

Crystallography

(Practice problems for exam prep)

- For the rutile phase of titania, show the location of the 4_2 screw axis in a unit cell projection.
- Consider the case of intersection of a mirror plane with a normal diad. What symmetry element does this combination create?
- Show that the lattice plane with the greatest density of atoms are $\{111\}$ planes for a FCC crystal.
- Does the 6_3 screw axis also include a 3-fold rotation? Explain with schematics or suitable discussions.
- In the diamond lattice, consider any two lines that represent bonds connecting a site to its nearest neighbors. Calculate the angle between them.