

USSR/ Chemistry - Hydrocarbon oxidation

Card 1/1 : Pub. 147 - 4/21

Authors : Ioffe, I. I.; Levin, Ya. S.; Sokolova, E. V.; Kironich, I. G.; and Shirokova, N. I.

Title : Study of the kinetics and mechanism of vapor-phase incomplete oxidation of benzene with molecular oxygen

Periodical : Zhur. fiz. khim. 8, 1386-1394, Aug 1954

Abstract : The kinetics of benzene oxidation with molecular O<sub>2</sub> was investigated at high hydrocarbon concentrations and relatively low temperatures and pressures. It was found that the kinetics of oxidation reaction corresponds to the kinetics of a degenerated explosion. The relation between the rate of reaction, benzene:oxygen ratio and partial O<sub>2</sub>-pressure, was established. The inhibiting effect of the quartz surface on the volumetric reaction of benzene oxidation, is discussed. Six references: 2-USSR and 4-English (1929-1950). Tables; graphs; drawings.

Institution : The K. E. Voroshilov Scientific Research Institute of Organ. Semi-Products and Dyes

Submitted : July 3, 1953

USSR/Chemistry - Hydrocarbon oxidation

Card 1/1 : Pub. 147 - 5/21

Authors : Ioffe, I. I.; Levin, Ya. S.; and Kronich, I. G.

Title : Induction of the reaction of benzene oxidation

Periodical : Zhur. fiz. khim. 8, 1395-1398, Aug 1954

Abstract : The inductive effect of hydrocarbons other than benzene on the oxidation of benzene, was investigated. The principle problems of induction and the circle of compounds found to be most suitable for such induction, are listed. The intensity of benzene oxidation was estimated by the amount of phenol formed as a product of oxidation. The effect of adding ozone to the reaction mixture, is described. Five references: 2-USSR; 1-USA and 1-English (1940-1954). Tables; drawing.

Institution : The K. E. Voroshilov Institute of Organic Semi-Products and Dyes, Moscow

Submitted : July 25, 1953

IOFFE, I. I.

USSR/Chemistry - Oxidation

Card 1/1

Author : Ioffe, I. I.

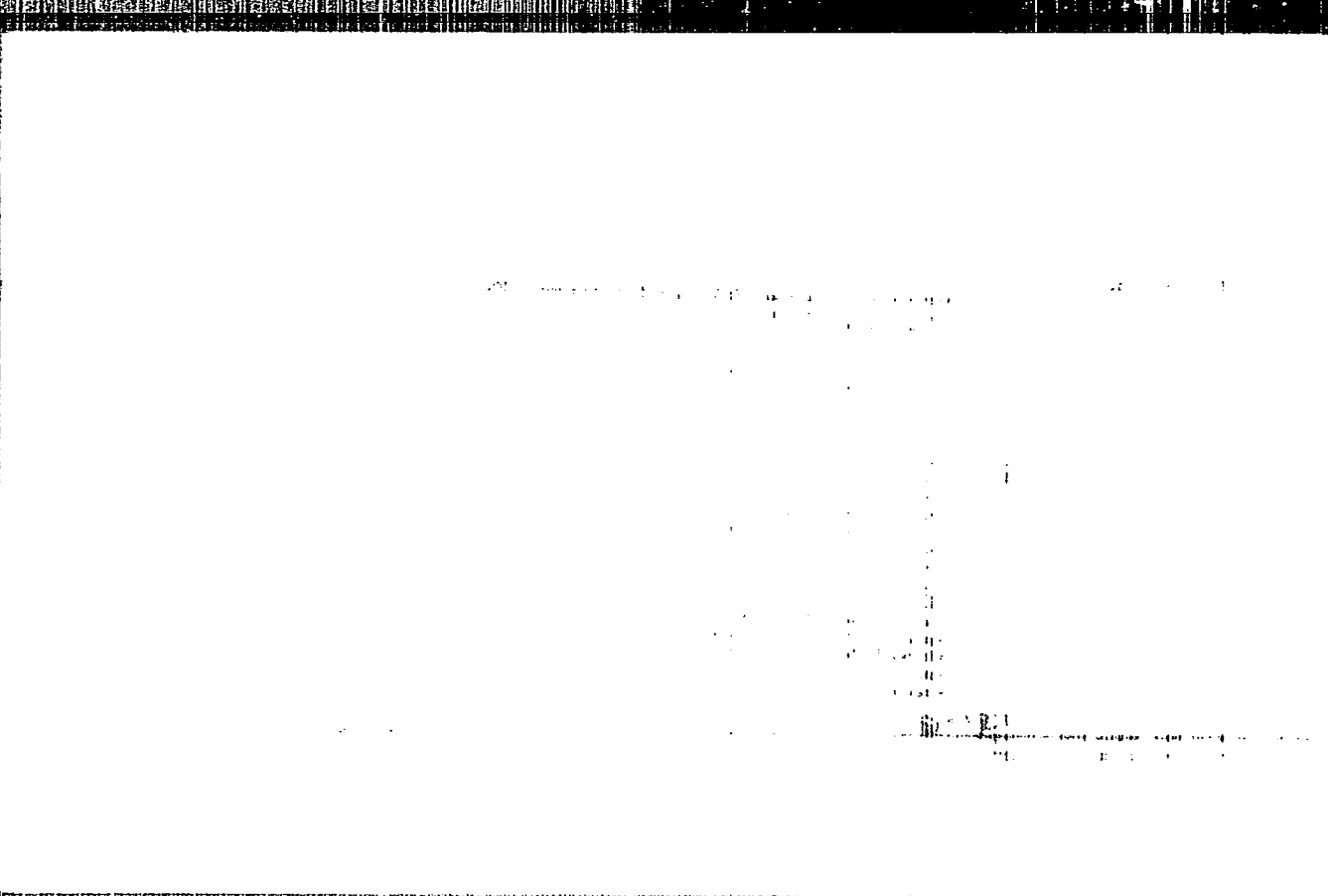
Title : Chain oxidation of phenol

Periodical : Zhur. Fiz. Khim., 28, Ed. 5, 772 - 779, May 1954

Abstract : The reaction of vapor-phase thermal oxidation of phenol was investigated at 610, 630 and 650° and the composition of the oxidation products (diphenyleneoxide) was established. The reaction in its initial stages corresponds to the equation of N. N. Semenov chain reactions. The process of the quartz surface, which inhibits the volumetric chain and catalytic surface reaction leading to complete oxidation, is explained. Treatment of the surface with hydrogen fluoride results in the poisoning of the catalytically active surface centers, chains cease to form on the surface and the rate of reaction is changed. Five references: 3-USSR, 1-German patent since 1906, 1-German ref. Table, graphs.

