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Shakhrai M. V., Huth C	, Quenzer J.	Lisec T.	Characterization
of Microelectromechanica	HF-Switches		

Microelectromechanical capacitive radiofrequency switches are considered. Design and technological process are reported. Switching characteristics and thermal behaviour are investigated. Ways to improve the measured parameters are shown. The switches are prospective for wireless telecommunication systems, in particular for mobile communications.

Mane stage developments of solid-state negetronics, which have being a new line of functional electronics are described. It is shown, that the technology of simultaneous growth the local poly- and monocrystalline silicon films permit to form of sensor and negatronics circuit with frequency output at the single chip.

The morphology and structure of conductivity of edge of the YBa₂Cu₃O_{7-x} (YBaCuO) strip is investigated. The AFM-modification of surface of the film, including its field evaporation is carried out. The area of edge having high resistance is allocated.

The paper presents the results of the STM investigation of the Si-SiO2 system on the air. It was established that at certain conditions the tunnel current is a superposition of a number of components. Thus a "pseudorelief" instead of a true relief is observed on the STM image. The pseudorelief can be modified in the electric field. When the positive voltage is applied to the sample, the features that look like depressions are formed, in the opposite polarity "protrusions" appear. The electronic nature of the pseudorelief is suggested which is confirmed by the realization of the recording-erasing-recording cycle on the same place. The proposed mechanism of the Si surface modification is based on the insulator-oxide-semiconductor structure properties where the adsorbate layer serves as the insulator. The injected from the Si charge is captured by the traps of the adsorbate layer which influence the tunneling characteristics during further scanning. This model was checked by means of replacing of the adsorbate layer with the model insulating polymer film. In the latter case the phenomenon can be reproduced in the similar conditions. Thus, it was shown that STM could be used for recording, erasing and reading of information on the insulator-oxide-semiconductor structure.

In the present paper we offer a correct thermodynamic substantiation of the existence of stable segregations in continuous phases of steels and alloys. Transmission electron, field-ion and atomic-force microscopy were used to study K-states of the Fe—Mo alloys.

Vaks V. L., Gaikovich K. P., Nozdrin Yu. N., Reznik A. N. Retrieval of Subsurface Dielectric Structure by Microwave Near-Fielf Measurements 18

First microwave near-field measurements of media with subsurface inhomogeneities of dielectric structure have been carried out. The results show the possibility of development of this noninvasive method of diagnostics which can be effective in various applications including, for example, defect finding and medical diagnostics. The possibility of the resolution improvement by taking into account the probe transfer function is shown.

The opportunity of creation of MEMS-analogues of environments with phase transitions the metal — semiconductor or metal dielectric is established on the basis of periodic structures and structures with a composite which properties can change convertible depending on value of amplitude and (or) frequencies of the sent managing voltage or mechanical influence on managing elements, and the resonant phenomena in these structures are investigated.

Panfilov Yu. V., Samoilovitch M. I., Slobodchikova I. V.

Thin Film Deposition to Artificial Opal Substrate Prospect 26

Thin film deposition for photonic lattices making is suggested. Conductance of the channels into artificial opal substrate is calculated. Results of experiments over thin film deposition to artificial opal substrate are shown.

Electrical and mechanical contributions to self-polarization phenomenon in thin-film ferroelectric capacitor are discussed. The self-polarization appearance is suggested to be identified with polarized electric field caused by nonhomogeneous charge distribution at the interfaces of ferroelectric layer, whereas tensile or comprehensive stresses increase or decrease the self-polarization only.

New contactless microwave methods to measure and calculate the transport parameters of semiconductor two-dimensional systems (2DS) such as $GaAs/Al_xGa_{1-x}As$ heterostructures and thin films such as $Cd_xHg_{1-x}Te$ by using Shubnikov — de Haas and cyclotron resonance effects are presented. The relative measurements of the magnetic field dependences of the derivative of the reflection coefficient allows the carrier concentration, Hall-conductivity, carrier mobility and relaxation time of impulse to be determined an accuracy of $\sim 0.5-1$ %. The contactless test of 2D systems is proposed.

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For foreign subscribers:

ЗАО МК-Периодика. E-mail: info@periodicals.ru;

Editor-in-Chief Ph. D. Petr P. Maltsev Index 79493.

Address is: 4, Stromynsky Lane, Moscow, 107076, Russia. Tel./Fax: (7 095) 269-5510.

E-mail: it@novtex.ru