

COMPUTER SCIENCE, COMPUTER TECHNOLOGY AND CONTROL**Balonishnikov A.M.****A MIXED ANISOTROPIC-ISOTROPIC APPROACH TO THE DESCRIPTION OF DEVELOPED HYDRODYNAMIC TURBULENCE**

The article is the first to propose to combine the description of small-scale velocity, dividing the dynamics into the anisotropic part of the spectrum and the isotropic part. It is proposed to determine the specific dissipation rate of turbulent energy within the Lundgren model with isotropic pumping, linear in velocity. The anisotropic large-scale part of the spectrum is proposed to be determined within the framework of the author's dynamic model of the generalized component-wise balance of turbulent energy. These two descriptions are related through the spectrum of the specific dissipation rate of turbulent energy and averaging of the anisotropic pumping over the angular variables.

Keywords: *developed hydrodynamic turbulence, incompressible fluid, combined anisotropic-isotropic approach*

Opalikhina O.V.**DIGITAL FILTERING OF INFORMATION SIGNAL**

The article discusses a nonlinear method for processing an analytical information vibration signal based on digital filtering. The dynamic stability of the rotor system is investigated.

Keywords: *dynamic stability of the rotor system, fatigue cracks, nonlinear transformation of analytical information vibration signal, fast Fourier transform, Hamming window*

Drobotun N.V., Lashkova I.A., Soshnikov A.V.**BASIC ASPECTS OF BUILDING AN ENTERPRISE INFORMATION SECURITY MANAGEMENT SYSTEM**

The article discusses the basics of information security, information security management system (management), principles of construction and participants in the construction of an information security management system.

Keywords: *information security, enterprise, information protection, threats, risk, confidential information, information security management system*

Bogdanov A.I., Mongush B.S.**OPTIMIZATION OF THE LOCATION OF WAREHOUSES USING CLUSTER ANALYSIS**

A mathematical model is proposed for optimizing the location of warehouses, based on the use of the cluster analysis apparatus. An iterative algorithm for solving the problem has been developed. The proposed algorithm was tested on a specific example.

Keywords: *cluster analysis, warehouse, consumer, transport costs, optimization, Newton's method*

Fedorova L.A., Sof'in A.P., Gorelov S.K., Belyaev B.V., Mikhailenko A.V.**PROTECTION OF CONSTRUCTIONS FOR VARIOUS PURPOSES AGAINST THE IMPACT OF PARTICLES WITH SIGNIFICANT KINETIC ENERGY**

A variant of protecting spacecraft from kinetic projectile particles is considered, and a model of interaction between the projectile particle and the surface of the external protective shield is presented.

Keywords: *protection, construction, screen, particle*

Shevchuk A.L., Makarov A.G., Busygin K.N., Zurakhov V.S.**UNAUTHORIZED BURGLARY DETECTION SYSTEMS OPTIONS**

The article discusses the most promising options for detecting unauthorized intrusions on the Internet. Their advantages and disadvantages are analyzed.

Keywords: *information protection, internet, computer networks, intrusion detection, unauthorized access*

Zhukova I.A., Truevtseva M.A., Evgenieva A.M.

DEVELOPMENT OF A CONCEPTUAL MODEL OF AUTOMATION OF TECHNOLOGICAL PROCESSES OF ORDER RECEPTION AND DOCUMENTATION MOVEMENT IN THE CONTACT AREA OF FASHION INDUSTRY SERVICE ENTERPRISES

Analysis of modern integrated sewing production management systems showed that the existing software systems are designed for batch production of clothing and do not take into account the specifics of service enterprises. A conceptual model has been developed for the complex automation of the processes of rendering services and the movement of documentation in the salon of a service enterprise in the fashion industry. A characteristic feature of this model is the presence and functioning of the sixth data stream - the flow of the service rendering process, which is important not only for the fashion industry, but also for all service enterprises. An information core has been developed for an integrated process automation system in the atelier salon. The information support for the "Receiver" database has been completely prepared and the structure of the "Client" database has been developed with a short example of filling and working.

Keywords: *integrated automation and production management system (ksaup), service enterprises in the fashion industry, database, service delivery process*

Belyaev B.V., Golikov I.O., Davidchuk V.A., Sadin D.V.

