

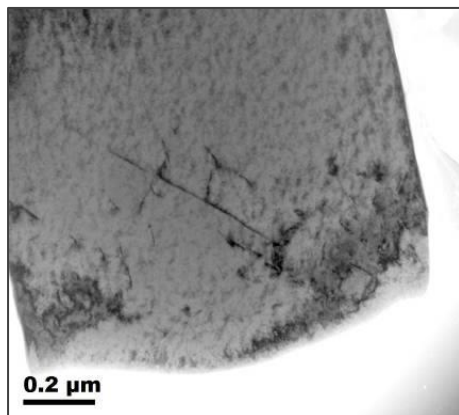
## Series 10

29 November 2024

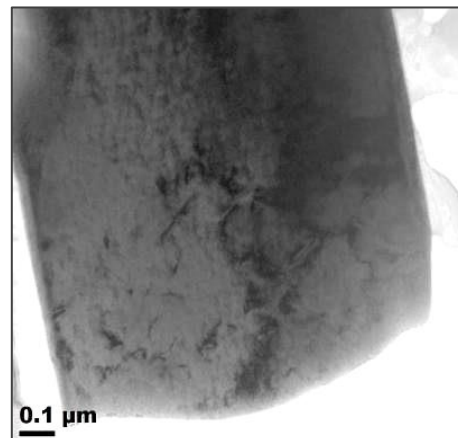
### Exercise 1 Dislocation Analysis

a) Below are four bright-field TEM images of a deformed Mo micro-pillar, each taken under a strong 2-beam condition with a different  $g$  vector. What is meant by a “strong 2-beam condition”?

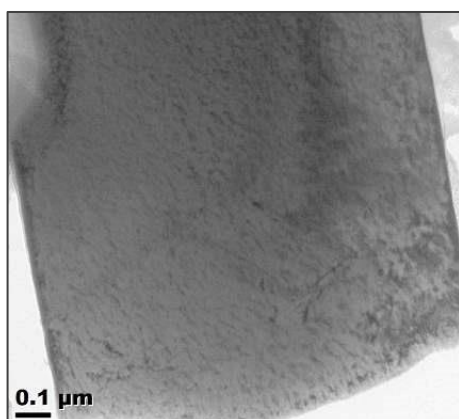
b) In some images, dislocations are visible in the pillar. Indicate this dislocation on the relevant images:



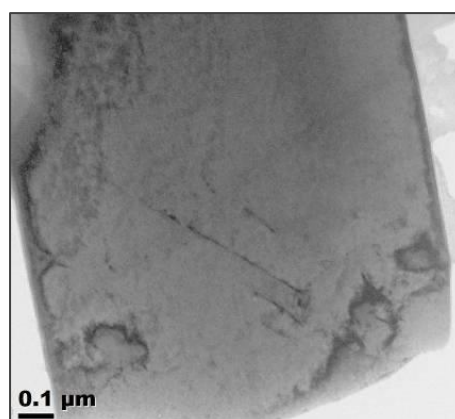
$g_1 = [1\ 0\ 3^-]$



$g_2 = [1\ 2\ 3]$



$g_3 = [1\ 1\ 2]$



$g_4 = [1\ 2\ 3^-]$

c) What criterion can be used to identify a possible Burgers vector for the dislocation?

d) Identify this possible Burgers vector, assuming that this is a screw dislocation that has a Burgers vector of type:  $b = a/2 \langle 111 \rangle$