

Geochemistry of biotite of the granitoid rocks from Rio Espinharas pluton, NE-BRASIL

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The Rio Espinharas pluton is mainly composed of shoshonitic metaluminous hornblende-biotite quartz monzonites associated with metaluminous to peraluminous biotite granite. However diorite, hornblende-biotite quartz monzodiorite and quartz syenite also occur. They show diffuse and interpenetrated contacts. In general they have subhedral granular textures, except the diorite which shows a pseudo-doleritic texture. They fit a single whole-rock Rb-Sr isochron of 606 ± 33 Ma old and $(^{87}\text{Sr}/^{86}\text{Rb})_0 = 0.7080 \pm 0.0003$. Mg-biotite occurs in granite, porphyritic quartz monzonite and quartz syenite, while Fe^{2+} -biotite was found in diorite, quartz monzonite and quartz monzodiorite. In the Mg-total Al diagram, most biotites fall in the field of biotite from the subalkaline rocks, but rarely plot in the field of biotite from the calc-alkaline rocks. Most variation diagrams of major and trace elements of biotite versus SiO_2 of rocks suggest that they be related and belong to hybrid rocks. They crystallized at f_{O_2} 10^{-11} and 10^{-14} bars. $P_{\text{H}_2\text{O}}$ of 6 kb is calculated from biotite composition of quartz monzonite and is close to that (5.9 – 6.8 kb) obtained from amphibole composition.