SIMULATION OF EVOLUTION OF DISPERSE REAGENTS FOR SUPPRESSING NEGATIVE FACTORS OF ACCIDENTS AT FIRE AND EXPLOSION HAZARDOUS FACILITIES

Within the framework of solving the complex problem of suppressing the negative factors of accidents at fire and explosive objects, the particular problem of modeling the dispersion of dispersed reagents in a two-dimensional axisymmetric formulation was solved. A highly stable scheme with tunable dissipative properties of the second order of accuracy in space and time was used for the calculation. The scheme is verified on a problem with a large initial density gradient in comparison with an exact self-similar solution. As a result of numerical simulation, the regularities of the expansion of the reagent powder and the possibility of controlling the dynamics of the evolution of particles by changing the charging pressure in the container were revealed. The data obtained make it possible to reduce the number of options for calculating the covered area and the concentration of the neutralizing powder in the general three-dimensional formulation of the problem.

Keywords: *modeling, evolution, dispersed reagents, negative factors of accidents*

Shevchuk A.L., Busygin K.N., Makarov A.G., Terushkina O.B.

COMPUTER NETWORK THREATS AND METHODS TO PREVENT THEM

The article discusses the most well-known types of computer network threats and describes the most promising methods for their prevention.

Keywords: *computer security violations, information protection, internet, computer networks, intrusion detection, unauthorized access*

Mustafakulov I.I., Drobotun N.V., Kosareva A.N., Kondrashova N.N.

BASIC APPROACHES TO VISUALIZATION OF ASSEMBLY PROCESSES OF SPORTS FOOTWEAR © I. I. MUSTAFAKULOV, N. V. DROBOTUN, A. N. KOSAREVA, N. N. KONDRASHOVA, 2018

One of the main stages of production is the technological process of assembling the finished product, the most labor-consuming part in the manufacture of the product. Visualization of the technological process of assembling sports shoes provides clarity and makes it possible to get acquainted with the properties of the product.

Keywords: *visualization, 3d-modeling, texturing, animation, rendering, post-production, script*

Busygin K.N., Shevchuk A.L., Makarov A.G., Vasilyeva E.K.

METHODS FOR SEARCHING INFORMATION VULNERABILITY IN NETWORK AND COMPUTER SYSTEMS

The article is devoted to the description of methods for searching for information vulnerabilities in network and computer systems.

Keywords: *information protection, internet, computer networks, intrusion detection, unauthorized access, information vulnerability*

CHEMICAL SCIENCES

Aniskin S.V., Kurov V.S.

STUDY OF THE CONDITIONS OF DESORPTION OF HYDROGEN SULFUR DURING CRUSHING OF A LIQUID BY A CENTRIFUGAL JET NOZZLE

An experimental study of the conditions for desorption of hydrogen sulfide during crushing of a liquid by a centrifugal jet nozzle has been carried out. Photographs of liquid crushing in reflected and transmitted light were obtained. The fragmentation of a liquid jet is a complex structural transformation, accompanied by surges from the surface of waves and foaming. The high intensity of desorption occurs as a result of mixing the liquid at all stages of its crushing.

Keywords: *desorption of hydrogen sulphide, stirring, jet crushing, drops, centrifugal jet nozzle*

Gladunova O.I., Lysenko A.A., Astashkina O.V., Diankina N.V., Dokuchaev V.N.

DEVELOPMENT OF TECHNOLOGY FOR OBTAINING FIRE-RESISTANT POLYOXADIAZOL (UNDER) FIBERS, MODIFIED WITH MICRO- AND NANOADDITIVES

Methods for modifying polyoxadiazole fibers in order to increase the oxygen index have been studied. The paper presents the properties of modified polyoxadiazole fibers. The antipyretic effect of highly dispersed additives has been substantiated.

Keywords: *polyoxadiazole fibers, flame retardant additives, modification of heat-resistant fibers*

Osipov P.V., Kokushin N.N., Klyushkin I.V., Kaurov P.V.

INTENSIFICATION OF THE PROCESS OF DEHYDRATION OF PAPER PULSE IN THE WET PART OF MACHINES USING CHEMICAL PRODUCTS

The article aims to analyze the process of intensification of dehydration in the wet end of paper machines using chemicals. The examples given in the article make it possible to assess the effect of chemical technology on dehydration, the molding process and product quality. As a result of the analysis, it can be concluded that in order to set the correct dehydration regime, the chemical system must be carefully selected in order to get a real effect from its use.

Keywords: *dehydration process, application of chemical products, chemical filtration, principles of selection of chemicals*

Lysenko A.A., Kuznetsov A.Yu., Lukicheva N.S., Astashkina O.V., Diankina N.V., Martsenyuk V.V.

