Contents

1 The InAs/GaAs(001) Quantum Dots Transition: Advances on Understanding 1
E. Placidi, F. Arciprete, M. Fanfoni, F. Patella and A. Balzarotti

2 Self-assembly of InAs Quantum Dot Structures on Cleaved Facets 25
E. Uccelli, J. Bauer, M. Bichler, D. Schuh, J. J. Finley, G. Abstreiter, and A. Fontcuberta i Morral

3 InAs/GaAs Quantum Dots with Multimodal Size Distribution 43
Udo W. Pohl

4 Carrier Transfer in the Arrays of Coupled Quantum Dots 67
Yuriy I. Mazur, Georgiy G. Tarasov, and Gregory J. Salamo

5 Dynamics of Carrier Transfer into In(Ga)As Self-assembled Quantum Dots 129
Saulius Marcinkevičius

6 Spin Phenomena in Self-assembled Quantum Dots 165
Alexander Tartakovskii

7 Excitons and Spins in Quantum Dots Coupled to a Continuum of States 217
Alexander O. Govorov

8 Quantum Coupling in Quantum Dot Molecules 239
Xiulai Xu, Aleksey Andreev and David A. Williams

9 Studies of Semiconductor Quantum Dots for Quantum Information Processing 267
H. Z. Song and T. Usuki

10 Stress Relaxation Phenomena in Buried Quantum Dots 297
N.A. Bert, V.V. Chaldyshev, A.L. Kolesnikova, and A.E. Romanov

11 Capacitance-Voltage Spectroscopy of InAs Quantum Dots 337
D. Reuter

12 In(Ga)As/GaAs Quantum Dots Grown by MOCVD for Opto-electronic Device Applications 359
K. Sears, S. Mokkapati, H. H. Tan, and C. Jagadish

13 Area-selective and Site-controlled InAs Quantum-dot Growth Techniques for Photonic Crystal-based Ultra-small Integrated Circuit 405
Nobuhiko Ozaki, Shunsuke Ohkouchi, Yoshimasa Sugimoto, Naoki Ikeda, and Kiyoshi Asakawa

14 Detailed Analysis of the Shape-dependent Deformation Field in 3D Ge Islands on Si(001) 421
G. Vastola, R. Gatti, A. Marzegalli, F. Montalenti, and Leo Miglio

15 Growth and Characterization of III-Nitride Quantum Dots and their Application to Emitters 439
Tao Xu and Theodore D. Moustakas

Subject Index 461