Chemistry of muscovite from the Kuala Lumpur granite, Peninsular Malaysia

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This work presents a new muscovite analyses from the Kuala Lumpur granite. The biotites has been analysed from three different samples namely equigranular normal biotite-muscovite granite (NBMG), deformed muscovite granite (DBMG) and porphyritic biotite-muscovite granite (PBMG).

Bivariate plots of the major elements versus Mg/Mg+Fe values for these muscovites show that the muscovite from the DBMG has high Si, Fe, Mn and K compared to muscovite from NBMG and PBMG. Muscovites from the NBMG has high Al(pfu) content and those from the PBMG is slightly higher in Na(pfu) compared to the other facies. Muscovites from the NBMG also have higher Mg/Mg + Fe ratio compared to muscovites from the other two facies. The major difference of the muscovites from the three samples are the TiO_2 contents. Thus, muscovites from the PBMG have the lowest TiO_2 content (0 to 0.028%; mean: 0.04%) and those from the NBMG have the highest TiO_2 content (0.29 to 0.65%; mean: 0.53%). The DBMG muscovites have intermediate TiO_2 content (0.02–0.67%; mean: 0.46%). All muscovites samples from the DBMG and PBMG plot in the secondary muscovite field of Miller *et al.* (1981) those from the NBMG plot in the primary muscovite field. Muscovites from the NBMG have high BaO and low P_2O_5 contents compared to those from the other two samples.

The variation diagrams of Si(pfu) with respects to Al(pfu), Fe(pfu), Mg(pfu) and Na(pfu) show remarkable differences between the chemical composition of muscovite from the different facies. Muscovite from the DBMG has the widest range of Si(pfu) content compared to the other facies. Clear trend of decreasing Al and Na and increasing of Mg and Fe with increasing SiO_2 shown by the muscovite from the DBMG. The decreasing Na content in muscovite may be related to the decrease of formation temperature and the variation of Fe, Mg and Al with Si can be related to solid solution between the end members muscovite and caledonite.

Warta Geologi (Newsletter of the Geological Society of Malaysia), Vol. 25, No. 3, May-June 1999