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**Dedkov G. V.** *Physical Aspects of Interactions Between the Tip of Scanning Probe Microscope and the Sample Surface. Part 1* . . . . . 2

Physical phenomena and effects being characteristic for the contact and noncontact operation regimes of the scanning probe microscopy, are discussed on an elementary level. A theoretical description and numerical estimations of energies, forces and other physical characteristics of contacts are given. Some applications and perspectives for future development of the scanning probe technique with regards to physics and nanotechnology are discussed.

**Butyvsckaya M. V., Petronuk Yu.S.** *The Ultrasonic Microscopy Technique as an Applicable Tool for Monitoring the Wafer Bonding Quality when Manufacturing the Silicon-on-Insulator (SOI) Structures* . . . . . 12

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**Samoylovich M. I., Belyanin A. F.** *Formation of Nanostructured Films of Diamond-Like Materials. Part 2* . . . . . 15

Formation of diamond-like material films being obtained by plasma-methods occurs under condition of morphological instability of boundary growth forms. Coherence-breaking for such solid-state systems can be carried out by different relaxation mechanisms that is conditioned on ability to decrease total energy by internal sub-structure selection, coherent phases relative position and optimization of morphological forms. Sputtering methods, especially magnetron sputtering, are irreplaceable for the formation of nanostructured films on large substrate area of amorphous and polycrystalline materials.

**Brukhova Yu. V., Zaitsev N. A.** *Spice Modeling and Parameter Extraction of Semi-Conductor Devices Using TCAD* . . . . . 25

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**Abramov I. I.** *Problems and Principles of Physics and Simulation of Micro- and Nanoelectronics Devices. Part I. Basic Positions* . . . 34

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**Kashtankin I. A., Gurin N. T.** *N-transistor Optrons* . . . . . 37

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