CONTENTS

Luchinin V. V. Introduction into the Industry of Nanosystems . . 2

Presented the system approach to the industry of nanosystems as a priority line of development of science and engineering.

Defined the fundamental concepts which are used in the industry of nanosystems. Defined research-and-production and educational basis of the industry of nanosystems according to the fusion with the priority lines of development of science, engineering and technology.

Maximov G. A., Nikolitchev D. E., Filatov D. O.

Analytic potential of Scanning Auger Microscopy for study of semiconducting nanostractures composition was investigated. The object of investigation was the self-assembled GeSi nanoclusters grown on silicon substrate by methods of Molecular Beam Epitaxy. The practicability of local compositional analysis with nanometer resolution of single GeSi nanoclusters was shown. The spatial resolution of the apparatus was determined for different structures types. The measurement technique was developed and concentration of Ge and Si profiling in nanoclusters was done.

Dedkov G. V. On the Mechanical Energy Dissipation in Dynamic Force Scanning Probe Microscopy in UHV.....14

This works aims at critical discussion of recent observations of conservative and dissipative interactions in tip — sample contacts probing by dynamic force spectroscopy in UHV. Specifically, both normal and lateral tip motion on different materials was realized, but to date, the origin of the long range damping forces proves to be unclear. For the first time, we propose a simple general relation between conservative and dissipative force of arbitrary origin, acting on the tip, which allows to explain the measured damping into the contact. A single phenomenological

parameter is needed — the characteristic velocity or time of the dissipative mechanism. A reasonable agreement with both type of the experiments is achieved. The physical origin of the dissipative mechanism is assumed to be related with phonon damping.

We expound the physical fundamentals and report on the development of Ge/Si photodetectors embedded with Ge quantum dots and designed for operation at the telecommunication wavelengths $(1,3...1,55~\mu m)$.

Gaikovich K. P., Dryakhlushin V. F., Nikolichev D. E. Images Deconvolution in the Scanning Auger Microscopy

Possibilities are demonstrated to improve the lateral resolution in the scanning Auger microscopy that is in use for the chemical analysis of the nanostructures as well as in the scanning electron microscopy by the images deconvolution with taking into account the probe transfer function. The problem of images retrieval from the 2D convolution equation are solved using a method based on the Tikhonov's theory of ill-posed problems.

The current issue surveys the results of investigations of dispersion, linear properties and birefringency of the micro-structured optical fiber properties. The non-linear properties are considered in the course. The computing and analytical methods for the calculations of the properties of micro-structured fibers are considered. The properties of the photonic crystal fibers are reviewed with the idea of their applications.

For foreign subscribers:

Joint-stock company MK-Periodica. E-mail: info@periodicals.ru Tel.: +7(095) 684-5008. Fax: +7(095) 681-3798

The journal bought since november 1999. Editor-in-Chief Ph. D. Petr P. Maltsev

ISSN 1813-8586.

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

E-mail: it@novtex.ru; http://www.microsystems.ru

Адрес редакции журнала: 107076, Москва, Стромынский пер., 4/1. Телефон редакции журнала (095) 269-5510. E-mail: it@novtex.ru
Журнал зарегистрирован в Федеральной службе по надзору за соблюдением законодательства
в сфере массовых коммуникаций и охране культурного наследия.
Свидетельство о регистрации ПИ № 77-18289 от 06.09.04.

Дизайнер Т.Н. Погорелова. Технический редактор И.С. Павлова. Корректор Е. Волкова

Сдано в набор 01.03.2005. Подписано в печать 07.04.2005. Формат 60×88 1/8. Бумага офсетная. Печать офсетная. Усл. печ. л. 6,86. Уч.-изд. л. 8,67. Заказ 738. Цена договорная

Отпечатано в Подольской типографии — филиал ОАО "ЧПК", 142110, г. Подольск, ул. Кирова, 15