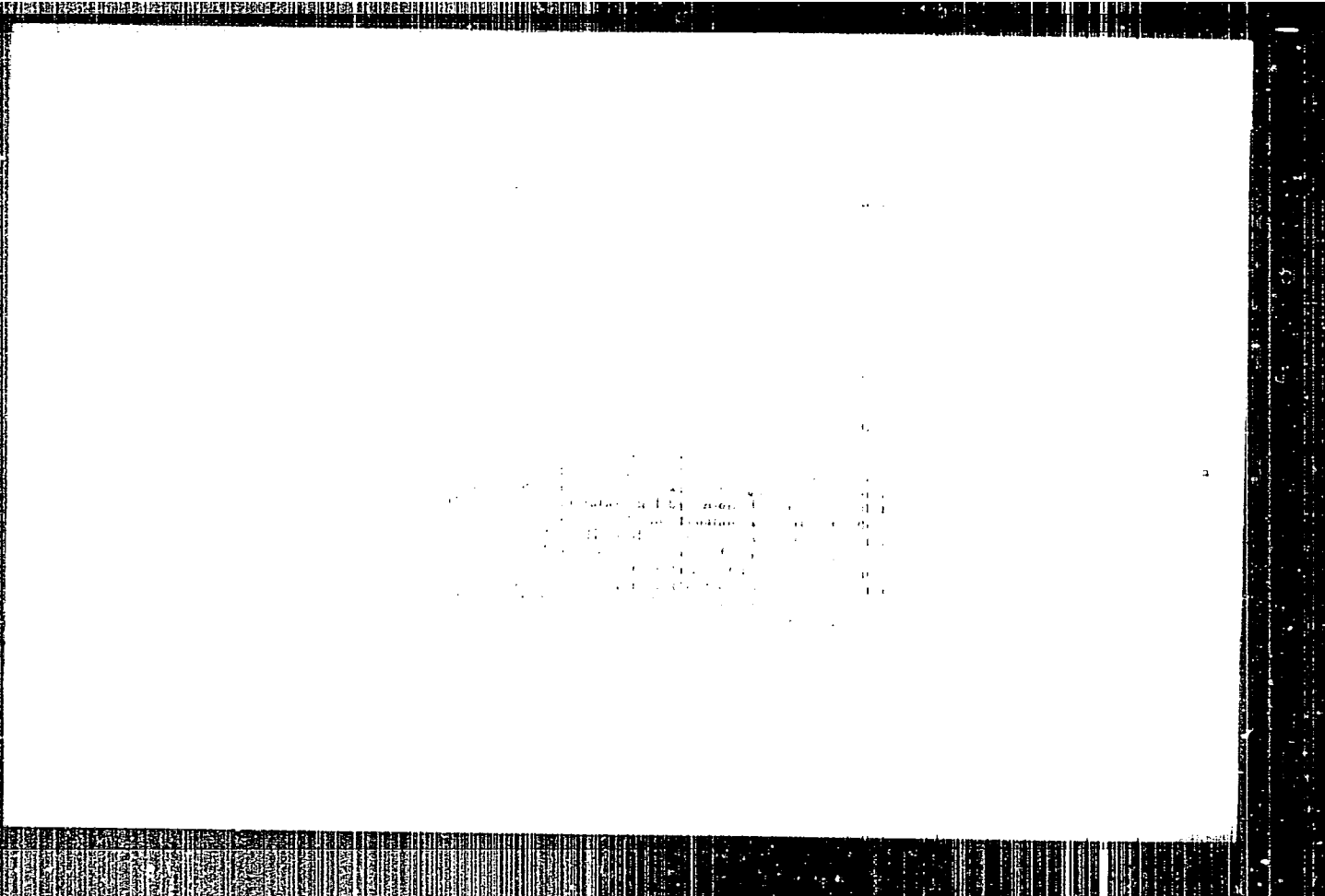
Institution : The K. E. Voroshilov Institute of Organic Semi-products and Dyes, Moscow

Submitted : April 10, 1953









Ioffe, I. I.

USSR/Chemistry - Oxidation

Card 1/1 Pub. 147 - 5/27

Authors : Ioffe, I. I.

Title : The mechanism of incomplete oxidation of benzene

Periodical : Zhur. fiz. khim. 28/9, 1555-1561, Sep 1954

Abstract : The mechanism of vapor-phase oxidation of benzene, leading to the formation of phenol and found to be based on the chain character of the oxidation process participated by the phenyl and peroxide radicals, is explained. The magnitude of the activation energy needed for the formation of the phenyl peroxide radical was established. The mechanism of further phenol conversion during the process of vapor-phase oxidation of benzene is described. Equations expressing the rate of phenol and diphenyl formation and the rate of phenol conversion are included. Six references: 3-USSR; 2-English and 1-USA (1935-1954). Table.

Institution : The K. E. Voroshilov Institute of Organic Semi-Products and Dyes, Moscow

Submitted : July 25, 1953



USSR/Chemistry - Physical chemistry

Card 1/1 Pub. 147 - 3/27

Authors : Ioffe, I. I., and Sherman, Yu. G.

Title : Study of the kinetics and mechanism of vapor-phase oxidation of aromatic hydrocarbons. Part 5. Kinetics of oxidation of naphthalin over a mixed vanadium catalyst

Periodical : Zhur. fiz. khim. 28/12, 2095-2106, Dec 1954

Abstract : The study of naphthalin oxidation kinetics with air over a mixed vanadium-potassium-sulfate catalyst was conducted with a thorough analysis of the resultant reaction products. A special isothermal method developed for this investigation is described. Formula determining the rate of reaction of naphthalin oxidation is included. It was established that at 300 - 400° the reaction is shifted into the internal-diffusion zone and the lower temperature limit of this transition increases with the increase in the basic concentration of the naphthalin. The rate of oxidation of the surface layer of the catalyst, which is regenerated during reaction with naphthalin molecules, and the desorption of reaction products are considered the determinant factors of the oxidation process. Five references ; 3 USSR and 2 USA (1935-1952). Tables; graphs; drawings.

Institution: The K. E. Voroshilov Scientific Research Institute of Org. Semiproducts and Dyes.

Submitted : December 11, 1953

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The principal problems in the kinetics and reaction mechanisms of vapor-phase oxidation of aromatic hydrocarbons. L. I. Isaia. *Voprosy Khim. Kinetiki, Kataliza i Reaktsionnoi Sposobnosti Akad. Nauk S.S.S.R.* 1955, 232-40. Two types of incomplete vapor-phase oxidations of aromatic hydrocarbons are discussed: (1) the homogeneous thermal oxidation process ( $C_6H_6 + O_2$ ), and (2) the heterogeneous catalytic processes on the surface of the elements of the oxides of the Group V-VII metals (naphthalene, *p*-xylene, 1- and 2-methylnaphthalene, phenanthrene, and indene). The aromatic, like the paraffinic, hydrocarbons are oxidized in heterogeneous processes in a series of parallel and parallel-consecutive reactions, and the formation of incomplete oxidation products may not be the result of their formation as intermediate reaction products. W. M. Sternberg

AM

"APPROVED FOR RELEASE: 08/10/2001

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**CIA-RDP86-00513R000618620018-9"**

