Isomorphism Encyclopedia Article

Isomorphism

The following sections of this BookRags Literature Study Guide is offprint from Gale's For Students Series: Presenting Analysis, Context, and Criticism on Commonly Studied Works: Introduction, Author Biography, Plot Summary, Characters, Themes, Style, Historical Context, Critical Overview, Criticism and Critical Essays, Media Adaptations, Topics for Further Study, Compare & Contrast, What Do I Read Next?, For Further Study, and Sources.

(c)1998-2002; (c)2002 by Gale. Gale is an imprint of The Gale Group, Inc., a division of Thomson Learning, Inc. Gale and Design and Thomson Learning are trademarks used herein under license.

The following sections, if they exist, are offprint from Beacham's Encyclopedia of Popular Fiction: "Social Concerns", "Thematic Overview", "Techniques", "Literary Precedents", "Key Questions", "Related Titles", "Adaptations", "Related Web Sites". (c)1994-2005, by Walton Beacham.

The following sections, if they exist, are offprint from Beacham's Guide to Literature for Young Adults: "About the Author", "Overview", "Setting", "Literary Qualities", "Social Sensitivity", "Topics for Discussion", "Ideas for Reports and Papers". (c)1994-2005, by Walton Beacham.

All other sections in this Literature Study Guide are owned and copyrighted by BookRags, Inc.

Contents

Isomorphism Encyclopedia Article.....1

Contents.....2

Isomorphism.....3

Isomorphism

The term *isomorphism* of minerals refers to a similarity in crystal structure between two or more distinct substances. Many **solids** have a tendency to crystallize in definite geometric frameworks. Table **salt**, for example, has a characteristically cubic crystalline shape that can be observed with the naked eye. Quartz and gypsum are other familiar examples of crystalline structures. Crystalline solids such as these have a three-dimensional pattern that can be represented as a coordinate system or lattice. Like a network of interconnecting cubes, the crystalline lattice is composed of regularly arranged subunits. Lattices of ionic crystals, like table salt, consist of alternating ions, or charged atoms. The attraction between alternate cations (positive charge) and anions (negative charge) stabilizes the crystalline structure. Likewise, metallic crystals consist of lattices of positively charged metal ions regularly arranged in three dimensions among a virtual sea of electrons. The lattice structures of isomorphic substances are comparable. Therefore, they form crystals that appear to be nearly identical. Two or more isomorphic substances sometimes crystallize together to form a solid **solution** with a singular geometric configuration. Isomorphous substances usually have similar chemical formulas, and the relative distances between anions and cations are generally alike.**Sodium** nitrate and **calcium sulfate** are isomorphous, as are the sulfates of **barium**, **strontium**, and **lead**. Isomorphism was discovered by Eilhard Mitscherlich (1794-1863) in the early nineteenth century.