

Rathkeen L. S. *The Inner and Foreign Nanotechnological Scientific Schools, which Cooperate with Russian Academy of Sciences* 2

At December 2011 in Moscow was organized scientific session of Common meeting of Russian academy of sciences (RAS) dedicated for 300th anniversary of Mikhail Lomonosov. On Common meeting of RAS were organized elections of full members, active members and foreign members of RAS. Famous scientists from inner and foreign scientific schools were elected for members of RAS for nanotechnological specialization for Department of physical sciences (DPS) of RAS, for Department of nanotechnologies and information technologies (DNIT) of RAS and Department of chemistry and sciences for materials (DCSM) of RAS.

Keywords: Russian academy of sciences (RAS), Department of physical sciences (DPS) of RAS, Department of nanotechnologies and information technologies (DNIT) of RAS, Department of chemistry and sciences for materials (DCSM) of RAS, nanotechnologies, nanomaterials, nanosystems, nanodiagnosics, nanoliquids, semiconductors, quantum computers

Buzanovskii V. A. *Analysis of Constructional and Metrological Characteristics of Gas Nanosensors with Sensitive Elements Based on Carbon Nanotubes* 6

The classification of gas nanosensors with sensitive elements based on carbon nanotubes is carried out. The results are three groups and 18 subgroups of these devices. Wide analytical abilities of the nanosensors at a determination of organic and inorganic chemical compounds are shown. Priority directions of metrological characteristic improvement for gas nanosensors with sensitive elements based on carbon nanotubes are specified.

Keywords: gas nanosensor, sensitive element, carbon nanotube, constructional characteristic, metrological characteristic

Averin I. A., Aleksandrova O. A., Moshnikov V. A., Pecherskaija R. M., Pronin I. A. *The Types of Decay Phase Polymer Solutions*. 12

The analysis of the phase stability of polymer solutions are discussed phenomenon of spinodal decomposition and nucleophilic these systems. The method of management of spinodal decomposition in order to obtain gas-sensitive struktur.

Keywords: spinodal, binodal, nucleophilic growth, spinodal decomposition, sol-gel technology

Morozov O. V., Postnikov A. V., Amirov I. I., Kalnov V. A. *The Technology of MEMS Devices Fabrication with Isolated Areas in Silicon Wafer*. 15

This paper presents a new method for electrically isolating released single crystal silicon (SCS) MEMS structures. The technology employs double-side processing DRIE to obtain functional high aspect ratio micro-mechanical structures and deep silicon oxidizing to isolate them from bulk silicon. Applicability of the technology to MEMS design was demonstrated with fabrication of the comb drive microactuator.

Keywords: comb drive, DRIE, micromechanics, thermal grown oxide

Smolin V. K., Kachemcev A. N., Kiselev V. K. *Physical Operating Principles Design Features of Manufacturing of Non-Volatile Memory Elements* 19

The article reviews design and engineering features of manufacturing of non-volatile memory elements with various physical operating principles (flash, MRAM, FRAM, CRAM, NRAM, RRAM). A list of leading vendors is provided. Lines of development are defined for mentioned non-volatile memory technologies.

Keywords: non-volatile memory, physical operating principles, MRAM, FRAM, CRAM, NRAM, RRAM

Glukhova O. E., Shunaev V. V. *Investigation of the Tensile Strength of Mono- and Bilayer Graphene* . . . 25

The mechanical properties of monolayer and bilayer graphene were investigated by the method of molecular dynamics: for these structures critical stresses and breaking forces were found out. The critical stresses for a monolayer and bilayer graphene are 126GPa and 196GPa, respectively. The value of the breaking forces for monolayer graphene is equal to 437nN, for bilayer – 679,81nN.

Keywords: monolayer and bilayer graphene, the method of molecular dynamics, the method of atom-atom potentials, critical stress, breaking force

Voytsehovskiy A. V., Kulchitsky N. A., Melnikov A. A., Nesmelov S. N., Dzyaduh S. M. *Avalanche Diodes, Schottky Barrier Diodes and Charge-Coupled Devices Based on Silicon for Photodetectors and Photodetector Devices of Visible and Near Infrared Bands* 29

The analysis of the current state and trends of photodetectors and focal plane array based on silicon avalanche diodes, Schottky barrier diodes and charge-coupled devices for the visible and near-IR the spectral range was carry out.

Keywords: photodetector, focal plane array, silicon avalanche diodes, Schottky barrier diodes, charge-coupled devices

Burlakov I. D., Voytsehovskiy A. V., Nesmelov S. N., Juravlev K. S. *Ultraviolet Detectors Based on AlGaN Metal-Semiconductor Structures* 37

The ultraviolet detectors based on metal-semiconductor contact of AlGaN were considered. The latest developments in field of discrete detectors and focal plane arrays based on Schottky barrier and structures of metal—semiconductor—metal were analyzed.

Keywords: AlGaN, solar-blind range of wavelengths, ultraviolet detectors, Schottky barrier, structure of the metal—semiconductor—metal

Lysenko I. E., Ryndin E. A., Dudin N. K. *Signal Processing Devices of Micromechanical Components Capacitor Converters* 48

The design method of processing devices of capacitor converters signals of micromechanical components is offered. Results of modeling and an experimental research of devices are described.

Keywords: micromechanical components, the converter capacity-frequency, integrated circuits

Atapin V.E., Baykov S.S., Kuzmina I.V. *Method and Appliance for Registration Acoustic Waves* 52

Has been developed registration method of acoustic waves by using parametric oscillations of plate, and considered practical device of acoustic waves of ultrasound range.

Keywords: parametric oscillations, bending oscillations, longitudinal oscillations, parametric excitation, microphone, geophone, three mirror interferometer

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