AUTHORS: Malyshev, A. I., Ioffe, I. I. 75-13-3-25/27

TITLE: Potentiometric Titration of Benzoquinone in a Maleic Acid Solution  
(Potentsiometrisheskoye titrovaniye benzokhinona v rastvore maleinovoy kisloty)

PERIODICAL: Zhurnal analiticheskoy khimii, 1958, Vol. 13, Nr 3, pp. 374-375 (USSR)

ABSTRACT: In the catalytic oxidation of benzene with vanadium catalysts benzoquinone (Reference 1), the quantitative determination of which is of interest for the control of the production of maleic acid, also forms beside maleic acid, the chief product of the reaction. Ezymkowski (Rzhimkovskiy) (Reference 2) had worked out a method for the determination of benzoquinone by which the authors of the present paper, however, did not obtain any positive results. For the potentiometric titration of the dark-colored solutions forming in the oxidation the authors employed the usual iodimetric method for the determination of benzoquinone (Reference 3). Benzoquinone reacts with potassium iodide in

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Potentiometric Titration of Benzoquinone in a Maleic  
Acid Solution

75-13-3-25/27

an acid solution under formation of free iodine and hydroquinone. The liberated iodine was potentiometrically titrated with thiosulfate, a distinctly marked potential drop occurring on this occasion. The results show a good agreement. The whole determination only lasts several minutes. As a compensation scheme in the potentiometric titration possesses a higher reliability (Reference 4), a potentiometer of type LP-5 was used. The redox potential was measured by a platinum electrode with reference to a saturated calomel electrode. At a content of benzoquinone in the order of magnitude of 0,0005 mol the error of this determination does not exceed 3% (relatively). The determinations were performed at 20-50°C. 1 ml of a 0,1n thiosulfate solution corresponds to 0,0054 g benzoquinone. Formaldehyde exerts no influence upon the determination of benzoquinone. A direct potentiometric titration of benzoquinone with thiosulfate is not to be recommended in the case under review. There are 1 figure, 1 table, and 8 references, 6 of which are Soviet.

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Potentiometric Titration of Benzoquinone in a Maleic Acid Solution 75-13-3-25/27

ASSOCIATION: Nauchno - issledovatel'skiy institut organicheskikh polu-produktov i krasiteley im. K. Ye. Voroshilova, Moskva (Moscow, Scientific Research Institute for Organic Intermediate Products and Dyes imeni K. Ye. Voroshilov)

SUBMITTED: April 9, 1957

1. Benzoquinone--Determination 2. Maleic acid--Chemical analysis

Card 3/3



**AUTHORS:** Ioffe, I. I., Vol'kenshteyn, F. F. 20-118-4-34/61

**TITLE:** The Trend of Contact Oxydation Reactions on  
Semiconducting Catalysts (Benzene Oxydation Serving as  
an Example)  
(K voprosu o napravlenii reaktsii kontaktnogo okisleniya  
na poluprovodnikovyykh katalizatorakh (na primere okisleniya  
benzola))

**PERIODICAL:** Doklady Akademii Nauk SSSR, 1958, Vol. 118, Nr 4,  
pp. 747-750 (USSR)

**ABSTRACT:** The authors here examine the phenomena mentioned in the  
title, from the aspect of the theory of catalysis, which  
was developed by F. F. Vol'kenshteyn (reference 5,6,7).  
Convenient objects for the investigation of the mechanism  
of the process are the simplest aromatic compounds  
(benzene, naphtalene), because at them sharply marked  
trends in the heterogeneous-catalytic and homogeneous  
reactions are observed. The authors suppose that it is  
possible to make various assumptions on the possible  
mechanism of the oxydation of benzene on electron-

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The Trend of Contact Oxydation Reactions on Semiconducting Catalysts (Benzene Oxydation Serving as an Example) 20-118-4-34/61

semiconductors and Hole-semiconductors (e.g. vanadium pentoxide and cupric oxide, or cuprous oxide). Here, the authors proceed from the assumption that in case of the adsorption of benzene one of the bindings in the benzene molecule is ruptured and that the valence which has become free in this way is saturated by the free valence of the catalyst. Here are two and only two possibilities: In case of the adsorption of the benzene molecule either a C-H-binding or a C-C-binding can be ruptured. As adsorber here a crystal of the type  $M_m R_r$  is examined (M denoting a metal and R a metalloid), which is regarded to be built up of the ions  $M^{+p}$  and  $R^{-q}$  ( $pm = rq$ ). Most of the semiconductors used as catalysts (oxides, sulfides) may have a lattice of this type. First the adsorption is investigated here, in the case of which a C-H-binding is ruptured. In this case the adsorption leads to the dissociation of the benzene molecule into 2 ions, as is illustrated here schematically. This mechanism is possible in case of electron-semiconductors and also of hole-semiconductors. The

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The Trend of Contact Oxydation Reactions on Semiconducting Catalysts (Benzene Oxydation Serving as an Example) 20-118-4-34/61

difference between these types of semiconductors becomes noticeable in case of the interaction of the compounds, which form on the surface, with the vagrant (bluzhdat') free valences of the catalyst. Thus the electrically neutral radical which is located on the surface, forms on the hole semiconductors, whereas it practically cannot form on electron semiconductors. Then the adsorption of a benzene molecule with the rupture of a C-C-binding is investigated. Also here the process of adsorption leads to the production of a positive and of a negative valence on the surface of the catalyst, whereon the negative valence (hole) remains free and the positive valence (electron) combines with the benzene molecule, retains it on the surface, and transforms it into an electrically charged radical. Such an ion radical, which is located on the surface, practically forms only on electron semiconductors, but on hole semiconductors. The here examined hypothetical mechanism is very much schematized, it only shows the way to the understanding of the action of semiconducting catalysts in the oxydation benzene.

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The Trend of Contact Oxidation Reactions on Semiconducting Catalysts (Benzene Oxidation Serving as an Example) 20-118-4-34/61

There are 7 figures, and 15 references, 11 of which are Soviet

**ASSOCIATION:** Nauchno-issledovatel'skiy institut organicheskikh poluproduktov i krasiteley im. Voroshilova  
(Scientific Research Institute for Organic Semiproducts and Dyes imeni Voroshilov)  
Institut fizicheskoy khimii Akademii nauk SSSR  
(Institute for Physical Chemistry of the AS USSR)

**PRESENTED:** July 8, 1957, by P. A. Rebinder, Member, Academy of Sciences USSR

**SUBMITTED:** April 24, 1957

**AVAILABLE:** Library of Congress

Card 4/4

10(2),5(4)

## AUTHORS:

Ioffe, I. I., Grigorov, A. F.

