compressed to 50 kilobars, the relative volume $\Delta V/V \simeq 0.035$ corresponds to a change in lattice parameter of only a few percent.[25] The greatest influence on the separation distance would appear to be the increase of G with pressure.

The shock problem, however, is no doubt further complicated by the heating associated with shock propagation,[25] since the SFE depends also on the temperature.[30] Coply and Kear[31] also suggest that the separation distance of partial dislocations may change at high rates of strain due to dislocation velocity, and this effect could certainly have a bearing on cross-slip. Thus, it is difficult to assess the relative changes in the SFE as a function of the temperature, pressure, and strain rate in shock loading, and it is not clear whether these effects reinforce or oppose each other.

Summary

A series of α brasses of varying SFE were shock-deformed to determine the influence of SFE in the formation of dislocation configurations in f.c.c. metals. The dislocation configurations observed after moderate shock (55 kilobars) were found not to vary appreciably from those produced by more conventional means of deformation. Apparently the relative amounts of cross-slip were controlled by the SFE in either case. A transition from a planar array of dislocations at low values of SFE to a dislocation cell structure at higher SFE was found to occur in a range 25 to 36 ergs/cm^2.

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