

8.8: Discussion Questions

- Using the Liverpool 3D visualization website (http://www.chemtube3d.com/solidstate/_table.htm) determine the anion and cation coordination geometries in cadmium chloride and anatase. Describe the arrangement of octahedra (in terms of whether they share edges, faces, etc.) in these structures.
 - Count the number of atoms in the Li_3Bi and ReO_3 unit cells, and determine the coordination environments of each of the ions.
 - Silicon, germanium, and many other semiconductors adopt the diamond (or zincblende) structure. Assuming that all the atoms are the same size, calculate the volume fraction of the unit cell that is occupied by the atoms. How does the filling fraction of diamond compare to simple cubic and close-packed structures, and what does this tell us about the relationship between coordination number and density?
 - Describe the structural basis of ferroelectricity in barium titanate.
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