SOV/64-59-3-13/24

## TITLE:

On the Theory of the Reaction Rate in a Pseudo-liquid Catalyst Layer (K teorii skorostey reaktsiy v psevdoczizhennom sloye katalizatora)

## PERIODICAL:

Khimicheskaya promyshlennost', 1959, Nr 3, pp 57-64 (USSR)

## ABSTRACT:

Although the application of pseudo-liquid catalyst layers (PC) offers advantages, it may on the other hand cause a reduction of the catalyst (C) capacity, i.e. reduce the reaction rate or change the selectivity of (C). Investigations of processes with (PC) (Refs 1-4, 12, 22) which took place recently, mainly dealt with particular questions. Some general properties therefore are examined in the present paper. The supposition that the application of a (PC) eliminates the influence of the diffusion, is often found in publications, but it is wrong. An inhibition of the reaction by means of an outside diffusion is caused by the fact that the diffusion in the (PC) is regulated by the proportion of the gas permeating the layer in the form of little "bubbles", by the linear dimensions of these bubbles and by the diffusion conditions of the gas in the bubbles. An example of the contact oxidation of naphthalene into phthalic acid by means

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On the Theory of the Reaction Rate in a  
Pseudo-liquid Catalyst Layer

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of the air served for constructing a diagram on the influence of the dispersity of (C) on the reaction (A. I. Tishchenko collaborated)(Fig 1). Two equations (3) and (4) are derived which explain the course of the reaction in the (PC), as well as some forecasts regarding the reaction rate (RR). The application of a "compressed" (PC), i.e. of a net on the (PC), proved useful in the naphthalene oxidation mentioned above (Fig 2). An increase in the density of the catalyst particles accelerates the reaction taking place in the diffusion area. One of the linear dimensions (the height) of the gas bubbles mentioned above, is proportional to the distance of the distribution grid, so that an approximate valuation can be carried out with regard to the influence of the height of the (C) layer on the RR. An example shows that an increase of the height of the (C) layer reduces not only its activity, but also the selectivity of the (C). In accordance with publication data (Ref 21) it was found that a mechanical mixture of the gas

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with the moving (C) particles plays a much smaller rôle than the sorption-desorption mechanism. Two border-line cases of the adsorption-desorption mixture are explained, and considerations are given on the activity of the (C). There are 2 figures, 1 table, and 35 references, 13 of which are Soviet.

ASSOCIATION: Nauchno-issledovatel'skiy institut organicheskikh poluproduktov i krasiteley, NIOPIK (Scientific Research Institute for Organic Semiproducts and Dyestuffs, NIOPIK)

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77289  
SOV/63-4-6-23/37

AUTHORS: Ioffe, I. I., Klimova, N. V., Brodskiy, M. S.

TITLE: Brief Communications. The Catalytic Oxidation of Acetophenone Into Benzoic Acid

PERIODICAL: Khimicheskaya nauka i promyshlennost', 1959, Vol 4, Nr 6, pp 799-800 (USSR)

ABSTRACT: The solid acetophenone from phenol-acetone plants is now used as fuel, in the form of phenolic tar. For the preparation of benzoic acid, the above acetophenone was catalytically oxidized both in vapor and in liquid phases. In the vapor phase, oxidation was carried out with air oxygen over a mixture of Va and Mo oxides, tin vanadate, supported on silica gel and chamotte; molar ratio of acetophenone-air 1:30, 1:60, between 200 and 300°. Benzoic acid (32%), maleic acid, and CO<sub>2</sub> were identified. In the liquid phase, oxidation was carried out with air and with pure oxygen, at normal pressure, over Mn, Co, Cu resinsates and strearates. The best results were

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Brief Communications. The Catalytic  
Oxidation of Acetophenone Into  
Benzoic Acid

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obtained by using Mn resinate as catalyst. The optimal conditions were: 150°, rate of oxygen 5 l/min, the ratio catalyst-acetophenone 2 g:1 g/mole. The conversion was 60-65% and the yield 70-75%. Benzoic acid, formic acid, formaldehyde, maleic acid, and CO<sub>2</sub> were identified.

Purified acetophenone was used in both cases (98.5-99% pure). Technical acetophenone inhibited the oxidation. The method of separation of benzoic acid from the reaction products was a preliminary distillation of recovered acetophenone, followed by extraction of benzoic acid with hot water. After recrystallization, the benzoic acid has mp 122° and 99.5% concentration. The yield by the above process was 83%. There are 4 figures; and 3 references, 2 Soviet, 1 U.S. The U.S. reference is: H. A. Riley, A. B. Gray, Org. Synthesis, 15, Nr 9, 67 (1935).

ASSOCIATION:

Voroshilov Scientific-Research Institute of Dyes and Intermediates (Nauchno-issledovatel'skiy institut poluproduktov i krasiteley imeni K. Ye. Voroshilova)

SUBMITTED:

April 29, 1959

Card 2/2

5(4)

AUTHORS:

Ioffe, I. I., Levin, Ya. S., Kronich, I. G.

SOV/76-33-4-18/32

TITLE:

Investigations in the Field of the Kinetics and the Mechanism of the Vapor Phase Oxidation of Aromatic Hydrocarbons (Issledovaniya v oblasti kinetiki i mekhanizma parofaznogo okisleniya aromaticeskikh uglevodorodov). VII. The Effect of Water Vapor on the Thermal Oxidation of Benzene by Molecular Oxygen (VII. Vliyaniye vodyanogo para na termicheskoye okisleniye benzola molekulyarnym kislorodom)

PERIODICAL:

Zhurnal fizicheskoy khimii, 1959, Vol 33, Nr 4, pp 863-868 (USSR)

ABSTRACT:

The investigations of benzene oxidation with an oxygen water vapor mixture were carried out in an apparatus and according to the method of the work reported in reference 2. The water vapor (WV) was introduced into the quartz reactor (volume of 50 or 100 ml) by an automatically operating portioner. In order to examine the specific influence exercised by (WV) parallel investigations were carried out with oxygen-nitrogen mixtures (Table 1). It was found that in the mixtures with (WV) (under the same conditions) a phenol (I) yield which is by 20% higher is obtained. With rising temperature the yield in (I) is reduced (with and without (WV), Table 2). An increase of the reactor volume gives the same yield of (I) at the same degree

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Sov/76-33-4-18/32

Investigations in the Field of the Kinetics and the Mechanism of the Vapor Phase Oxidation of Aromatic Hydrocarbons. VII. The Effect of Water Vapor on the Thermal Oxidation of Benzene by Molecular Oxygen

of conversion of benzene at a simultaneous temperature decrease and a prolonged reaction time (Table 3). The reduction of the ratio benzene/oxygen in the reaction mixture leads to an extension of the process of complete combustion (Table 4). An increase of the relative amount of the (WV) added leads to the general conversion of benzene and increases the yield in (I) (Table 5 for experiments at 725° in a 50 ml reactor). The positive influence exercised by (WV) on the yield in (I) is explained from a point of view already described by way of benzene oxidation (Ref 4). There are 1 figure, 5 tables, and 4 references, 3 of which are Soviet.

ASSOCIATION: Institut organicheskikh poluproduktov i krasiteley im. K. Ye. Voroshilova (Institute of Organic Semi-Products and Dyes imeni K. Ye. Voroshilov)

SUBMITTED: September 25, 1957

Card 2/2



IOFFE, I. I., NIKOLAYEV, Yu. T., BRODSKIY, M. S.

