High-P, High-T Equation of State of Omphacite: Precise determination of density of subducted MORB

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In order to estimate the density of subducted MORB precisely, high-P high-T equation of state of Ca-Eskola rich (9 mol%) omphacite was determined by in-situ X-ray experiments. The derived thermoelastic parameters are $K_T = 115(2)$ GPa, $K' = 5.0$ (fixed), $dK/dT = -0.019(4)$ GPa/K, $a = 2.1(4) \times 10^{-5}$ K$^{-1}$, $b = 0.9(7) \times 10^{-8}$ K$^{-2}$ while $\alpha = a + bT$. This result is consistent with simple estimation from those of Diopside and Jadeite in literatures. Thus, Ca-Eskola component should have little influence for thermoelastic character of clinopyroxene.