**[Modernization](http://slovari.yandex.ru/modernization/en-ru) of existing manufactures of nitrogen containing mineral fertilizers and porous ammonium nitrate for production of** [**energy-efficient**](http://slovari.yandex.ru/energy-efficient/en-ru)**, environmentally-friendly products of improved quality**

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**Keywords**: granulation, energy-saving, large-capacity manufactures, nitrogen containing mineral fertilizers, porous ammonium nitrate.

**Abstract.** The suggestions for re-equipment of existing preel production capacities of ammonium nitrate, carbamide, NPK, porous ammonium nitrate etc. are given for possibility of flexible (one shift reset maximum) production of up-graded ammonium nitrate with various additives, microelements, with reduced velocity of solution, NPK of flexible formula and composition. This technology also allows to improve strength and granulometric composition of the obtained product. As a result we get a flexible manufacture that easily and quickly adapts to customers’ needs and produces granules of excellent quality and various compositions at the same period of time.

Part of this suggestions passed experimental - industrial and industrial tests.

The article by Taran Y.A., Taran A.V. contains results, which were obtained within State assignment of Minobrnauki of Russian Federation.

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**Еfficiency of sorption of Mg(II) and Са(II) cations by glauconite from chloride solutions**

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**Keywords:** magnesium, calcium, chloride, glauconites, sorption, concentration, competition, indifferent electrolyte, extraction level.

**Abstract**. Kinetics and level of sorption extraction of Mg(II) and Са(II) cations from solutions of MgCl2 and CaCl2 by glauconite concentrate has been studied. Effect of initial concentration of the salts, their correlation, twofold sorption, process duration, indifferent electrolyte on the extraction level of the model media is considered. Sorption of Mg(II) and Са(II) corresponds to Langmuir isotherm. The values of constants of the adsorption equilibrium, adsorption rates and maximum specific adsorption were calculated for both cations. Two stages sorption permits to bring the Mg(II) content up to 0.01mol-equiv/L and lesser. At the joint presence, the Са(II) sorption proceeds more effectively and the Г∞,Са(II) : Г∞,Mg(II) ratio is , as a rule, essentially higher than initial ratio of the cation concentrations in the solution and depends on the nature of the present extraneous anions. A presence of the extraneous salts (NaNO3 and Na2SO4) decreases the depth of Mg(II) and Са(II) sorption by the glauconite.

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**The technology of low-tonnage production**

**of fluorides metals of high purity for optical glass**

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**Keywords:** low-tonnage, manufacturing, fluorides, especially high purity, optical glass.

**Abstract.** The paper includes an analysis of the existing technical literature on synthesis and technological processing of fluorides Li,Na,Mg,Ca,Sr,Ba,Y,La and Al. It is shows the possibility of essentually simplification and unification of manufacturing this reagents. A low-tonnage production of metal fluorides for optical glass ,based on neutralization of strong hydrofluoric acid by hydroxides or carbonates of metals, is developed. As a result of neutralization, depending on the bases ,the mother liquor contains a small amount of carbon dioxide and hydrofluoric acid ( for the synthesis aplied excess of about 5% from stoichiometric amount ).

At subsequent annealing in a glassy carbon crucibles at 450-500 oC this excess is removed together with the steam and is captured in the filter-absorber.

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**Explore the use of coal by Kuznetsk basin for activated carbons**

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**Keywords:** the activated carbon, fossil coals, metamorphism of coals, fragrance level, ash-content, output of volatiles.

**Abstract.** Researches of physical and chemical properties of fossil coals (from brown to lean and anthracite) of different stages of a metamorphism are provided. In operation analysis results of element composition of fossil coals, their ash-contents, the maintenance of basic elements in a mineral component, a level of fragrance and an output of volatiles are given. With use of a scanning electron microscope the structure of their surface is studied. Optimum conditions and kinetic characteristics of process of thermal modifying of fossil coals are defined when receiving shredded activated carbons. The assessment of their qualitative characteristics and suitability for receiving shredded activated carbons with high getter and physical and chemical characteristics is carried out.

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**Denitration of spent sulphuric acid production of high-energy substances and concentration of nitric acid with the help of sulfuric**

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**Keywords:** denitration, spent sulphuric acid, thermodynamic analysis, cetan, isooctane.

**Abstract**. Thermodynamic analysis of the interaction of nitrogen oxides (III) and nitric acid with isooctane and cetane recovery of nitrogen compounds to nitrogen oxides (II) and (I) and elemental nitrogen, and carbon compounds to carbon oxide (II) and (IV) has been performed. The Gibbs energy of formation of these oxides and elemental nitrogen is negative and sufficiently large in absolute value. To validate the results of thermodynamic calculation was carried out experimental study on denitration of sulfuric acid containing 0,13 % of N2O3 and 0,061 % HNO3, unleaded gasoline A-72 in the amount of 0,18 to 0,27 g per 1 g of nitrogen oxide (III) and 0,18 - 0.27 g per 1 g of nitric acid in terms of isooctane, and diesel fuel with a cetane number of 45 in the amount of 0,18 to 0,27 g per 1 g of nitrogen oxide (III) and 0,37 – 0,56 g per 1 g of nitric acid in terms of cetane at a temperature of 130 to 170 °C, which showed the possibility of reduktion nitrogen compounds contents in acid after denitration to 1·10-4%. Analysis of the gas environment after denitration showed that products of denitration contains elemental nitrogen and nitrogen dioxide.

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**Study of the filtration process of fermentation suspensions based on acid hydrolysates brewing spent grains**

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**Keywords:** deep heterophase cultivation, acid hydrolysis, filtration, filtrating materials, brewing spent grains, yeast, Endomycopsis fibuligera, Yarrowia lipolytica.

**Abstract.** The article describes the results of yeast *Yarrowia lipolytica and* yeast-like fungus *Endomycopsis fibuligera* cultivating and concentrating suspensions of microorganisms. Deep heterophase cultivation process using hydrolisates of brewing spent grains has been applied. To obtain microorganism biomass, a perspective energy efficient filtration process run in the presence of non-utilisable solid phase has been used. The optimum process conditions to ensure the best filterability have been identified. It has been found that *Endomycopsis fibuligera* suspensions are characterised by better filterability than *Yarrowia lipolytica* suspensions. Comparing modern filtrating materials, it has been demonstrated that PX 562-04 (manufactured by UK) has optimal characteristics for the studied process.

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