



# **The Physics and Applications of Resonant Tunnelling Diodes (Cambridge Studies in Semiconductor Physics and Microelectronic Engineering)**

*By Hiroshi Mizuta, Tomonori Tanoue*

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## **Editorial Review**

From the Back Cover

The rapid progress in crystal growth and microfabrication technologies over the past two decades have led to the development of novel semiconductor devices. Among the most significant of these are resonant tunnelling diodes (RTDs), and this book is the first to give a comprehensive description of the physics and applications of these devices. The RTD, which utilises electron-wave resonance in double potential barriers, has emerged as one of the most important testing grounds for modern theories of transport physics, and is central to the development of new types of semiconductor nanostructure. The opening chapters of the book set out the basic principles of coherent tunnelling theory and the various fundamental concepts necessary for the study of RTDs. Longitudinal-optical phonon-assisted resonant tunnelling, the effects of impurity scattering, femtosecond dynamics, non-equilibrium distribution, space charge build-up and intrinsic bistabilities are then described in detail. The applications of RTDs, such as in high-frequency signal generation, high-speed switching, and multi-valued data storage are reviewed, and the book closes with a chapter devoted to the new field of resonant tunnelling through laterally confined zero-dimensional structures. Covering all the key theoretical and experimental aspects of this active area of research, the book will be of great value to graduate students of quantum transport physics and device engineering, as well as to researchers in both these fields.

## **Users Review**

**From reader reviews:**

**Mildred Ortiz:**

Playing with family in the park, coming to see the marine world or hanging out with buddies is thing that usually you may have done when you have spare time, after that why you don't try matter that really opposite from that. One particular activity that make you not feeling tired but still relaxing, trilling like on roller coaster you are ride on and with addition associated with. Even you love The Physics and Applications of Resonant Tunnelling Diodes (Cambridge Studies in Semiconductor Physics and Microelectronic Engineering), you can enjoy both. It is fine combination right, you still desire to miss it? What kind of hangout type is it? Oh occur its mind hangout folks. What? Still don't understand it, oh come on its called reading friends.

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