

CHAPTER 14

ELECTRONIC SCIENCE

Doctoral Theses

01. AJAY

Modeling and Simulation Based Investigation of Field-Effect Transistors for Sensing Application.

Supervisors: Prof. Mridula Gupta and Dr. Manoj Saxena

Th 23194

Contents

1. Introduction. 2. Gate underlap (open cavity) dielectric modulated double gate MOSFETs as biosensors 3. Nanogap (close cavity) dielectric modulated junctionless double gate MOSFET as biosensor 4. Gate underlap (open cavity) dielectric modulated junctionless double gate MOSFET as biosensor 5. pH sensing characteristics of junctionless (JL) silicon on insulator (SOI) ISFET 6. Conclusion and future scope. Appendix -A reprints of journal publications.

02. VERMA (Jay Hind Kumar)

Impact of Inner Core Gate on Cylindrical Surrounding Gate (CSG) MOSFET: Modeling and Simulation.

Supervisors: Prof. Mridula Gupta and Dr. Subhasis Haldar

Th 23195

Contents

1. Introduction. 2. Impact of inner core gate on cylindrical surrounding gate (CSG) mosfet for improved electrostatic integrity and RF performance 3. Modeling and simulation of subthreshold behaviour of cylindrical surrounding double gate mosfet 4. Modeling and simulation of CSDG mosfet with vacuum gate dielectric for hot carrier reliability and RF performance 5. Temperature dependent performance evaluation and linearity analysis of CSDG mosfet.