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Nota di contenuto	Preface; CONTENTS; Advanced Terahertz and Photonics Devices; Broadband Terahertz Wave Generation, Detection and Coherent Control Using Terahertz Gas Photonics J. Liu, J. Dai, X. Lu, I. C. Ho and X. C. Zhang; 1. Introduction; 2. The Mechanism of THz Generation and Detection in Gas; 3. THz Wave Generation and Detection in Different Gases; 4. THz Remote Generation and Detection; 5. Coherent Control of THz Generation; 6. Conclusion; Acknowledgement; References; How do We Lose Excitation in the Green? C. Wetzel, Y. Xia, W. Zhao, Y. Li, M. Zhu, S. You, L. Zhao, W. Hou, C. Stark and M. Dibiccari 1. Introduction2. Material and Methods; 3. Experimental; 4. Discussion; 5. Conclusions; Acknowledgments; References; Silicon Finfets as Detectors of Terahertz and Sub-Terahertz Radiation W. Stillman, C. Donais, S. Romyantsev, M. Shur, D. Veksler, C. Hobbs, C. Smith, G. Bersuker, W. Taylor and R. Jammy; 1. Introduction; 2. Plasma Wave Detectors; 3. FinFET Structure; 4. Response Measurements; 5. Noise Equivalent Power; 6. Conclusion; Acknowledgments; References

Progress in Development of Room Temperature CW GaSb based Diode Lasers for 2-3.5  $\mu\text{m}$  Spectral Region T. Hosoda, J. Chen, G. Tsvid, D. Westerfeld, R. Liang, G. Kipshidze, L. Shterengas and G. Belenky1. Introduction; 2. Results and Discussion; 2.1. Waveguide core width and asymmetry optimization for 2  $\mu\text{m}$  emitting devices; 2.2. CW power characteristics over 2.2 to 3.3  $\mu\text{m}$  wavelength range; 3. Conclusion; Acknowledgements; References; WDM Demultiplexing by Using Surface Plasmon Polaritons D. K. Mynbaev and V. Sukharenko; 1. Introduction; 2. The Frequency of SPPs 3. The Concept of WDM Demultiplexing with SPPs4. Summary; Acknowledgment; References; Silicon and Germanium on Insulator and Advanced CMOS and MOSHFETs; Connecting Electrical and Structural Dielectric Characteristics G. Bersuker, D. Veksler, C. D. Young, H. Park, W. Taylor, P. Kirsch, R. Jammy, L. Morassi, A. Padovani and L. Larcher; 1. Introduction; 2. Noise Generating Defects in High-k Gate Stacks; 2.1. Analysis of Random Telegraph Signal Noise (RTN); 2.2. Extracting defect characteristics; 3. Defects Responsible for High-k Gate Stack Degradation/Breakdown 3.1. Physical evidences of O-vacancies in IL3.2. Defects identification; 4. Vfb Roll-Off Phenomenon; 4.1. Roll-off mechanism; 4.2. Generation of positively charged defects; 4.3. Origin of R-O defects and R-O suppression; References; Advanced Solutions for Mobility Enhancement in SOI MOSFETs L. Pham-Nguyen, C. Fenouillet-Beranger, P. Perreau, S. Denorme, G. Ghibaudo, O. Faynot, T. Skotnicki, A. Ohata, M. Casse, I. Ionica, W. van den Daele, K-H. Park, S-J. Chang, Y-H. Bae, M. Bawedin and S. Cristoloveanu; 1. Introduction; 2. Series Resistance Reduction; 3. High-K Dielectrics; 4. Metal Gate 5. Strain

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## Sommario/riassunto

Frontiers in Electronics is divided into four sections: advanced terahertz and photonics devices; silicon and germanium on insulator and advanced CMOS and MOSHFETs; nanomaterials and nanodevices; and wide band gap technology for high power and UV photonics. This book will be useful for nano-microelectronics scientists, engineers, and visionary research leaders. It is also recommended to graduate students working at the frontiers of the nanoelectronics and microscience.

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