

# CONTENTS

## **Kozlov A. G.** *Thermal Microsensors: Classification. Basic Types.* . . . 2

The classification of thermal microsensors is considered. The role of thermal processes in operating thermal microsensors is used as the basis for the presented classification. Based on the role of these processes all thermal microsensors are divided into the following groups: direct conversion microsensors; microsensors using an intermediate thermal conversion; microsensors with controlled heat flows; microsensors using temperature actuation and control; combined microsensors. For each group of thermal microsensors the generalized functional scheme is created with using the distributed system approach. These functional schemes allow one to mark out the basic functional elements of thermal microsensors and the couplings between the elements and to determine the features of each group of thermal microsensors.

## **Altukhov V. I., Rostova A. T., Kazarov B. A.** *The Phonon Scattering on the Point Structural Defects, Complexes-Nanoparticles and Typical Peculiarities of the Thermal Conductivity Resistance of Real Ferroelectric Crystals. Part II. The Roul of the Point Defects, Nanoparticles and Fluctuation Effect of the Vibrations (Beanies).* . . . . . 14

It is shown, real crystals with phase transition the thermal conductivity coefficient  $k_{\alpha\beta}(T)$  may be present by correlation function current — current. The last one is described by the transport Bethe—Salpeter type equation and in self-correlated motion of phonons approximation the behavior of systems near  $T_c$  is described by the system of two renormalization group equations for the vertex  $U$  and the phonon frequencies  $\Theta$ . It is calculation of the values of critical indexes for the ferroelectric crystals. It is shown that this indexes are connected with the dynamical index of crystal.

## **Atuchin V. V., Kidyarov B. I., Pervukhina N. V.** *Systematics and Relationship between Physical Properties and Micro- and Macrostructure of Noncentrosymmetric Oxide Crystals. I. Symmetry Relations and Statistics.* . . . . . 21

An empirical relation has been revealed between chemical bond lengths and crystal structure for  $> 700$  noncentrosymmetric (NCS) binary oxides. The crystal clarkes of binary oxides and the distribution over chemical types have been obtained for 21 NCS point symmetry classes. Universal scheme has been proposed for relations between the structure and combination of four most valuable acentric properties

distributing the NCS phases over 7 groups and 7 crystal systems. On the plane of chemical bond lengths the field of binary NCS oxides is specified as a rossete of two crossing ellipses with one common focus.

## **Rembeza E. S., Svistova T. V., Rembeza S. I., Komarova A. S., Dyrda N. N.** *Structure and Electrical-Physical Properties of Nanocomposite $SnO_x:MnO_y$ .* . . . . . 27

Nanocomposites  $SnO_x:MnO_y$  were prepared by reactive ion-beam sputtering of metal tin target with manganese insertions in the ambient of  $Ar + O_2$ . Element composition of the films was determined with the help of X-ray microanalyzer JXA-840, morphology of film's surface was studied by atomic force microscope Femtoscan-001. Electrical-physical properties of the films were controlled with the help of Hall effect according to Van-der-Pauw method. It was found that the change of impurity concentration from 0,4 up to 5 % at. leads to the decrease of average grain size of polycrystals in the film. Possible mechanisms of electrical conductivity in film nanocomposites  $SnO_x:MnO_y$  were evaluated.

## **Kovalevskii A. A., Dolbik A. V.** *The Peculiarities of Germanium Interaction with Polycrystalline Silicon Films.* . . . . . 29

The germanium interaction with polycrystalline silicon films produced in low pressure chemical vapor deposition was investigated. It were obtained the submicrostructure parameters (the Bragg scattering region site  $D$  and microstresses  $\sigma$ ) time and doping dependences after diffusivity Ge for polycrystalline silicon films. The kinetics of defect structure was examined. It was shown that polycrystalline silicon films diffusivity Ge leads to the increase crystalline perfection level, subgrain boundary migration and turn of grains.

## **Kukushkin S. A., Osipov A. V., Zakharov M. A.** *Kinetic Theory of Polarization Switching of Multiaxial Ferroelectric Crystals.* . . . . 34

On the basis of multidimensional theory of the first-order phase transitions kinetics of switching of multiaxial ferroelectrics with  $180^\circ$  and  $90^\circ$  domains at different mechanisms of domain growth is studied theoretically. The main stages of switching under conditions of three-dimensional growth of cylindrical domains are considered. Equations for switching current are derived. The quantitative comparison of the main characteristics of switching with experimental data of barium titanate is provided.

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