

Preface

Advances in high performance semiconductor electronic and optoelectronic devices over the last 40 years are due in large measure to the developments in growth, fabrication and experimental techniques. However, predicting and understanding the operation of these novel devices would not have been possible without the parallel developments in theoretical and modelling techniques.

This book aims to provide a comprehensive account of the theoretical and modelling techniques used in semiconductor research and is suitable for researchers and postgraduate students. It covers the theoretical description of electronic and optical properties of semiconductors and devices, and techniques used to understand the electronic band structure and the band gap engineering where the strain and quantum confinement can be optimised for ideal device performance. It also covers the fundamental theory of lasers and semiconductor optical amplifiers, as well as the main computational techniques used to understand linear and nonlinear electronic transport.

The book is based on the lectures given by leading experts in the EU-COST Action MP0805 training school held in Izmir in April 2011.

Toulouse
Colchester

Xavier Marie
Naci Balkan

Semiconductor Modeling Techniques

Marie, X.; Balkan, N. (Eds.)

2012, XII, 264 p., Hardcover

ISBN: 978-3-642-27511-1