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Nota di contenuto	Nanoscaled Semiconductor-on-Insulator Materials, Sensors and Devices; Preface and Committee Members; Table of Contents; I. Technology of Semiconductor-On-Insulator Structures and Devices; ZnO Films and Crystals on Bulk Silicon and SOI Wafers: Formation, Properties and Applications; Influence of Hydrogen Plasma Treatment on a-SiC Resistivity of the SiC/SiO2/Si Structures; Diamond - Graphite Heterostructures Formed by Nitrogen and Hydrogen Implantation and Annealing; Hydrogen Gettering within Processed Oxygen-Implanted Silicon; II. Physics of New SOI Devices Gate Control of Junction Impact Ionization Avalanche in SOI MISFETs: Theoretical Model Semi-Analytical Models of Field-Effect Transistors with Low-Dimensional Channels; Model of Nonuniform Channel for the Charge Carrier Transport in Nanoscale FETs; High Temperature Effects

on Harmonic Distortion in Submicron SOI Graded-Channel MOSFETs; Some Issues of Modeling the Double Barrier Metal-Oxide-Semiconductor Tunnel Structures; Electrical Properties of High-K LaLuO<sub>3</sub> Gate Oxide for SOI MOSFETs; Effects of High-Energy Neutrons on Advanced SOI MOSFETs; III. SOI Sensors and MEMS Polysilicon on Insulator Structures for Sensor Application at Electron Irradiation & Magnetic Fields On-Chip Tensile Testing of the Mechanical and Electro-Mechanical Properties of Nano-Scale Silicon Free-Standing Beams; Non-Standard FinFET Devices for Small Volume Sample Sensors; 3D SOI Elements for System-on-Chip Applications; Routes towards Novel Active Pressure Sensors in SOI Technology; IV. Nanodots, Nanowires and Nanofilms; Photovoltage Performance of Ge/Si Nanostructures Grown on Intermediate Ultrathin SiO<sub>x</sub> Layers Interface and Bulk Properties of High-K Gadolinium and Neodymium Oxides on Silicon Effect of Ge Nanoislands on Lateral Photoconductivity of Ge-SiO<sub>x</sub>-Si Structures; A Model of the Evolution of the Au/Si Droplet Ensembles during Rapid Thermal Annealing at High Temperatures; The Nanometer Scaled Defects Induces with the Dislocation Motion in II-VI Insulated Semiconductors; Keywords Index; Authors Index

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Sommario/riassunto

This special collection covers: 1. the technology of semiconductor-on-insulator structures and devices; 2. the physics of new SOI devices; 3. SOI sensors and MEMS; 4. nanodots, nanowires and nanofilms. The first part covers a wide variety of SemOI-based structures such as ZnO-on-Insulators, a-SiC-on-Si oxide, graphite inner films fabricated by ion implantation, and others. The second part presents new devices based upon impact ionization near to the source junction, the modeling of charge transport in nano-scale SOI MOSFETs, the electrical properties of SOI MOSFETs with LaLuO<sub>3</sub> high-k gate dielectric

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