

6.5: Band Theory and Conductivity

Learning objectives for this unit are to:

- Explain the origins of band theory and define valence and conduction bands
 - Classify materials as conductors, insulators, or semiconductors, and describe their conductivity
 - Use band theory to explain the manner in which conductors and semiconductors allow for the movement of electrons
 - Rationalize or predict trends in band gaps based on periodic properties
 - Explain how doping alters the electrical conductivity of a solid state material
 - Identify, compare, and design p- and n-type semiconductors
 - Calculate band gaps, carrier concentrations, and electrical conductivity of materials
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