KYANITE-QUARTZ ISOCHORIC REACTION CONTROLS THE ALBITE CORONITIC MICROTEXTURES DEVELOPED ON KYANITE IN RETROGRESSED ECLOGITES

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In retrogressed eclogites, coronitic microtextures develop on the kyanite (Ky) cristals in the ambiance of partially or totally symplectised omphacite. The studied Ky-eclogites from Portile de Fier, South Carpathians, Romania show two types of coronitic microtextures on kyanite: a) Multi-coronitic (from Ky core to Sym omphacite): An±Cor±Sp+Sph → An+Sp → Pl, and b) Double coronitic, where both inner and outer coronas are represented by polygranular monomineralic albite ($Ab_{89.6}$), developed between Ky and Qtz, in the ambiance of symplectites on omphacite. In the double corona we can observe radial fibrous Ab at the Ky-Qz interface. A trail of fine opaque-like inclusions marks the old boundary between Ky and Qtz. Based on this observation, we interpreted the inner and outer Ab coronas as being developed on the Ky and Qtz space, respectively. The outer corona is between 2.5 and 3.5 times thicker than the inner corona, implying that the Qtz volume consumed in the reaction is 2.5 to 3.5 times higher than the volume of Ky replaced by Ab. Two possible reactions can be written: (1) Ky + 5 Qtz + Na_2O → 2 Ab (with $\Delta V_{reaction}$ = 27%), and (2) 0.5 Ky + 3.43 Qtz + Na → Ab + 0.93 Si + 1.36 O (isochoric reaction for Al = ct at V = 100 cm^3, with V_{Qtz} : V_{Ky} = 3.53 : 1). The calculated volume ratio fits reasonably well the observed corona thickness in the case of the isochoric reaction (reaction 2). We suggest that the formation of Ab coronas on Ky / Qtz is controlled by isochoric reactions in an open system, where Na is provided by the symplectisation of omphacite. This interpretation also implies that the breakdown of omphacite in order to form diopside-plagioclase symplectites has to be a process synchronous with the formation of coronitic microtextures on Ky.