CURRICULUM SUGGESTIONS

TOPICS

SOLIDS	QUANTUM MECHANICS	SEMICONDUCTORS
Bonding	Electron Configurations	p-n Junctions
Metals	Periodic Table	LEDs
Metallic Bonding	Periodic Relationships (Trends)	
(Valence-Bond Model)	Band Theory	
Solid Solutions		

OVERVIEW

This module would complement a unit on atomic structure and periodicity. Typically, is introduced in two chapters: one dealing with the nature of light and its use to determine the electronic structure of atoms; and another that relates this electronic structure to the periodic table and trends in properties. Since students would have to have a basic understanding of electron configurations, this module would be more appropriate if used later in the atomic structure and periodicity unit of the standard chemistry curriculum.

SUGGESTIONS

Demonstrations 1 and 2, and Investigation 1 could be used to introduce students to the band theory model of bonding in solids. Metallic bonding and properties especially thermal and electrical conductivity provide examples of the use of this model.

Investigation 2 could be used to introduce students to families of solid solutions having tunable structure and composition. This is important in the development of later demonstrations and experiments that deal with light emitting diodes of specific colors.

Demonstration 3 could be used to discuss semiconductors, p-n junctions, and LEDs.

Demonstration 4 and Experiment 1 could be used to further understanding of solid solutions and how their properties vary with composition. Periodic relationships such as sizes of atoms and valence configurations could also be emphasized.