

RAMAN SPECTROSCOPY OF GRANULITE FACIES PYROXENES FROM GUAXUPE, MINAS GERAIS, BRAZIL

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Iron-rich granulite facies pyroxenes have been analysed with a Raman microprobe. Shifts in Raman spectra with mg number ($100 \times \text{Mg}/(\text{Mg} + \text{Fe})$) have been reported in literature for Mg-rich pyroxenes from a differentiated intrusion from Australia. This microbeam method has been applied to Fe-rich ortho- and clinopyroxene for which electron microprobe analyses already exist, shifts in their spectra matching their mg numbers. The pyroxenes analysed are orthopyroxenes and Ca-clinopyroxenes from charnockite, enderbite and mafic granulite from the high-grade terrain of the Guaxupe Massif in SW Minas Gerais State, Brazil. In the pyroxene chains, there are O1, O2, and O3 oxygens, of which O1 and O2 are non-bridging (nb) and O3 is a bridging oxygen (b), and Raman spectra of both orthopyroxene and clinopyroxene result from Si-O(nb) vibrations, Si-O(b)-Si stretching, and from lattice vibrations, O(nb) and O(b) being non-bridging and bridging oxygens respectively. The first two are the most prominent and are around 1011 $1/\text{cm}$ and 665 $1/\text{cm}$ for clinopyroxene, and around 1009 $1/\text{cm}$ and a 650-700 $1/\text{cm}$ doublet for orthopyroxene. The spectral peaks show shifts expected from the mg numbers, and therefore provide a rapid method for estimating Fe-Mg ratios of pyroxenes for which no chemical analyses are available. So far, measurements have not shown effects of polarization on the spectra, except for minor changes in intensity of the strong peaks.