

Problem 1 (Chapter 7):

7.16 (a) A single crystal of a metal that has the BCC crystal structure is oriented such that a tensile stress is applied in the $[100]$ direction. If the magnitude of this stress is 4.0 MPa , compute the resolved shear stress in the $[\bar{1}\bar{1}1]$ direction on each of the (110) , (011) , and $(10\bar{1})$ planes.

(b) On the basis of these resolved shear stress values, which slip system(s) is (are) most favorably oriented?

Problem 2 (Chapter 7):

7.22 Describe in your own words the three strengthening mechanisms discussed in this chapter (i.e., grain size reduction, solid-solution strengthening, and strain hardening). Be sure to explain how dislocations are involved in each of the strengthening techniques.