CHAPTER 16

ELECTRONIC SCIENCE

Doctoral Theses

01. KOHLI (Niharika)
Coupled Mode Waveguide Analysis and Device Application.
Supervisors: Prof. EnakshiKhular Sharma and Dr. Sangeeta Srivastava
Th 23480

Contents

1. Introduction 2. Coupled mode analysis for evanescently coupled waveguides 3.Ritz galerkinvariational method for evanescently coupled waveguides 4. Anderson localization: localization in coupled waveguides with random disorder 5. Evanescently coupled rib waveguides: a study by RGVM in conjunction with effective index method 6. Spot-size converter for coupling between nanowire and fiber: conceptualization in planer waveguides 7. Spot-size converter for coupling between nanowire and fiber. Scope of future work. Bibliography. Reprints of publications.

02. MANOJ KUMAR
Analytical Modelling, Simulation and Characterization of Schottky Barrier (SB) Gate All Around (GAA) Mosfet Structures for Low Power Applications.
Supervisors: Prof. Mridula Gupta
Th 23481

Contents

1. Introduction 2. T-shaped source/drain extension (T-SSDE) gate underlap GAA mosfet for low power application 3. Schottky-barrier gate all around mosfet: Analytical modelling and impact of gate material engineering 4. Threshold voltage degradation model of GME schottky barrier gate all around mosfet including localized charges 5. Insulated shallow extension and asymmetric vacuum gate dielectric sb-gaa-mosfet structures for ambipolarity reduction 6. Ambipolarity reduction in DMG asymmetric vacuum dielectric SB GAA mosfet to improve hot carrier reliability: Modelling 7. Summary, conclusion and future scope. Appendixes.

03. SHIVANI SITAL
Analysis and Simulation of Propagation in Metal-Dielectric Plasmonic Waveguides and Devices.
Supervisors: Prof. EnakshiKhular Sharma
Th 23482

Contents

1. Introduction 2. Electromagnetics of metals 3. Dielectric-metal-dielectric waveguides and surface plasmon modes 4. Te-pass polarizer in silicon-on/-insulator waveguide planar configuration 5. Design methodology for metal clad polarizer in soi ridge waveguides 6. Dielectric-metal-dielectric plasmonic waveguides in sensor

application 7. Future work: Other plasmonicwaveguiding structures of interest. Appendix. Bibliography. Reprint of publications.

04. SHOKEEN (Poonam)
Investigation of Enhanced Light Trapping Mechanism in Plasmonic Solar Cells.
Supervisors: Prof. Anivashi Kapoor and Dr. Amit Jain
Th 23726

Contents

1. Introduction 2. Experimental and theoretical techniques 3.Optimization of nanoparticle for improved photovoltaics 4.Multi-layer plasmonic structures 5. From metallic nanoparticles to silicon nanoparticles – A comparative study 6. Conclusions

05. UPASANA
Steep Sub-Threshold Devices for Energy Efficient Circuits: Modeling and Simualation Study.
Supervisors: Prof. Mridula Gupta
Th 23479

Contents

1. Introduction 2. Modeling and simulation of hetero-dielectric (H-D) tunnel FET (TFET) architectures: Accumulation to inversion mode analysis 3. Gate material and gate dielectric engineered tunnel field effect transistors 4. Dielectric pockets in tunnel field effect transistors 5. Conclusion and scope for future work. Reprints of journal publications.