Liquid-phase contact-catalytic oxidation of organic compounds on noble metals. Part 1: Oxidation of phenoxyethanol into phenoxyacetic acid. Kin. i kat. 1 no. 1:125-128 My-Je '60.  
(MIRA 13:8)

1. Nauchno-issledovatel'skiy institut organicheskikh poluproduktov i krasiteley im. K. Ye. Voroshilova, Moskva.  
(Platinum) (Acetic acid) (Ethanol)

S/064/60/000/004/010/021/XX  
B013/B069

AUTHORS: Ioffe, I. I., Pis'men, L. M.

TITLE: Statistical Analytical Method of the Macrokinetics of Processes in the Pseudoliquid Layer of a Catalyst

PERIODICAL: Khimicheskaya promyshlennost', 1960, No. 4, pp. 23-29

TEXT: A statistical method of analyzing the processes taking place in the pseudoliquid layer of a catalyst is described here. The method is based upon a study of the distribution function of the time the gas stays in the layer. The authors wanted to clarify the causes of the specific inhibition of the reaction in the pseudoliquid layer, and to identify the quantitative characteristics of the process taking place therein. A two-phase model, similar to that of Refs. 7 and 8, and consisting of a gaseous and a pseudoliquid phase, was chosen for the analysis of the pseudoliquid layer. The generalized hydrodynamic characteristics of the system - the distribution function of the time of stay in the layer - which is of decisive importance for the investigation

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Statistical Analytical Method of the  
Macrokinetics of Processes in the  
Pseudoliquid Layer of a Catalyst

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of the pseudoliquid layer, can be expressed by the parameters  $h$  and  $\omega$ :  
 $h$  denotes the rate constant of mass exchange between the phases;  $\omega$  is the  
fraction of gas bubbling through. These parameters can be calculated  
on the basis of experimental data from formulas (24), (25), and (28):

$$c_1(t_1) \Delta t = S \exp(-hV/\omega v) \quad (24); \quad c_1(t_2) \Delta t = S \exp[-hV/(1-\omega)v] \quad (25);$$

$\omega = 1 - 1/S \int_{t_1}^{\infty} \Omega(t) dt = S'/S \quad (28)$ .  $c$  - concentration; index 1 - cross  
section of outlet;  $S$  - area under the outlet curve;  $t$  - chart time;  
 $v$  - volume rate of the current;  $V$  - volume of the layer;  $d$  - diameter  
of the apparatus;  $S'$  - area bounded by curves  $\Omega(t)$  and  $c_1(t)$ . The  
method concerned was tested with the system shown in Fig. 2. The  
concentration of the passing gas was measured on its escape from the  
system by means of radioionization. Helium was used for the purpose. The  
air consumption was measured with a coupled diaphragm. The circuit of  
the system was worked out in a way as to ensure the synchronization of  
the pulse emission with the taking of the oscillogram. The distribution

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Statistical Analytical Method of the  
Macrokinetics of Processes in the  
Pseudoliquid Layer of a Catalyst

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functions for an empty volume, for an immobile, and a pseudoliquid layer were determined with an average particle size of  $120\mu$ . The distribution functions were estimated from the "degree of compactness  $\pi$ ". Experimental data allowed the following conclusions: 1) As expected, the immobile layer approaches the conditions of an ideal displacement; 2) turbulent washing in an empty volume is considerable; 3) gas mixing in a short pseudoliquid layer at low linear velocities is less appreciable than in an immobile layer; 4) the "degree of compactness" of the distribution function drops sharply with an increase of the suspended layer. This fact cannot be explained by a single-phase model.  $h$  and  $\omega$  are calculated for the pseudoliquid layer at a height-to-diameter ratio of 3.4. The theoretical conclusions and the correctness of the chosen model were confirmed. Proceeding from a two-phase model, the process can be calculated from ordinary differential equations of the material balance, which are written for every individual phase. Using  $h$  and  $\omega$  it is possible to set up a dimensionless criterion which embraces the hydrodynamic and kinetic factors, and characterizes the performance of

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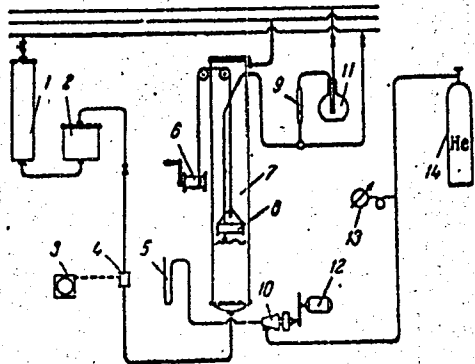


Statistical Analytical Method of the  
Macrokinetics of Processes in the  
Pseudoliquid Layer of a Catalyst

S/064/60/000/004/010/021/XX  
B013/B069

the system, as well as the range of the reaction course:

$\Phi = h(1 - \omega)/k'\sigma\omega$ .  $k'$  denotes the rate constant of the chemical surface reaction;  $\sigma$  is the specific surface of the catalyst. There are 7 figures, 1 table, and 8 references: 4 Soviet and 3 US.



Legend to Fig. 2: 1: oil separator;  
2: receiver; 3: counter; 4: coupled  
diaphragm; 5: mercury pressure gauge;  
6: regulator; 7: column; 8: ionization  
chamber; 9: rotameter; 10: cock;  
11: volume; 12: motor with reduction  
gear; 13: diaphragm pressure gauge;  
14: gas container.

Card 4/4

IOFFE, I.I.; PIS'MEN, L.M.

Statistical method for analysing the macrokinetics of  
processes arising in the fluidised bed of a catalyst.  
Khim.prom. no.4:287-293 Je '60. (MIRA 13:8)  
(Catalysis) (Fluidisation)

IOFFE, I.I.; DOBROVOL'SKIY, S.V.; LEVIN, Ya.S.; GRIZIK R.M.;  
KAMBULOVA, V.A.; KRONICH, I.G.; SOKOLOVA, Ye.V.

Similarity of reactions catalyzed by liquid and solid acids.  
Probl. kin. i kat. 10:294-297 '60. (MIRA 14:5)

1. Nauchno-issledovatel'skiy institut organicheskikh poluproduktov  
i krasiteley.

(Acids) (Naphthylamine) (Naphthol)

IOFFE, I.I.: LEVIN, Ya.S.

Manufacturing phenols by the direct oxidation of benzene. Org.  
poluprod. i kras. no.2:88-117 '61. (MIRA 14:11)  
(Phenols) (Benzene)

DOBROVOL'SKIY, S.V.; GRIZIK, R.M.; KRONICH, I.G.; IOFFE, I.I.

Catalytic aryl amination of  $\beta$ -naphthol. Org. poluprod. i kras.  
no.2:148-150 '61. (MIRA 14:11)

(Amination) (Naphthols)

IOFFE, I.I.; GRIGOROV, A.F.; RUMYANTSEV, R.P.; IVANOVA, E.T.

