

On the relationship between Fe content and lattice constants

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The relationship between Fe content and lattice constants has been investigated using olivine crystals from San Carlos with compositions of Fo93, Fo92 and Fo73 together with the data of Wenk and Raymond (1973), Brown and Prewitt (1973), Fujino et al.(1981), Pricivalle and Secco (1985). The linear regression analysis showed $g_a=0.016(1)$, $g_b=0.031(2)$, $g_c=0.021(2)$ where $g_i=1/d_i(d\ d_i/ dx)$, $x=Fe/(Mg+Fe)$. The variation along the b axis was larger than those along the a and c axes, being consistent to the result of thermal expansion (Takeuchi et al.,1984) and compression (Kudoh and Takeuchi, 1985). The anisotropic variation of lattice constants with composition has been successfully interpreted by the result of structure analysis (Izuka et al.,2007).