**Сhemical enterprise as an object of management in the open innovation model**

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**Keywords:** innovation, open innovation, chemical enterprise, chemical-technological system, physic-chemical system, chemical industry, innovation cooperation, logistic approach.

Theoretical approaches to the open innovation model are presented. On the base of system approach the principals, features and reasons of the transition to open innovation model in postindustrial economy are generalized. The advantages of the open innovation for management of chemical enterprise are shown. The authors proved that in terms of the fifth and in the process of forming of the basis of the six technological step of chemical industry is one of the priority in the management of innovation processes. Considering the levels of chemical-technological system the management of innovation in chemical industry is studied. Using logistic approach innovation processes, the entities of innovation cooperation at the micro-, meso- and macro- levels in оpen innovation model including tools, goals and results of innovative cooperation are presented.

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**Influence of porosity layer of iron-potassium-cerium catalyst for dehydrogenation processes methylbutenes and gasification of carbonaceous deposits**

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**Keywords:** specific surface area, porosity of the catalyst layer, potassium and cerium promoted iron oxide catalyst for the dehydrogenation of methylbutene, gasification of

The influence of particle size potassium and cerium promoted iron oxide catalyst on performance indicators of dehydrogenation methylbutenes process was investigated. It was shown that the catalyst has not developed internal surface, and a dehydrogenation reaction takes place in kinetic region. Dehydrogenation process defined porosity of the catalyst layer, which increases with decreasing pressure gap was found. This in turn affects the gasification reaction of carbonaceous deposits and the efficiency of dehydrogenation process. The optimal value of porosity (0.62; Dgranule = 3mm) was defind and recommendations for changing production technology potassium and cerium promoted iron oxide catalyst of dehydrogenation methylbutenes were issued. Pilot tests of the sample with the changed diameter pellets were carried out and increase in the yield of isoprene was recorded.

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**Degree of the catalyst surface utilization on the ceramic supports of different structure**

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**Keywords:** utilization of the inner surface, ceramic high porous cellular catalyst, ceramic honeycomb catalyst, sulfur dioxide.

Results of calculation of the degree of use of the inner surface of catalysts on ceramic supports of different structure: in the form of pellets, Raschig rings, block honeycomb and cellular – are presented. As a test for the catalysts of different structure oxidation reaction of sulfur dioxide to sulfur trioxide is selected with the following assumptions: the concentration of oxygen in the catalytic layer is negligible, the diffusion coefficients of SO2 and SO3 are closed, in the equation of the kinetics of sulfur dioxide oxidation reaction rate depends on the concentration of only SO2. To assess the quantitative influence of internal diffusion on the reaction the model of Zeldovich-Thiele was used. The values of degree of useng of the inner surface of the catalysts with different structures depending on equivalent diameter and porosity are determined.

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**Regeneration of lanthanum and chromium compounds synthesis**

**from lanthanum chromite heaters**

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**Keywords:** ceramic heaters, lanthanum chromite, electrolysis, lanthanum chromate, electrode.

Lanthanum and chromium compounds synthesis was investigated using membrane diaphragm electrolysis method (as the anode we took foul depleted ceramic lanthanum chromite heaters). The principal possibility was proved for obtaining precipitated lanthanum compounds as lanthanum hydroxide and in its compositions with chromium - as lanthanum chromate in sodium chloride solutions under the temperature of 298К. It was found that by passing through the electrolytic cell the charge in 1 Faraday 9.3 g of ceramic lanthanum chromite heaters is being processed. Thus, it was proved that in NaCl solution with isolated and acidic anode space under the current density of 5A/dm2 it is possible to obtain separately powders of lanthanum hydroxides and lanthanum chromates.

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**Methodology selection of the method of removing water-soluble impurities from suspensions of pigments**

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**Keywords:** suspension, pigment, repulping, decantation, water-soluble impurities, metal nanoparticles.

On the basis of the analysis of results of removal of water-soluble impurities from pigments the classification of their suspensions allowing to choose an optimum method of washing out is offered. The engineering method of calculation of technological parameters of the processes of removal of water-soluble impurities by a repulping multiple-decanting of suspensions of a pigment yellow C with use of an aqueous dispersion of nanoparticles of metals is developed. The technique of washing out of a sediment of a pigment orange G on a filtering partition is offered at cyclic supply of wash liquid. It allows to define the amount of wash liquid necessary for achievement of the demanded concentration of water-soluble impurities into a final product, time of carrying out components of a cycle, quantity of cycles, concentration of water-soluble impurities in wash liquid and in a settling at the end of each cycle. Identification of the developed techniques is carried out and results of check of their adequacy to actual process are given in industrial plants. The divergence between design and experimental values was 10,4%.

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**Surface-active properties of polysiloxane-polyoxyalkylene copolymers**

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**Keywords:** polysiloxane-polyoxyksialkylene, copolymer,wettability, pourability, surface tension, polydimethylsiloxane, surface energy spreading.

The wetting ability of the graft polymethylsiloxan-polyoxyalkylene copolymers (PSPE) and their aqueous solutions on the steel, glass and polycarbonate surfaces was investigated. The wettability evaluation was determined by wetting angle and surface tension, the flowing work (energy) was calculated by Wf = -F , where F mN/m ratio Harkins. PSPE like PMS have a very high flowability and for Wf approximately zero values. Like nonionic surfactants, addition of PSPE several-fold decrease the σ and Wf of aqueous solutions. Some of them exhibit the properties of superlatively with Wf ≈ 0. High wetting ability and low surface tension make them extremely promising compounds for use as an additive in aqueous polymeric compositions or as spreading agents, wetting, super wetting agents and emulsifiers.

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**Determination of mass transfer coefficients from bubbles in the liquid and the efficiency of the process in the turbulent regime**

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Using the concept of pseudo-laminar boundary layer considered applying of the equation based on the model of the diffusion boundary layer Levich, to calculate the mass transfer from the bubbles with different modes of motion. The main parameter of the equation is the shear stress at the interface of the bubble and the dimensionless thickness of the viscous sublayer. The expressions for the shear stress on the surface of the bubbles with the free movement and in the turbulent cocurrent with the liquid in the channels with elements of intensification (ring rolling and chaotic nozzle) are obtained. The prospects of application of turbulent flow mixer with random packing for mass transfer processes with gas-liquid medium are shown. The results of the calculation of mass transfer efficiency in removing dissolved carbon dioxide, from water are given.

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