of the maximum concentration is 97 % wt. was obtained from raw materials with a concentration of aromatic substances entering the sulfonation reactor with linear alkyl benzene, not exceeding 5.9 % wt. According to the calculations, with an increase in the concentration of aromatic compounds in the raw material, it is necessary to increase the consumption of combusted sulfur.

Thus, the use of mathematical models to control and optimize the production of alkylbenzenesulfonic acid makes it possible to increase the duration of continuous operation of the reactor, reduce the cost of washing, increase the yield of alkylbenzenesulfonic acid in the product stream, and optimize the entire multistage process.

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Table 1. Dependence of the optimal consumption of combusted sulfur on the content of aromatic hydrocarbons in the feed

Optimal consumption of combusted sulfur, kg/h	376.4	377.1	378	379	380.1	381.1
Concentration of aromatic hydrocarbons, kg/h	252	288	310	337	352	389

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SYNTHESIS OF ZEOLITE MATERIALS AND STUDY OF THEIR PROPERTIES

М.О. Патз
д.т.н., профессор Е.Н. Ивашкина
National Research Tomsk Polytechnic University
634050, Russia, Tomsk, Lenin Avenue, 30, matheus_osmar@hotmail.com

Zeolites are porous materials with high adsorption capacity. This characteristic is the main, distinctive characteristic of them, thus explaining the widespread use of zeolites.

The synthesis of zeolites is carried in a basic solution. The synthesis can be performed in one or two steps. Nowadays, a two steps method is more suitable for higher conversion. The main components responsible for the synthesis are aluminum and silicon, as can be seen in Figure 1:

The compensation cation is usually referred as sodium (Na^+) or potassium (K^+) since the higher interaction between these components with silicon and aluminum is responsible for the stability of the desirable zeolite.

The two steps method consists in a variation of one step method – hydrothermal synthesis-, with the addition of an alkali fusion, where interaction between Silicon (Si) and Al (Aluminum) is increased. Thus, improving the conversion rate of the method.

Furthermore, according to the main components of the zeolite, a list of raw materials that have suitable qualifications is performed, encouraging the use of the ecological factor to reduce pollution.

One of the main sources of the raw materials are power plants which convert solids into energy. In the modern time, not only coal is used as a source of energy but also rice husk, or clay. But the main characteristics of the ideal source of minerals remain as high concentration of Si and Al, and lower concentration of iron and calcium. Within the reaction between NaOH, iron and calcium, if present in high quantity in the sample, compete with the

minerals Al and Si to react and be removed from the ash.

Considering the Russian Federation, the main materials suitable with availability and characteristics favorable for the synthesis are the coals from the Seversk and Kemerovo regions.

Therefore, synthesis of Y zeolite is possible. Since zeolite are porous media. To assess the characteristics of the material formed, various methods are employed. The main methods employed are: Scanning Electron Microscopy (SEM), XRF (X-ray fluorescence analysis), XRD (X-Ray Diffraction analysis) and BET (Brunauer–Emmett–Teller).

After characterization of the material formed, optimization of the process is carried under the identification of the main parameters of the synthesis process, especially time and temperature of the alkaline fusion and hydrothermal synthesis.

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VOLTAMMETRIC DETERMINATION OF INDOMENTHYL

M.A. Pavlenko[1], K.A. Leonov[2]
Scientific supervisor – PhD, assistant professor O.I. Lipskikh
Language expert – PhD, Head of Department of Foreign Languages L.M. Bolsunovskaya

[1]National Research Tomsk Polytechnic University
634050, Russia, Tomsk, Lenin Avenue, 30

[2]Innovative Pharmacology Research, LLC (IPHAR, LLC)
634021, Russia, Tomsk, 79/4 Elizarovykh Str., map27@tpu.ru

The modern pharmaceutical market is characterized by high rates of development. Anti-inflammatory drugs are considered to be one of the most popular medicines. To minimize the side effects of nonsteroidal anti-inflammatory drugs (NAD) as well as to increase their effectiveness, prodrugs are being actively developed. This is a chemically modified form of a drug (ether, salt, ether salt, etc.), which turns into the drug itself in the biological environment as a result of metabolic processes [1].

In this paper Indomenthyl (IML; IPHAR, LLC, Tomsk) was chosen as the test object. The molecule of IML represents indomethacin, which is bound to menthol by covalent bonds (Fig. 1). IML is a white crystalline powder without odor. The best solvent for IML is dimethylformamide.

The purpose of this work is selection the conditions of the electrochemical determination of IML for the subsequent development of a method for its determination. For experimental studies, a TA-2 voltammetric analyzer was used (Tomanalyt, Tomsk, Russia). The electrochemical cell consisted of 20 cm^3 quartz cups, which were installed in a special hole on the platform of the voltammetric

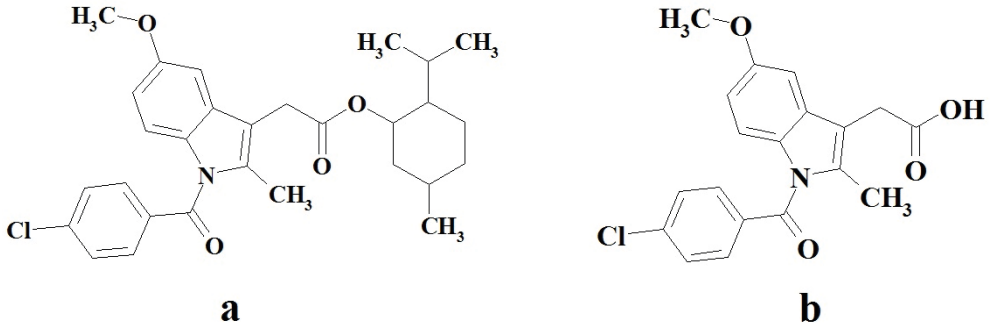

Fig. 1. *Chemical structure of indomenthyl*