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У збірці опубліковано тези наукових доповідей учасників **II Симпозіуму “Сучасні проблеми нанокаталізу” NANOCAT-2017** за участю закордонних вчених, організованого відділенням хімії Національної академії наук України, Інститутом фізичної хімії ім. Л.В. Писаржевського НАН України та Науковою радою ІАН України з проблеми «Нанохімія» (м. Київ, 24-29 вересня 2017 р.).

Представлені матеріали висвітлюють останні досягнення в галузі нанокаталізу, що проводяться у провідних наукових центрах України, Азербайджану, Білорусі, Вірменії, Казахстану, Німеччини, Польщі, Росії, Угорщини, Фінляндії, Франції, Чехії та інших країн. Тематика доповідей охоплює сучасні фундаментальні та прикладні проблеми нанокаталізу: розмірні ефекти в каталізі, отримання та дизайн нанофазних матеріалів для каталізу, нанофазні матеріали для гетерогенно-каталітичних процесів у газовій фазі та розчинах, нанофазні каталізатори для синтезу нових функціональних речовин і матеріалів хімічного виробництва, а також нанофотокаталіз.

Видання призначене для наукових співробітників, інженерів та викладачів вищих навчальних закладів, аспірантів та студентів хімічних спеціальностей.

Видання підготовано до друку Організаційним комітетом Симпозіуму.

Матеріали друкуються в авторському варіанті без редагування та рецензування.

Book of Abstracts contains the scientific presentations of participants of the **2nd Symposium “Modern problems of nanocatalysis” NANOCAT-2017** organized by the L.V. Pisarzhevsky Institute of Physical Chemistry of the National Academy of Sciences of Ukraine, Department of Chemistry of the National Academy of Sciences of Ukraine and the Scientific Council of the National Academy of Sciences of Ukraine on the problem of “Nanochemistry” (Kyiv, September 24-29, 2017).

The presented materials highlight the latest advances in nanocatalysis by the leading scientific centers of Ukraine, Azerbaijan, Belarus, Armenia, Kazakhstan, Germany, Poland, Russia, Hungary, Finland, France, Czech Republic, and other countries. The subject covers modern fundamental and applied problems of nanocatalysis: dimensional effects in catalysis, production and design of the nanophase materials for catalysis, the nanophase materials for the heterogeneous catalytic processes in the gas phase and solutions, nanophase catalysts for the synthesis of the new functional substances and materials of chemical production, as well as nanophotocatalysis.

The publication is intended for scientific staff, engineers and lecturers of higher educational institutions, post-graduate students, and students of chemical specialties.

The publication is prepared for publication by the Organizing Committee of the Symposium. The materials are printed in the author's version without editing or reviewing.

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POSTER PRESENTATIONS

INFLUENCE OF ACTIVATION ON THE FORMATION OF NANOSTRUCTURE ON CHROMIUM IRON/ZINC CATALYST

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Freshly prepared olefin dehydrogenation catalysts generally have low catalytic activity and are subjected to further processing before contacting. Preliminary treatment of iron-containing catalysts is carried out by air, steam, inert or reducing gas.

During the preparation of chromium oxide iron zinc catalyst, the main components are mixed in a reduction reactor in the following sequence: zinc oxide is dissolved firstly in chromic acid, iron hydroxides are then added later. In this work, the resulting mixture was reduced by molasses. The recovered mass calcined at different temperatures has a difference in the phase composition, which affects the formation of the nanostructure and the activity of the catalyst prepared.

The activity of the catalyst does not depend on the activation temperature: during the preparation of the oxide catalyst, a calcination temperature of $T = 923$ K or more was used to prepare the catalyst, although a dependence on temperature was observed, when there was a reduction in calcination temperature to 823 K.

The research results of catalyst activity, prepared from oxides calcined at 1000 K, are presented in the table. Raw material of butylene was used, the selectivity was calculated from the yield of divinyl.

Table. Dependence of catalyst activity on temperature and activation time

Activation temperature, K	Activation time, h	Degree of transformation, % mass	Selectivity % mass	Specific surface area, m ² /g
823	2	32.0	85.4	26.6
823	5	31.3	80.8	21.1
823	10	30.6	76.1	20.6
923	2	28.9	79.7	20.6

The data in the table show that the catalyst prepared from the reduced mass calcined at 823 K has greater activity and selectivity than the catalyst calcined at 923 K. Increasing the activation time from 2 to 10 hours also leads to a decrease in activity by 4.4%, selectivity - 10.9% and specific surface - 22.6%.

The highest activity of the catalyst corresponds to the maximum content of $ZnCr_2O_4$ and $\gamma-Fe_2O_3$ in it. It was found that when the activation temperature increases from 823 K to 923 K, the content of $\gamma-Fe_2O_3$ in the catalyst decreases as a result of its transition to $\alpha-Fe_2O_3$. The content of $ZnCr_2O_4$ and $\gamma-Fe_2O_3$ in the catalyst with a calcination temperature of 823 K is greater than in the catalyst prepared from the reduced mass when calcining above 893 K.

The results obtained allow us to conclude that the activity and lifetime of the catalyst can be increased by lowering the activation temperature to 823 K.

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