CONTENTS

Dedkov G. V. Physical Aspects of Interactions between the Tip of Scanning Probe Microscope and the Sample Surface. Part 2 . . . 2

Physical phenomena and effects being characteristic for the contact and noncontact operation regimes of the scanning probe microscopy, are discussed on an elementary level. A theoretical description and numerical estimations of energies, forces and other physical characteristics of contacts are given. Some applications and perspectives for future development of the scanning probe technique with regards to physics and nanotechnology are discussed.

Analysis of fabrication methods, examples of surface polymer structures providing dry adhesion effect and estimation of the structures adhesion to different types of substrates are presented.

Acentric mesofragments of piroelectric crystals are responsible for the loss of an average inversion symmetry. Transformations of piroelectric structures during phase transition are discussed in details.

Metod of energetical linearization have been proposed for approximate estimation of transient response for electron circuits on basis of operational amplifiers for high signal condition. Algorithm of drawing of transient response have been demonstrated for the transfer cascade of the optoelectronic device with differencial optocouple.

 The basises of various microelectronic devices simulation in the framework of semiclassical approach are considered.

On the base of the represented physical model of ionic implantation through firms and alloying by recoil atoms was developed the packet of mathematical programs of modeling of indicated processes.

Carried out numerical experiment and shown that ionic bombardment of film — substrate structures allows to from thin high — alloy layers, by recoil atoms, the thickness by the was of several hundred parts of micron, to form such alloyed by bombarded ionic layers of different thickness and by the level of alloying.

To realize the simultaneous alloying of substrate by recoil atoms and by bombarded ions.

Dynamic processes are under consideration in multilink miniature robots consisting of sequential chains of functional micro modules. The dynamical integration is analyzed between separate modules connected between by means of rigid or elastic links. The analytic solution is suggested for a problem of miniature multilink robot motion inside of the small diameter tubes.

It is examined the possibility of colloidal electro-rocket thrusters usage for soft stabilization of parameters of motion for space micro-vehicles with mass from 1 up to 100 kg, power capacity 0.4...2 W/kg and compensating micro-acceleration $10^{-5}...10^{-4}\ m/s^2.$ It is represented a tendency of cost growth for single units of the satellites under jumping from usual sizes of the spacecrafts to micro-vehicles.

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