

BARIUM- AND TITANIUM-RICH BIOTITES AND PHLOGOPITES FROM FERNANDO DE NORONHA ARCHIPELAGO, BRAZIL.

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Small amounts (1-2%) of Ba- and Ti-rich micas occur as microphenocrysts and groundmass platelets in Fernando de Noronha melanephelinites. The composition of the micas in different melanephelinitic flows ranges from phlogopites (mg#= 0.85-0.65) with 4 to 12 wt% TiO₂ and 2 to 16 wt% BaO to biotites (mg#= 0.60) with very high BaO (16-19 wt%) and TiO₂ (13-15 wt%) contents. Two groups of phlogopites, one with higher BaO (10 wt%) and another with lower BaO (9 wt%) were recognized. In both groups, the enrichment in Ba or Ti is accompanied by increase in Al and decrease in Si. Ba shows strong negative correlation with K (and K + Ca + Na) indicating that it is an interlayer cation and pointing to the coupled substitution $Ba + IVAl = K + Si$. Increase in Ti correlates with decrease in Mg and F and increase in total iron (as Fe²⁺). The data plotted according to the equation $(Mg+Fe^{2+}) + 2Si = VI Ti + IVAl$ fits a linear trend. Other probable substitutions are: a) Fe³⁺ or Ti in the tetrahedral sites, particularly in biotites, with the lowest Si+Al content (Si + Al = 7.4 to 7.5, based on 22 oxygens); b) vacancies in the octahedral sites, to account for low cation sums. The Ba- and Ti-rich micas from Fernando de Noronha melanephelinites cover a larger compositional range than those found in similar rock types, reported in the literature. Acknowledgements: FAPESP, FAB, IBAMA.