# 03/01/2021

# HW10: Crystal Plasticity in ideal crystals

1.

With a simple sketch for force versus displacement (in shear) show that the ideal yield stress will be approximately given by $\sigma_{ideal} = 0.25G$

What would be the ideal yield stress in uniaxial direction.

2.

Why is the lowest ideal yield stress belong to slip planes with the highest packing.

3.

Why are the slip plane and slip direction normal to one another? Give ONE example to show that this is true in any systesm (you may want to pick the face  centered cubic systam).

4.

What constitutes an "independent" slip system?

Enumerate all the independent slip systems in body centered cubic structure. The most favorable slip vector and the slip plane in this structure are 0.5[111] and slip plane in the {111}. Why?

Enumerate all the independent sip systems in this family.

5.

Why is a single crystal of Zn malleable but the polycrystal is brittle?