POROUS SOUND-ABSORBING COMPOSITE MATERIALS

The article provides data from an analytical review of the sound-absorbing properties and structures of various materials. It is shown that the use of fibrous materials and composites based on them is promising for the creation of soundproof barriers. Nonwoven materials made of carbon fibers were chosen as the base material for the development of sound-absorbing composites. Several structures of porous fiber composites have been proposed for testing, including gradient structures, the sound absorption coefficient of which was 0.31-0.42.

Keywords: *soundproof materials, carbon nonwovens, carbon-carbon composites, carbon-polymer composites, sound absorption coefficient*

Derkacheva O.Yu., Leiman V.I.

ANALYSIS OF CHANGES IN THE STRUCTURE AND PROPERTIES OF PAPER DURING THE AGING PROCESS

By the method of FTIR spectroscopy of reflection from the paper surface, it was revealed that artificial light aging of paper samples from three types of fibers causes a decrease in the degree of ordering of cellulose and the formation of groups that absorb in the frequency range 1550-1700 cm⁻¹. It is shown that with aging there is a decrease in the parameters of the whiteness of the paper and pH-water extract. Analysis of changes in spectroscopic data and traditional characteristics revealed the presence of correlations between these parameters. Linear regression models were built to predict the whiteness and acidity of the paper from the intensities of the absorption bands in the IR spectra of paper samples.

Keywords: *paper, artificial aging, IR reflectance spectra, cellulose structure, whiteness, acidity, chromophore groups*

Kuznetsov A.Yu., Lukicheva N.S., Lysenko A.A.

TEMPERATURE SYNTHESIS - EFFECTIVE TECHNOLOGY FOR OBTAINING ABSORBERS AND SORBENTS

The paper analyzes and shows the efficiency of using the template method to obtain porous composites - sorbents of petroleum products. Studies of the absorptive capacity of the developed materials in relation to oil and oil products have been carried out. It has been shown that porous carbon-carbon composites obtained by template synthesis have a high absorption capacity in relation to oil and oil products.

Keywords: *template synthesis, template, porous composite material, thermally expanded graphite, absorption capacity, oil absorption*

Gruzdeva I.G., Dmitruk V.V., Tropets V.A.

RESEARCH OF PHYSICO-CHEMICAL AND PRINTING AND TECHNICAL PROPERTIES OF FLEXOGRAPHIC PAINTS FOR LABEL AND PACKAGING PRODUCTION

The paper investigates the main characteristics of alcohol-based flexographic printing inks from two manufacturers using standard methods, including the input control of the original pastes and the assessment of printing properties using a specific circulation as an example.

Keywords: *alcohol-based flexographic inks, label and packaging, viscosity, adhesion, abrasion, scratch, crease, odor and taste test, optical density*

DECISION OF THE IV INTERNATIONAL SCIENTIFIC CONFERENCE "MODERN TRENDS IN THE DEVELOPMENT OF CHEMISTRY AND TECHNOLOGY OF POLYMERIC MATERIALS"

TECHNOLOGY OF MATERIALS AND PRODUCTS OF TEXTILE AND LIGHT INDUSTRY

Pereborova N.V., Kogan A.G., Dembitsky S.G., Kirsanova E.A., Levakova N.M., Muradyan V.E.

DEVELOPMENT OF A MATHEMATICAL CREEP MODEL OF GEOTEXTILE NON-WOVEN MATERIALS

A mathematical model of creep of geotextile needle-punched nonwovens made of polypropylene is proposed. It is based on the spectral-time theory of viscoelasticity, which takes into account the smallness of the delay times.

Keywords: *creep, viscoelasticity, polymers, nonwovens, geotextiles, needle-punched materials, deformation, mathematical modeling*

Pereborova N.V., Titov E.V., Silchenko E.V., Zagorodnikov S.V., Nazarov A.V., Dembitsky S.G., Kirsanova E.A.

DEVELOPMENT OF OPTIMAL CRITERIA FOR MATHEMATICAL MODELING OF OPERATIONAL PROCESSES OF POLYMER TEXTILE MATERIALS

Integral criteria for the optimality of mathematical modeling of the operational processes of polymeric textile materials were developed using integral constitutive equations of the Boltzmann-Volterra type. Their practical implementation involves a large amount of numerical calculations, which justifies the need to use modern information technologies for optimal modeling and forecasting of these processes.

Keywords: *textile materials, optimization criterion, operational processes, mathematical modeling, computer forecasting*