

- Rathkeen L. S.** *About the Integration of Academician and University Science in Nanotechnological Sphere* . . . 2
 In 2010 Russian academy of science (RAS) and Ministry of education and science of Russian Federation organized international forums, symposiums, conferences and scientific and practical seminars, in which were discussed the questions of integration of academician and university science in nanotechnological sphere. One the main problem is the law aspect, connecting with the intellectual property of common research in the institutes of Russian academy of science and Russian universities.
Keywords: RAS, nanotechnologies, integration, university
- Matyushkin I. V.** *The Comparison Routine for a Methods of Optical Proximity Correction at Layout Figures Formation on Photoresist*. 5
 Based on CAD Synopsys and MATLAB comparison routine for OPC methods is developed. Related with contour metrics and took into consideration the interactive graph features of comparator, math description of comparison procedure is given. Base matrix method for comparison execution is proposed.
Keywords: layout, OPC, computer vision, CAD, metric
- Solovjev V. V.** *The Model of Precision Surface Processing of Solid Brittle Crystalline Material with Reception Nanometers a Relief of Surface*. 10
 Diamonds and other diamond-like hard materials are finding an increasing application in industry. Monocrystals of the lime sapphire, thanks to the properties, find wide application by manufacture of hi-tech products in the field of nanotechnologies. Surface roughness of substrate is an important parameter, when manufacturing high-frequency instruments. Presence of dislocations and microcracks results in developing of defects in epitaxial layers and decreases performance attributes of microschemes. For manufacturing of the specified products it is necessary precision processing of a surface with reception nanometers a relief. Traditional processing represents the difficult technological scheme with finishing polishing in excited environments. The perspective method of quasiplastic processing allows to receive a high-quality surface at a stage of diamond grinding.
Keywords: leikosapphire (lime sapphire), microelectronics, quasiplastic grinding, base layers, roughness
- Eganova E. M., Voronkov E. N.** *The Electrical Properties of Chalcogenide Films Containing Gold Nanoparticles* 15
 The aim of this work was to study the electrical characteristics of the films As_2Se_3 , containing nanoparticles of gold. Experiments preceded by a preliminary calculation of the dependence of electrical conductivity on volume fraction of nanoparticles on the basis of standard models used for composite materials. After the experiments were performed to compare experimental data with calculations. It found significant differences that indicate the interaction of the structural matrix with embedded nanoparticles.
Keywords: CGS, nanoparticles, gold, electrical conductivity
- Rembeza S. I., Kosheleva N. N., Rembeza E. S., Buslov V. A.** *Gas Sensitivity of Film Composites on the Base of SnO_2 Surface Doped with Platinum* 17
 Measurement data of gas sensitivity for film composite on the base of tin dioxide with silicon additive surface doped with platinum are reported. It was determined that surface doped film composites have good sensitivity to redox-gases and allow to decrease temperature of maximal gas sensitivity.
Keywords: tin dioxide films, surface doping with platinum, gas sensitivity
- Kozlov D. V. Smirnov I. P., Korpuhin A. S., Zhukov A. A., Babaevsky P. G., Suhorukov A. G.** *Estimation of Multicycle Bending Effect on Thermal Actuator* 22
 Method is offered and estimation of multicycle bending effect on thermodeformation characteristics of thermal actuator elastic-hinge beams after assign number of loading cycles was carried out. It was shown, that functional thermodeformation angles during heating after 5×10^6 bending cycles decreased approximately on 15 % and after $3,2 \times 10^7$ cycles — on 25 %. Method and results obtained gave the opportunity to estimate durability and performance stability of the actuators during operation and aging effect on their performance characteristics.
Keywords: thermal microactuators, elastic-hinge beams, polyimide, silicon, multicycle bending, initial and functional deformations
- Raspopov V. Ya., Matveev V. V., Lihosherst V. V., Alaluev R. V., Ivanov Yu. V., Shvedov A. P., Seregin S. I.** *Informational-Measurement Attitude Control Systems on Micromechanical Sensing Probes for Flight Vehicles Rotating on the Roll* 26
 In work is probed possibility of using micromechanical gyros and accelerometers onboard unmanned airborne vehicle rotating on a roll. Algorithm of obtaining measurement information for the solution problems of stabilisation and control by the airborne vehicle rotating on a roll is offered.
Keywords: micromechanical sensors, missile, strapdown inertial navigational systems, oblique measurement basis

- Vopilkin E. A., Chechenin Yu. I., Savitskaya L. N., Bronnikova N. G. Shashkin V. I. MEMS — Electrostatic Actuated Variable Capacitor.** 30
 A microelectromechanical system (MEMS) on GaAs substrate consisting of movable 1.5 μm thick golden membrane with dimensions $100 \times 100 \mu\text{m}$ is fabricated. The membrane is electrostatic actuated. Static electrical and resonant mechanical properties of the device are investigated. A possibility of application of this system as capacitive accelerometer, Coulomb drive and varactor is estimated.
Keywords: MEMS, varactor Coulomb drive, accelerometer
- Novikov S. G., Gurin N. T., Korneev I. V., Rodionov V. A. Bipolar Position-Sensitive Photosensor with a Negative Differential Conductivity.** 35
 This work deals with the bipolar position-sensitive photo sensor with a negative differential conductivity (NDC). Photosensor is an analog composite device, implemented on the basis of bipolar-field element with the NDC and a semiconductor position-sensitive photodetector. A special feature of the photocell is the appearance of land NDC on the output current-voltage characteristics in a two-electrode switch during illumination of photosensitive area and the dependence of the values of the EIR coordinates of the center of the beam on the surface of the photocell. Examined above pole position-sensitive photosensor with the EIR can be used in different nodes of mechatronics, microsystems technology, automation, control devices and positioning.
Keywords: position-sensitive photo sensor, the device with negative differential conductivity
- Ovakimyan K. G., Andriyanov S. V. Aerostatic Solar Power Plants** 39
 In this article are listed technological and economical perspectives of potential high-effective alternative energy element. This new element is based on the concept of aerostatic solar energy systems. Also this article describes possible solutions of the basic problems of modern solar energy.
Keywords: Solar energy, aerostatic platforms, project Gelios, ASES, nanomaterials
- Ershova E. V., Ovakimyan K. G., Grigoriev D. V. Solid-State Solar Batteries** 41
 In this article the best results in Russia on highly effective transformation of energy of the sun solid-state multi epitaxial by semi-conductor elements are mentioned. The efficiency of such batteries stably exceeds 35 % and ways of its increase are visible. In work the structure of a photo cell and a design of solar cells, quality assurance also conclusions and prospects of development of solar modules are considered also.
Keywords: solid-state solar batteries, semi-conductors, concentrators, Fresnel lens
- Ershova E. V., Ovakimyan K. G., Svergun O. A. Soft Solar Batteries.** 45
 This article is about different kind of solar batteries and ways of its manufacturing. In the text below listed the results of solar cell production experiments used with organic-semiconducting materials, and given conclusions about it's efficiency and disadvantages.
Keywords: solar energy, photovoltaic solar cells, soft organic solar batteries, organic semiconductive materials, solar cells manufacturing, hight-efficiently organic solar batteries
- Grigoriev D. V. Economy of Solar Energy** 49
 This article has economic character. In it key players of the market of solar converters are shown, and also the forecast for change of the price of the energy received from the sun is given. Article is written by graduate National Research Nuclear University MPhI.
Keywords: energy sector, alternative energy, semiconductors, European Photovoltaic Industry Association, sun powers

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