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$\{11\bar{2}2\}\langle\bar{1}\bar{1}23\rangle$ Slip System in Magnesium*

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*The Research Institute for Iron, Steel and Other Metals***Abstract**

The slip mode operative in the c -axis compression of magnesium was examined using precisely-oriented single crystals. From recorded stress-strain curves and observations with light and transmission electron microscopes, it was found that (1) the $\{11\bar{2}2\}\langle\bar{1}\bar{1}23\rangle$ slip system operates at all temperatures investigated (from room temperature to 500°C), (2) the work hardening rate of this slip system is very high especially below 200°C, (3) the Burgers vector of the dislocation for the slip system is $\frac{1}{3}\langle\bar{1}\bar{1}23\rangle$, and (4) the dislocation has a strong preference to lie along a basal plane, which means that the edge dislocation is much less mobile than the screw dislocation. The ductility of polycrystalline magnesium is discussed from above observations.

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