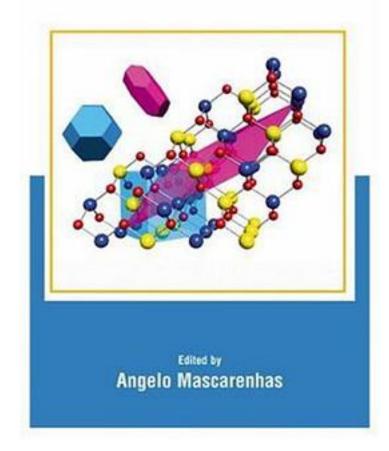
Spontaneous Ordering in Semiconductor Alloys

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出版者:Kluwer Academic Pub

出版时间:2002-4

装帧:HRD

isbn:9780306467783

This book presents a comprehensive account of the phenomenon of spontaneous ordering. The phenomenon, which can be categorized as a self-organized process, is observed to occur spontaneously during epitaxial growth of certain ternary alloy semiconductors and results in a modification of their structural, electronic, and optical properties. There has been a great deal of interest in learning how to control this phenomenon so that it may be used for tailoring desirable electronic and optical properties. There has been even greater interest in exploiting the phenomenon for its unique ability to provide an experimental environment of controlled alloy statistical fluctuations. As such, it impacts areas of semiconductor science and technology related to the materials science of epitaxial growth, statistical mechanics, and electronic structure of alloys and electronic and photonic devices. During the past two decades, significant progress has been made toward understanding the mechanisms that drive this phenomenon and the changes in physical properties that result from it. A variety of experimental techniques have been used to probe the phenomenon and several attempts made at providing theoretical models, both for the ordering mechanisms as well as electronic structure changes. The various chapters of this book provide a detailed account of these efforts during the past decade.

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