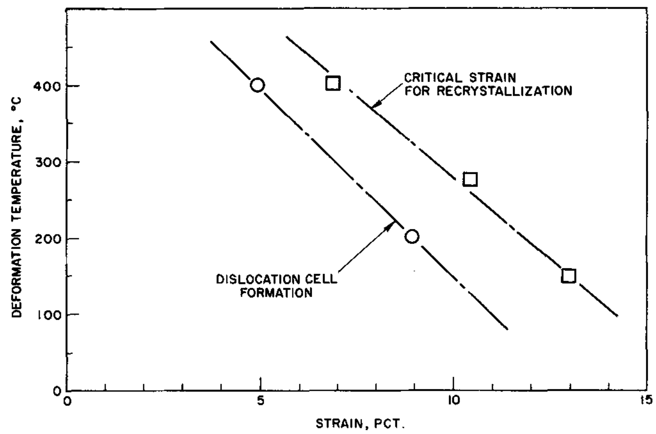


Fig. 3—Temperature dependence of critical strain for dislocation cell formation and recrystallization of tungsten.

higher rate and amount of recovery as the deformation temperature is lowered within the same homologous temperature range. It is to be expected that a high recovery rate as well as the absence of dense subgrain boundaries will reduce the proclivity to recrystallization, unless the degree of cold work is increased.

This appears to be supported by experimental data in Fig. 3, which show the influence of deformation temperature below 400°C on the critical strain $\epsilon_{cr}$, for recrystallization. The data were obtained using cylindrical compression specimens machined from the same tungsten rod. Specimens were compressed various amounts with an average strain rate of 0.01 per min at 150°, 250°, and 400°C and annealed for 2 hr at 2000°C. It is seen that the critical strain increases with decreasing deformation temperature.

The temperature dependence of the critical strain for recrystallization as shown in Fig. 3 is contrary to the normal experience. Working is usually performed at higher temperatures, where the critical strain increases with increasing deformation temperature. This is probably also true for the tungsten material of this investigation, if straining were performed above 400°C.

In summary, the observed influence of deformation temperature on the dislocation structures in polycrystalline tungsten after deformation and recovery annealing as well as on the critical strain for recrystallization suggests that for a given amount of cold work recrystallization depends on the distribution of dislocations. If the deformation produces a rather homogeneous dislocation arrangement, the structure will be more resistant to recrystallization. Deformation of tungsten and other bcc metals in the ductile-brittle transition temperature range for the purpose of controlling recrystallization is obviously of limited practical value. However, the results of this investigation may be applicable to warm-working as well as to other metals, if the dislocation distribution is controlled by other metallurgical means. For instance, Humphreys and Martin[14] have in part attributed the resistance to recrystallization of a fcc metal (copper) containing a dispersed second phase to the homogeneous dislocation arrangement produced by the presence of the second phase during deformation.

A part of the experimental work was performed by Lt. E. J. Dunn for a Master Thesis at the Air Force Institute of Technology.[15] The electron microscopy was provided by Battelle Memorial Institute, Columbus, Ohio.


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## Correction to *Met. Trans.*, 1971, vol. 2

*Solid Solutions in Sputter-Deposits of Iron with 0 to 5 Wt Pct C,* by S. D. Dahlgren and M. D. Merz, pp. 1753-60.

**Pages 1756 and 1757, Figures 5 and 6**

Figure numbers and captions for these figures are correct as published. However, the figures should be interchanged, that is, the figures which appear as 5(*a*) and 5(*b*) should be 6(*a*) and 6(*b*), and vice versa.