significantly different from the close-packed case because of the difference in nearest neighbors.

Conclusions

The main conclusion based on the above study of ultrasonic and shock wave data on metals is that the simple two-component model predicts K_T' values for certain metals quite well. The principal contribution to the theory of interatomic repulsion is that K_{SR}/K_T seems to be a well behaved function of Ω_o^{-1} (i.e., $K_{SR}/K_T \sim \Omega_o^{-1}$) in close-packed (h.c.p. and f.c.c.) metals. There may be, however, a critical interatomic spacing below which this relation would not hold. In the case of Au and Ag, the contribution of the anisotropy of the Fermi surface to the K_F term may be involved and thus produce a deviation from the first term (5/3) in equation (11).

On the basis of the limited data, the K_{SR}/K_T versus Ω_o^{-1} relation may not be valid for the b.c.c. transition metals, where the electron band structure energy makes an important contribution to the elastic moduli.

Further experimental verification of the K' values and other theoretical research on the close-packed and b.c.c. transition metals would prove to be valuable in understanding the partitioning of K_F' and K_{SR}' among the exceptional cases in the close-packed structures and in clearer understanding of the cohesive forces in the b.c.c. metals.

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