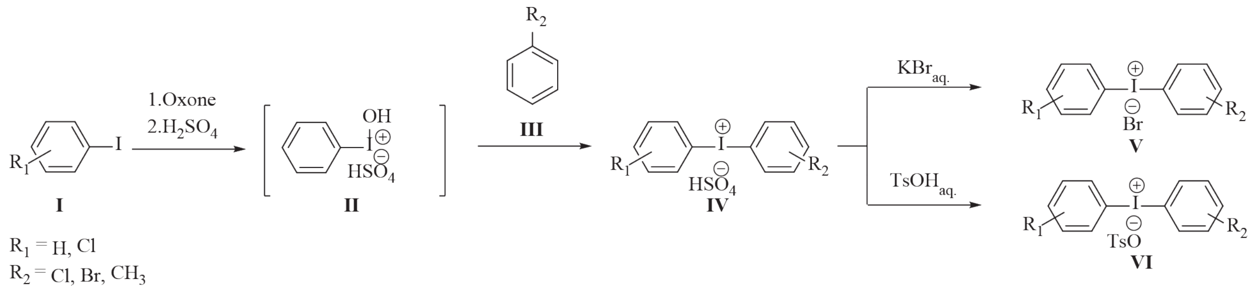
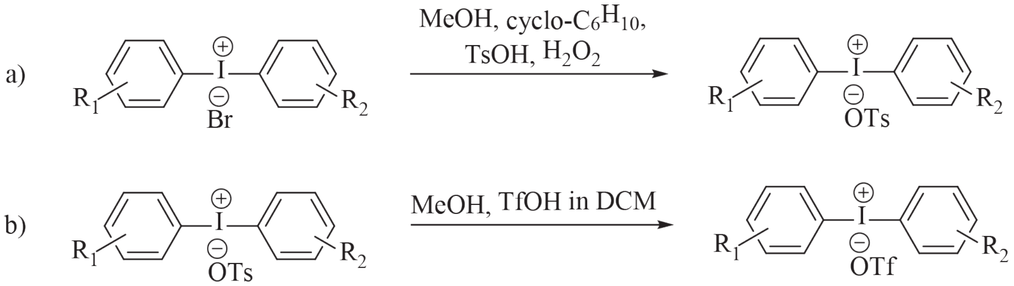


Fig. 1. *Scheme of diaryliodonium salts synthesis*



Scheme 1.

convenient precursors for preparing of diaryliodonium salts with other counter – ions via oxidative anion metatheses. Thus, we succeeded to obtain diaryliodonium tosylates from the corresponding bromide (a) and diaryliodonium triflate from tosylate (b):

The prepared products can find application as initiators for some polymerization processes and also as tracers for positron – emission tomography (PET).

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EFFICIENCY EVALUATION OF CATALYTIC REFOTMING IN THE STUDY OF FEEDSTOCK COMPOSITION WITH THE USE OF MATHEMATICAL MODEL

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In this work, the catalytic reforming unit monitoring of one of the refineries in Russia using mathematical modeling was performed . For assessing the quality of feedstock, the feedstock index (1) criterion was defined. After the feedstock composition analysis with a mathematical model, it was revealed that the feedstock index does not allow to assess the influence of the feedstock composition on the reformer operation adequately. Moreover, it cannot give a fairly complete picture of processes taking place in the reactor, as far as it's calculated only on the basis of total naphthenic and aromatic hydrocarbons content in the feedstock:

$$\text{Feedstock index} = A + 0.85N, \quad (1)$$

where A and N are the content of aromatic and naphthenic hydrocarbons in hydroprocessed feedstock respectively, % wt.

However, it is known, that the straight-run gasoline fraction, which is the feedstock for the reforming process, is a continuous multicomponent mixture that contains in addition to naphthenic and

Table 1. The technological mode and the plant performance for two studied dates

Characteristic	Date	
	04.02.2016	04.04.2016
Activity, relative units	0.98	
Among of processed feedstock, t	292071	
Inlet temperature, °C	488	
Feedstock Consumption, m^3/h	156	
The multiplicity of circulation, m^3/m^3	1315.9	
Hydrogen, % in HCG	84.8	
Degree of isomerization	38	33
Degree of aromatization	22.51	19.38
Aromatic hydrocarbons in the catalyst, % mass.	64.98	62.13
Octane number (RM)	96.3	96.6
Hydrogen yield, %	2.9	2.77
Coke on catalyst, % wt.	1.02	0.84
Reformate Yield , % wt.	91.68	88.17
Paraffins/(Naphtenes+Aromatics) in the feedstock	1.18	1.24
n-Paraffins/iso-Paraffins in the feedstock	0.82	0.73

aromatic, also normal and iso-structure paraffinic hydrocarbons, which inevitably are subjected to transformation as a result of industrial processing.

In the course of the work, the feedstock index coincided for two different dates of the feedstock cycle.

The calculations of the plant performance (octane number, product yield, coke content on the catalyst surface, degree of aromatization and isomerization) also differ significantly for two dates under the same process conditions (catalyst activity, raw material consumption, inlet temperature, etc.) (Table 1).

From Table 2 we can see that for two different dates the octane numbers are slightly different, however, the yield of reformate and coke content on the catalyst surface are different for these process conditions with 3.51 % and 0.18 % wt., respectively. Accordingly, that can be significant at large volumes of industrial feedstock processing, at which it is necessary to adhere both quantity and economic indicators of the obtained product. After all, the smaller product yield with the same feedstock volume and the same process conditions indicates processing inefficiency , and an increase of coke content on the catalyst surface under other equal conditions, can lead to an the catalyst activity reduction acceleration and, accordingly to decrease the regeneration cycle. This, in turn, leads to additional expenses involved inthe marketable commodities production.

Thus, the studies above confirm the need of relevance of the processed feedstock composition industrial reformer operation predicting with the use of mathematical model. This, in turn, will provide more complete and accurate data for industrial installations operation both for analytical and prognostic purposes. In addition, careful consideration of the composition will allow selecting the process parameters in which the production of petroleum commodities will be the most economically profitable at minimum cost.

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