CONTENTS

Keywords: conception, nanoprojecting, nanodesigning, mechanosynthesis, nanosystem, atom.

Keywords: carbon tubular nanoclusters in electric field, work function, ponderomotive force, polarizability of carbon tubular nanoclusters.

In article requirements to led technological process of manufacturing of microcircuits with the usual and raised degree of quality, and as economic purpose.

Keywords: technological process, microcircuit, degree of quality the control.

Keywords: model order reduction, circuit simulation, Krylov-subspace, node-elimination reduction, deflation, sparsification.

The physical and mathematical models of electrode impedance for the thin-film resistors of rectangular and interdigital shapes are presented in this work. The impact of electrode impedance on the manufacturing and temperature errors is estimated. **Keywords:** electrode impedance for the thin-film resistors, mathematical models.

Keywords: calix[4]resorcinarene, polyionic self-assembly, Langmuir—Blodgett technique, polyelectrolyte.

Voshchinskii E. A., Voshchinskii Yu. A., Gorelik V. S., Zlobina L. I., Samoylovich M. I., Sverbil P. P. *Transmission Spectra of Artificial Opals, Infiltrated with Liquid.* 27 The results of experimental investigations of transmission spectra in visible region of artificial opals, infiltrated with ethanol, are presented. Narrow band with minimal transmittance (about 0,01 %) has been observed in these spectra. Observed pro-

perties of transmission spectra may be used for realizing narrow band optical filters and selective mirrors for laser systems. **Keywords:** opal, transmission spectra, forbidden photonic band, negative index of refraction, selective filter.

Teplova T. B. Physical-Technological Principles of Receipt of the Nanometric Relief of Surface at Treatment of Hard FragileMaterials for Electronic Technique33

Solid brittle materials and minerals (such as diamond, leikosapphire) are adapted in microelectronics for preparing the base layers. Quasi-plastic grinding makes it possible to simulate the surface of high quality with the roughness of 1-10 nm without the polishing. The acoustic fluctuations, generated by billet in the working process, can be used for the control of working process, and also can be used for control of quality of the finished surface of the materials of electronic engineering technique. **Keywords:** nanometric relief, hard fragile materials, surface, polishing.

Prosyanyuk V. V., Sigeikin G. I., Suvorov I. S., Koledinskiy G. M. Miniature Reserve Power Supplies Based on Energy Re-

Perspective special techniques are needed in miniature reserve power supplies with high specific energy density. The most perspective for miniaturizing are the batteries of high-temperature galvanic elements, which electrodes are made from heterogeneous low-gas energy condensed systems. They are widely used for power supply of different on-board mechanisms and emergency warning. Also they are the base of a new reserve power supplies class based on thermic chemical power supplies, energy storage, etc. Their specific (volume and mass) characteristics may be significantly improved by using active materials with nanosize particles.

Keywords: direct conversion of chemical to electrical energy, high temperature galvanic element, gasless exothermic interaction, nanostructured electrolyte material.

The design concepts of making the capacitive thin-films MEMS structures with higher stability against temperature and vibration acceleration are described . Implementation of these concepts, enabling to increase the MEMS structure stability of the capacitive thin-film pressure sensors against temperature and vibration acceleration, is presented. Keywords: capacitive thin-film MEMS structures, temperature, vibration acceleration, conductor, conductive pad, electrode.

Matveev V. V., Raspopov V. Ja. Sampling of Orientation of Topol Ogy of the Microgyroscope on the Sheet of Single-Crystal

Agency of orientation of topology of micromechanical gyroscope R-R of type in crystallographic planes (100), (110), (111) on its dynamic characteristics is in-process examined. In paper it is illustrated, along what directions extremes of key parametres of a micromechanical gyroscope lay.

Keywords: a micromechanical gyroscope, anisotropy of mechanical properties.

Grigoryev Yu. A., Shalaev P. D., Bourtsev A. A., Pimenov V. G., Rehen G. A. A Study of Vacuum Field Emission Array

The theoretical and experimental investigations of I-V characteristics of vacuum field emission array carbon microdiodes with the varying gap distance between electrodes were carried out in this paper. It was shown that increasing gap at the permanent average electric field given a high growth of the field emission current and also increased the effective emitting areas. Under such conditions the current density in the field emission centers was being significantly reduced. The field emission array cathode with tip density $N = 10^6 \text{ cm}^{-2}$ was employed.

Keywords: multi-tip field emission array cathode, fractal structure, gap distance between electrodes, glass-like carbon, field enhancement factor, effective emitting area, current density.

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