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## Article 1

**Gusev B. V., Speransky A. A.**

### **Volume periodic matrix of chemical elements**

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**Keywords:** dimensional periodic matrix of chemical elements, informativity of three-dimensional models, matrix frame system, sequence number of elements, valence, electronic formulas and matrix properties, signal and valence elements, volume periodicity of systems

## Abstract

The paper considers the proposals for the creation of a bulk periodic matrix (MFT) of chemical elements. The authors consider the work to be an extension of the Periodic System of Chemical Elements. Mendeleev University. The proposed representation of the matrix in the form of a volume-frame spiral is considered by analogy with the origin and development of the Universe, since atoms are star matter.

As atomic parameters are taken atomic number of elements, their group and electronic properties, periodic increase of valence. The level formulas of the electronic shells of signal and valence elements determine the special points of nucleation of new periods. The state was formulate that there are the volume periodicity and the presence of four levels of volume periodicity in the proposed Volume-frame matrix, which opens the possibility of computer modeling in the creation of chemical compounds.

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## Article 2

**Zorin D. A., Khomutayev A. V.**

### **Effectiveness of the use of sulfoferritic cements in construction**

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**Keywords:** expansive cements, non-shrinkage cements, calcium sulffoferrite

## Abstract

Currently, high-rise construction has received increasing attention around the world. In the big cities under construction is less space and one solution is the high-rise construction. However, high-rise buildings use special requirements, such as strength, thermal insulation, wind load and others. When concrete is exposed to continuous loads by wind or to mechanical loads, it undergoes abrasion. Resistance to this process depends on the characteristics of materials that the concrete and finishing seams are made of. Research on increasing impact and abrasion resistance of calcium sulfoferrite-based cement stone from the perspective of formation of cement stone structure will be instrumental in developing durable materials for application in high-rise construction.

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## Article 3

**Borisov I. N., Grebeniyk A. A.**

**The effect of portland cement of sulfoferrite clinker's injection on feature of matrix**

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**Keywords:** mixed cement, sulfoferrite clinker, linear expansion, dense structures, ferrous ettringite

## Abstract

In the process of the economical and social development there are certain problems for industry to decide. These problems' realization is necessary at any stage. Non-shrinking binding material's production based on secondary materials is able to decide such problems as special cement implementation what is necessary for the building sphere and to decide ecological problem what becomes more current from year to year.

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#### Article 4

##### Zaw Ye Maw Oo

##### The gas permeability of the porous ceramics with electrofusion corundum and porcelain binder

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**Keywords:** open porosity, strength, electrofused corundum, a bunch of porcelain, ceramic filters, gas permeability

##### Abstract

Studied permeable materials obtained by selection of the grain compositions filled with electrofusion corundum (EFC) (0.5 mm) and a binder of porcelain (PFL-1). Formulations with different filler / binder ratios were studied, by weight: 99/1, 97/3, 95/5, 93/7 and 90/10. Samples in the form of cross members 40x7x5.5 mm and disks with a diameter of 20 mm and a thickness of 5.5 mm were pressed at a pressing pressure of 25 and 50 MPa and fired at 1350 and 1450 °C. The flexural strength of sintered samples of all compositions was from 1.1 to 9.8 MPa, the open porosity from 22 to 33%, and the gas permeability coefficient from 1.53 to 4.33  $\mu\text{m}^2$ . Samples are promising for filters and substrates of ceramic membranes.

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## Article 5

**Bobkova N. M., Trusova E. E.**

### **Glass composite materials for light converters of optoelectronic devices**

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**Keywords:** low-melting glasses, phosphor, light-converting coatings, bismuth oxide, boron oxide

## Abstract

Data on phase- and glass formation in bismuth-borate systems as the basis for the production of low-melting glasses with a wide range of physical and optical characteristics have been given. The efficiency of using such glasses in the production of light-converting coatings was shown. Glass-composite coatings were obtained on sheet glass substrates for use in remote-type LED converters of optoelectronic devices.

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## Article 6

**Guseva T. V., Begak M. V., Potapova E.N., Molchanova Y. P.**

### **Public Dialogue in the Field of Environmental Regulation of cement Production In Russia**

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**Keywords:** Best Available Techniques, Integrated Environmental Permits, business role-playing games, Cement production

### Abstract

We consider the prospective procedures for integrated environmental permitting in the Russian Federation. Testing procedure and integrated permitting procedures currently implemented in the format «business games». Examples of some of the conducted business games.

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