional granite based on I and S type granitoids classification. However recent studies show that the Peninsular Malaysia Main Range granite is not exclusively S-type granite. The main minerals that present in the Bangka island granites are megacrystic K-feldspar, quartz, plagioclase, biotite and less common hornblende. The accessories minerals include the zircon, apatite, allanite and ilmenite. The granite from Bangka island have SiO_2 content range from 68.8 wt. % - 77.7 wt. %, Na_2O content range from 2.25 wt. % – 3.6 wt. % , weakly metaluminous to peraluminous (A/CNK = 0.98 – 1.13). The Bangka granites are also high-K calc-alkaline to shosonite series and depleted in Ba, Nb, Sr, Zr, Eu and Ti in multi-element variation diagram. Granites from Bangka Island show evidences of mixed source of greywacke and amphibolite and they are formed within syn-collision tectonic setting. This is evidence from $CaO/(MgO+Fe_2O_3+TiO_2)$ vs $CaO+MgO+Fe_2O_3+TiO_2$ plot. Geochemical data shows that the Bangka island granite are comparable to the Peninsular Malaysia Main Range granite although the granites shows within overlap fields between Peninsular Main range and East Malaya - Sukhotai granite. We suggest that the Bangka Island is southward continuation of Main Range granite province from Peninsular Malaysia.

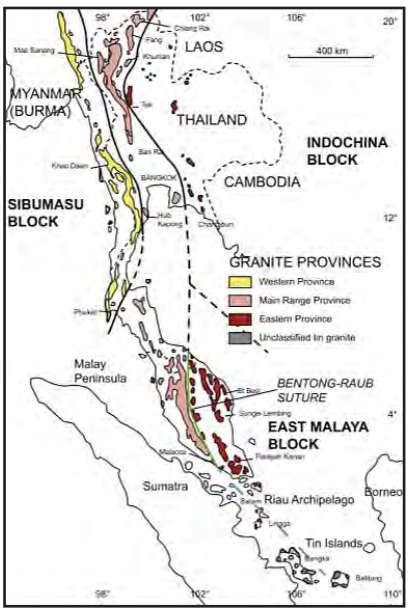

Figure 1: Map shows the distributions of Southeast Asian granites (after Cobbing et al. 1986, 1992).

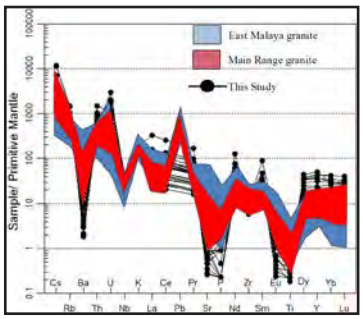

Figure 2: Multi-element variation diagrams of rock samples from Bangka island (this study), Main Range and East Malaya. All sample are normalized to primitive mantle (after Sun and McDonough, 1989). Note the granite from Bangka Island shows depletion in Ba,Nb,Sr,P,Eu and Ti.

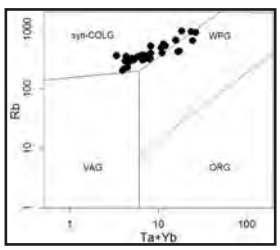

Figure 4: Tectonic discrimination diagram after Pearce et al. (1984). Note that most of the Bangka Island granites are plotted into syn-collisional field.

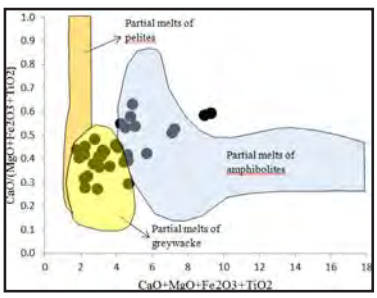

Figure 5: Binary diagram of $CaO/(MgO+Fe_2O_3+TiO_2)$ against $CaO+MgO+Fe_2O_3+TiO_2$. The fields are from Patino – Douce and Harris (1998), Sylvester (1998).

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