Effect of macrokinetic factors on the oxidation rate of naphthalene  
in a fluidized catalyst bed. *Khim. prom.* no.4, 258-261 Ap '61.  
(MIRA 14:4)

(Naphthalene)

IOFFE, I.I.; NIKOLAYEV, Yu.T.

Liquid phase contact-catalytic oxidation of organic compounds on noble metals. *Kin. i kat.* 2 no.2:245-246 Mr-Apr '61. (MIRA 14:6)

1. Nauchno-issledovatel'skiy institut organicheskikh poluproduktov i krasiteley imeni K. Ye. Voroshilova.  
(Acetic acid) (Ethers)  
(Oxidation)

SLAVINSKAYA, B.A.; SHIMANSKAYA, M.V.; GILLER, S.A.; IOFFE, I.I.

Kinetics of the vapor-phase contract oxidation of furfurole.  
Kin. i kat. 2 no.2:252-257 Mr-Apr '61. (MIRA 14:6)

1. Institut organicheskogo sinteza AN Latvyskoy SSR, Riga i  
Nauchno-issledovatel'skiy institut organicheskikh poluproduktov  
i krasiteley imeni K. Ye. Voroshilova.  
(Furaldehyde) (Oxidation)



PIS'MEN, L.M.; IOFFE, I.J.

Reaction kinetics of flow systems. Kin.i kat. 2 no.4:606-621  
Jl-Ag '61. (MIRA 14:10)

1. Nauchno-issledovatel'skiy institut organicheskikh poluproduktov  
i krasiteley imeni K.Ye.Voroshilova.  
(Hydrodynamics) (Systems (Chemistry))

KAZANSKIY, V.B.; YEZHKOVA, Z.I.; LYUBARSKIY, A.G.; VOYEVODSKIY, V.V.;  
IOFFE, I.I.

Electron paramagnetic resonance study of the structure of  
vanadium-molybdenum oxide catalysts. *Kin.i kat.* 2 no.6:862-866  
N-D '61. (MIRA 14:12)

1. Institut khimicheskoy fiziki AN SSSR i Institut organicheskikh  
poluproduktov i krasiteley imeni K.Ye. Voroshilova.  
(Catalysts--Spectra)

С. 1190

28293  
S/076/61/035/010/012/015  
B106/B110

AUTHORS: Ioffe, I. I., Yezhkova, Z. I., Lyubarskiy, A. G. (Moscow)

TITLE: Catalytic activity of mixed vanadium oxide catalysts in vapor phase oxidation of organic compounds

PERIODICAL: Zhurnal fizicheskoy khimii, v. 35, no. 10, 1961, 2348 - 2351

TEXT: The authors studied the catalytic activity of vanadium oxide, molybdenum oxide, and vanadium oxide - chromium oxide catalysts in the vapor phase oxidation of benzene and that of vanadium oxide, molybdenum oxide, titanium oxide, phosphorus oxide catalysts in the vapor phase oxidation of furfural to maleic anhydride. The authors attempted to clarify the mechanism of the activating effect of oxide additions of other elements on the catalytic activity of vanadium pentoxide. The catalysts for furfural oxidation were produced by aspirant V. A. Slavinskaya (In-t organicheskogo sinteza AN Latv. SSR (Institute of Organic Synthesis of the Academy of Sciences Latvinskaya SSR)). The catalysts were analyzed by X-ray diffraction, moreover, catalytic activity and selectivity of the catalysts were determined in continuously circulating and in continuous

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B106/B110

Catalytic activity of...

flow plants. The authors thank V. V. Voyevodskiy and V. B. Kazanskiy for taking the epr spectra for part of the catalysts. The X-ray diffraction phase analyses were carried out in cameras of type PKA (RKD) with CrK $\alpha$ -radiation. The specimens were produced by evaporation of a mixture of solutions of corresponding oxalates and ammonium salts with subsequent heating to 400°C. Figs. 1 and 2 show the change of catalytic activity of the examined catalysts with the composition in the oxidation of benzene to maleic anhydride. A comparison of the determined phase compositions and the epr spectra with the activity of studied catalysts show that the increase of catalytic activity of mixed vanadium oxide catalysts is due to the increase of concentration of defects in the V<sub>2</sub>O<sub>5</sub> lattice. These defects are caused by molybdenum, chromium or titanium atoms penetrating into the V<sub>2</sub>O<sub>5</sub> lattice in the formation of solid solutions. When the tested V<sub>2</sub>O<sub>5</sub>-MoO<sub>3</sub> catalyst is annealed at high temperatures, a considerable deactivation occurs, since the oversaturated solid MoO<sub>3</sub> solution existing prior to annealing changes over into state of equilibrium, then having less MoO<sub>3</sub> and thus also fewer lattice defects. It is, therefore, probable that

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Catalytic activity of...

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pure  $V_2O_5$  can be successfully used as catalyst when the compound to be oxidized itself, e. g. naphthalene, causes a considerable concentration of defects in the  $V_2O_5$  lattice (by forming a non-stoichiometric excess of vanadium). In other cases, however, oxides of other elements which form solid solutions with  $V_2O_5$  must be added to vanadium pentoxide in order to create the required concentration of defects. Concentration and character of defects and thus also catalytic activity and selectivity of the catalyst can be varied within wide limits by variation of quantity and kind of additions. In order to substantiate the mentioned rules, further papers will study connections between activity and selectivity of vanadium oxide catalysts, on the one hand, and concentration of lattice defects, on the other hand. Also the crystallographic characteristics of oxides to be added to  $V_2O_5$  will be determined. There are 2 figures, 1 table, and 7 references: 4 Soviet and 3 non-Soviet. The reference to the English-language publication reads as follows: K. Tarama, Sh. Teranishi, T. Vasui, J. Chem. Soc. Japan. Industr. Chem. Sect., 60, 1222, 1957. X

Card 3/4

Catalytic activity of...

28293 S/076/61/035/010/012/015  
B106/B110

ASSOCIATION: Institut organicheskikh poluproduktov i krasiteley (Institute of Organic Semifinished Products and Dyes)

SUBMITTED: March 4, 1960

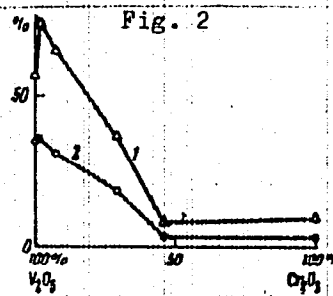
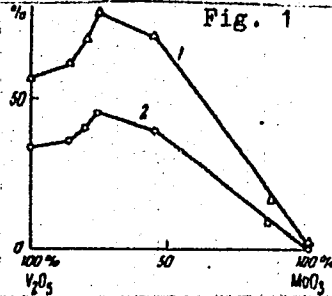
Fig. 1. Alteration of activity and selectivity of vanadium-molybdenum catalysts as dependent on the  $\text{MoO}_3$  content

Legend: (1) Total conversion of  $\text{C}_6\text{H}_6$ , (2) conversion of  $\text{C}_6\text{H}_6$  into  $\text{C}_4\text{H}_2\text{O}_3$ .

