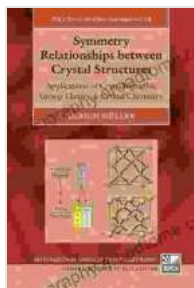


Exploring the Crystalline World: Applications of Crystallographic Group Theory in Crystal Chemistry



Symmetry Relationships between Crystal Structures: Applications of Crystallographic Group Theory in Crystal Chemistry (International Union of Crystallography Texts on Crystallography Book 18)

by Ulrich Müller

★★★★☆ 4.7 out of 5

Language : English

File size : 15475 KB

Screen Reader: Supported

Print length : 360 pages

Lending : Enabled



Crystals are fascinating materials that exhibit a wide range of properties, from their ability to conduct electricity to their ability to diffract light. These properties are determined by the arrangement of atoms or molecules within the crystal, known as the crystal structure. Understanding the crystal structure is essential for predicting and understanding the properties of a crystal.

Crystallographic group theory is a mathematical tool that allows us to understand and predict the crystal structure of a material. It is based on the concept of symmetry, which is a fundamental property of crystals.

Symmetry refers to the regular arrangement of atoms or molecules within a

crystal, such that the crystal appears the same when viewed from different directions.

Applications of Crystallographic Group Theory in Crystal Chemistry

Crystallographic group theory has a wide range of applications in crystal chemistry, including:

- **Predicting crystal structures:** Crystallographic group theory can be used to predict the crystal structure of a material based on its symmetry. This information can be used to identify new materials with desired properties.
- **Understanding crystal properties:** The symmetry of a crystal can be used to understand its properties, such as its electrical conductivity, optical properties, and mechanical properties.
- **Designing new materials:** Crystallographic group theory can be used to design new materials with specific properties. For example, it can be used to design materials that are more resistant to wear and tear or that have a higher electrical conductivity.

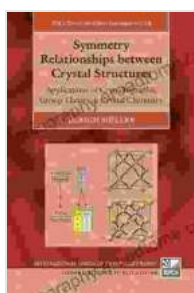
Crystallographic group theory is a powerful tool that has a wide range of applications in crystal chemistry. It allows us to understand and predict the crystal structure of a material, which is essential for understanding its properties and designing new materials.

For further exploration of this topic, we highly recommend the book "Applications of Crystallographic Group Theory in Crystal Chemistry" by H.F. Bradley and C.J. Gilmore. This book provides a comprehensive and in-

depth treatment of the subject matter, making it a valuable resource for researchers and students alike.

Additional Resources

- Crystallographic group theory on Wikipedia
- Applications of crystallographic group theory in crystal chemistry by H.F. Bradley and C.J. Gilmore



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