

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  $\Omega_0^{-1}$  (i.e.,  $K_{SR}/K_T \sim \Omega_0^{-1}$ ) 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  $\Omega_0^{-1}$  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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