Fig. 2. Alteration of activity and selectivity of vanadium-chromium catalysts as dependent on the  $\text{Cr}_2\text{O}_3$  content

Legend: (1) Total conversion of  $\text{C}_6\text{H}_6$ , (2) conversion of  $\text{C}_6\text{H}_6$  into  $\text{C}_4\text{H}_2\text{O}_3$ .

Card 4/4



PIS'MEN, L.M.; IOFFE, I.I.

Calculating optimal conditions for chemical reactors by the  
method of dynamic programming. Ideal displacement reactors.  
Khim.prom. no.4:260-266 Ap '62. (MIRA 15:5)  
(Chemical reactors)

PIS'MEN, L.M.; IOFFE, I.I.

Dynamic programming method for calculating optimal conditions  
for chemical reactors. Reactors of ideal mixing. Khim.prom.  
no.5:352-359 My '62. (MIRA 15:7)

(Chemical reactors)



IOFFE, I.I.; KLIMOVA, N.V.; MAKEYEV, A.G.

Liquid phase catalytic oxidation of organic compounds on noble metals. Part 3: Oxidation of ethylene glycol to glyoxal. Kin. i kat. 3 no.1:107-110 '62. (MIRA 15:3)

1. Nauchno-issledovatel'skiy institut organicheskikh produktov i krasiteley imeni K.Ye.Voroshilova.  
(Ethylene glycol) (Glyoxal) (Catalysts)

S/195/62/003/002/001/003  
E075/E436

AUTHOR:

Ioffe, I.I.

TITLE:

All-Union Conference on the heterogeneous catalytic oxidation of organic compounds

PERIODICAL: Kinetika i kataliz, v.3, no.2, 1962, 171-174

TEXT: A meeting was convened in Riga to present and discuss papers on heterogeneous catalytic oxidation of organic compounds derived from petroleum. The papers presented dealt with four main groups of subjects: 1) mechanism of action of heterogeneous catalyst; 2) kinetics of the catalytic oxidation; 3) synthesis with the use of catalytic oxidation of organic compounds. In the first group of papers, I.I.Ioffe dealt with the significance of the place of primary attack of an organic molecule with molecular oxygen, relationships between the speeds of the reaction and desorption stages of the catalytic process, electron-donor or acceptor characteristics of the catalysts and reagents and kinetics of phase transitions of the catalysts and S.Z.Roginskiy discussed the speed of electronic transitions in the Card 1/4

S/195/62/003/002/001/003  
E075/E436

All-Union Conference ...

system catalyst - reagents. A series of papers by L.Ya.Margolis, E.Kh.Yenikeyev, S.S.Babkov, Yu.A.Kozlova, M.I.Temkin, V.Ye.Ostrovskiy, N.I.Popova and others was devoted to modification of the heterogeneous oxidation catalysts leading to an increase in their selectivity. I.I.Ioffe and V.V.Voyevodskiy and co-authors reported on their investigation of the mechanism of action of mixed catalysts with the application of X-ray and EPR analysis. The second group of papers came from the Fiziko-khimicheskiy institut im. L.Ya.Karpova (Physicochemical Institute imeni L.Ya.Karpov), Institut fizicheskoy khimii AN UkrSSR (Institute of Physical Chemistry AS UkrSSR), Institut organicheskogo sinteza AN LatvSSR (Institute of Organic Synthesis AS Latvian SSR). G.K.Boreskova and co-authors reported on the preparation of catalyst and kinetics of the oxidation of ethylene. N.I.Popova, Ye.Ye.Vermel' and F.A.Mil'man described the oxidation of isobutylene, piperylene and isoprene to aldehydes on a copper catalyst. Most of the papers in the third group dealt with the oxidation of propylene to acrolein. A beneficial influence of water vapour and selenium on the process was mentioned in the

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S/195/62/003/002/001/003  
E075/E436

All-Union Conference ...

papers by N.I.Popova and co-authors, A.M.Garnish and co-authors, B.D.Kruzhalov, A.G.Polkovnikova and co-authors, S.S.Bobkov, A.I.Kir'yan and co-authors. N.D.Rus'yanova and co-authors described the ways of increasing the yields of phthalic anhydride and anthraquinone prepared from the anthracene fraction of coal tar. B.V.Suvorov reported on a direct synthesis of benzo- and phthalo-nitrites. Yu.T.Nikolayeva and I.I.Ioffe described a new method for the synthesis of aryloxyacetic acids. V.L.Plakidina and co-authors gave more precise conditions of oxidation of dibenzatril to dioxyviolantrop. R.M.Flid and A.Ye.Krasotkin demonstrated the superiority of the process of combined oxidation and dehydration of alcohols for the production of ketones and aldehydes over that of normal oxidation processes. I.I.Ioffe and R.M.Flid and co-authors presented data on the selective preparation of glyoxal by the oxidation of ethylene glycol. Yu.D.Kernos, B.L.Moldavskiy and S.S.Bobkov described new syntheses of maleic anhydride and acrylonitrile from olefines. In the fourth group of papers, L.I.Oks reported on the production of phthalic anhydride with the application of boiling film of

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All-Union Conference ...

S/195/62/003/002/001/003  
E075/E436

catalyst. A.F.Grigorov and R.P.Rumyantsev described a process for the oxidation of o-xylol to phthalic anhydride. A.A.Avot, S.A.Giller and M.V.Shimanskaya reported on the production of maleic anhydride from furfurool by the method of NIOPiK. V.M.Dobkin dealt with the question of automatic direction and regulation of exothermic processes of heterogeneous catalytic oxidation of organic compounds. Some other papers, previously published, were also read. ✓

Card 4/4

IOFFE, I.I.

Problems in the kinetics and mechanism of heterogeneous catalytic  
oxidation of organic compounds. *Kin.i kat.* 3 no.2:175-180  
Mr-Apr '62. (MIRA 15:11)

1. Nauchno-issledovatel'skiy institut organicheskikh poluproduktov  
i krasiteley imeni K.Ye.Voroshilova.  
(Oxidation) (Catalysis)

IOFFE, I.I.; YEZHKOVA, Z.I.; LYUBARSKIY, A.G.

Phase composition of mixed vanadium catalysts for the oxidation  
of aromatic hydrocarbons. Kin.i kat. 3 no.2:194-200 Mr-Ap  
'62. (MIRA 15:11)

1. Nauchno-issledovatel'skiy institut organicheskikh poluproduktov  
i krasiteley imeni Voroshilova.  
(Hydrocarbons) (Oxidation) (Vanadium oxides)

IOFFE, I.I.; LYUBARSKIY, A.G.

Kinetics of the catalytic oxidation of benzene to maleic anhydride.  
Kin.i kat. 3 no.2:261-271 Mr-Ap '62. (MIRA 15:11)

1. Nauchno-issledovatel'skiy institut organicheskikh poluproduktov  
i krasiteley imeni K.Ye.Voroshilova.  
(Benzene) (Maleic anhydride) (Catalysis)



SLAVINSKAYA, V.A.; GULEVSKIY, E.K.; SHIMANSKAYA, M.V.; GILLER, S.A.;  
IOFFE, I.I.

