Comparision of compressibilities of wollastonite and parawollastonite

# Takahiro Usui[1], Takahiro Kuribayashi[2], Yasuhiro Kudoh[1]

The compressibilities of wollastonite and parawollastonite were determined by single crystal high pressure X-ray diffraction method with a modified Merrill-Bassett diamond anvil cell. The crystals used were wollastonite(P-1) from Kasuga, Gifu Prefecture, Japan and parawollastonite(P21/a) from Kushiro, Hiroshima Prefecture, Japan. Lattice parameters of wollastonite were measured up to 6.1GPa. The bulk modulus determined by the Birch-Murnaghan equation of state was $K_0=107(2)$GPa (assuming $K'=4$) and the axial compressibilities are $B_a=3.67(6)\times10^{-3}$GPa$^{-1}$, $B_b=2.23(4)\times10^{-3}$GPa$^{-1}$ and $B_c=2.82(6)\times10^{-3}$GPa$^{-1}$ for wollastonite. For parawollastonite, lattice parameters were measured up to 3.7GPa, and the bulk modulus is $K_0=115(2)$GPa (assuming $K'=4$) and the axial compressibilities, $B_a=3.3(3)\times10^{-3}$GPa$^{-1}$, $B_b=2.25(5)\times10^{-3}$GPa$^{-1}$ and $B_c=2.93(3)\times10^{-3}$GPa$^{-1}$ were obtained.