Kinetics of furfurole catalytic oxidation. Kin.i kat. 3  
no.2:276-281 Mr-Ap '62. (MIRA 15:11)

1. Institut organicheskogo sinteza AN Latvyskoy SSR, Riga i  
Nauchno-issledovatel'skiy institut organicheskikh poluproduktov  
i krasiteley imeni K.Ye.Voroshilova, Moskva.  
(Furaldehyde) (Maleic anhydride) (Catalysts)

PISMEN, L.M. [Pis'men, L.M.]; IOFFE, I.I.

Kinetics of the reaction in the flowing systems. *Analele chimie*  
17 no.2:85-103 Ap-Je '62.

PIS'MEN, L.M.; IOFFE, I.I.

Optimal process in a sequence of adiabatic reactors with ideal displacement. Dokl.AN SSSR 144 no.3:609-612 My '62.

(MIRA 15:5)

1. Nauchno-issledovatel'skiy institut organicheskikh poluproduktov i krasiteley. Predstavleno akademikom A.A.Balandinym.  
(Chemical reactors)

PIS'MEN, L.M.; IOFFE, I.I.

Amount of information required for designing reactors by the  
dynamic programming method. Kin.i kat. 3 no.4:493-501 J1-Ag  
'62. (MIRA 15:8)

1. Nauchno-issledovatel'skiy institut organicheskikh poluproduktov  
i krasiteley.

(Chemical reactors)

PIS'MEN, L.M.; IOFFE, I.I.

Optimal process in a sequence of reactors with ideal mixing.  
Dokl.AN SSSR 144 no.4:853-854 Je '62. (MIRA 15:5)

1. Nauchno-issledovatel'skiy institut organicheskikh poluproduktov  
i krasiteley. Predstavleno akademikom A.A.Balandinym.  
(Chemical reactors)

IOFFE, I.I.; LYUBARSKIY, A.G.

Kinetics of heterogenous catalytic oxidation of maleic  
anhydride. Kin.i kat. 4 no.2:294-298 Mr-Apr '63. (MIRA 16'5)

1. Nauchno-issledovatel'skiy institut organicheskikh poluproduktov  
i krasiteley imeni K.Ye. Voroshilova.  
(Maleic anhydride) (Oxidation) (Catalysis)

1  
IOFFE, I. I.; MARGOLIS, L. Ya.

"Selective heterogeneous catalytic oxidation of hydrocarbons."

report submitted to 3rd Intl Cong on Catalysis, Amsterdam, 20-25 Jul 64.

Inst of Chemical Physics, AS USSR, Moscow.

IOFFE, I.I.; KLIMOVA, N.V.

Liquid-phase oxidation of hydrocarbons on solid semiconducting catalysts. Kin.i kat. 4 no.5:779-782 S-0 '63. (MIRA 16:12)

1. Nauchno-issledovatel'skiy institut organicheskikh poluproduktov i krasiteley.



DOSOVITSKIY, Ye.I.; IOFFE, I.I.

Kinetics of oxidative decarboxylation of copper benzoate. *Kin.i*  
kat. 5 no.6:1104-1107 N-D '64. (MIRA 18:3)

1. Nauchno-issledovatel'skiy institut organicheskikh poluproduktov  
i krasiteley.

IOFFE, I. I.; PISZMEN, L. M. [Pis'men, L. M.]

Calculation of the optimum operation of chemical reactors.  
Magy kem lap 19 no. 2: 93-99 F '64.

1. Szerves Közbenso Termekes es Szinezekes Tudomanyos Kutate  
Intezete, Moszkva.

ACCESSION NR: AP4012976

S/0020/64/154/004/0903/0906

AUTHORS: Ioffe, I.I.; Yezhkova, Z.I.; Lyubarskiy, A.G.

TITLE: Concerning the mechanism of organic compounds oxidation over solid nonmetallic catalysts

SOURCE: AN SSSR. Doklady\*, v. 154, no. 4, 1964, 903-906

TOPIC TAGS: solid nonmetallic catalyst, oxidation catalyst, pi catalyst, sigma catalyst

ABSTRACT: The present work is a discussion and derivation of laws based on the experimental work by A.G. Lyubarski (Candidate thesis, Moscow, 1963) and constitutes, therefore, the conclusions of the thesis. Oxidation of organic compounds consists of the following stages: 1. electron transition from reagent to catalyst (chemisorption), 2. Electron transmission from donor (reagent) to acceptor (oxygen), 3. incorporation of electrons by the oxygen molecule (chemisorption of O) forming O-ion, and 4. Interaction of organic ion with the O-ion and the formation of the oxidation product. The

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ACCESSION NR: AP4012976

first stage is a complex formation with filling of d-orbits of cations. The capacity of catalysts to form  $\pi$ -complexes on their surface in contact with hydrocarbons having double and triple bonds depends on the acceptor capacity of the catalyst. Stage 2 is achieved by straight interaction of electrons with oxygen, recharging of ions and zonal conductivity (in  $\pi$ -activated catalysts). Stages 3 and 4 are not discussed in the article, which concludes with some recommendations on how to synthesize selective  $\sigma$ -activating catalysts which do not destroy the double C=C bond during oxidation. Orig. art. has: 2 figures, 1 formula, no tables.

ASSOCIATION: Nauchno issledovatel'skiy institut organicheskikh poluproduktov i krasiteley (Scientific Research Institute of Intermediates and Dyes)

SUBMITTED: 01Aug63

DATE ACQ: 26Feb64

ENCL: 00

SUB CODE: CH

NO REF SOV: 006

OTHER: 001

Card 2/2

GOLOVANENKO, B.I.; SHARIPOV, A.Kh.; IOFFE, I.I.; MUKHTARULLINA, F.G.

Obtaining phthalic anhydride by conjugated vapor-phase oxidation  
of hydrocarbons on vanadium catalysts. Neftekhimia 4 no.4:591-592  
Jl-Ag '64. (MIRA 17:10)

1. Nauchno-issledovatel'skiy institut neftekhimicheskikh proizvodstv,  
Ufa.

SHARIPOV, A.Kh.; GOLOVANENKO, B.I.; IOFFE, I.I.; BORSHCHENKO, V.P.;  
FATKULLINA, N.S.

Obtaining phthalic anhydride by oxidizing a petroleum naphthaline  
fraction. Nefteper. i neftekhim. no.8:22-23 '64.

(MIRA 17:10)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut neftekhimicheskikh  
protseessov, Leningrad, i Nauchno-issledovatel'skiy institut nefte-  
khimicheskikh proizvodstv, Ufa.

YEZHKOVA, Z.I.; IOFFE, I.I.; KAZANSKIY, V.B.; KRYLOVA, A.V.; LYUBARSKIY,  
A.G.; MARGOLIS, L.Ia.

Activity, structure and the electric properties of mixed  
vanadium catalysts. *Kin. i kat.* 5 no.5:861-867 S-O '64.  
(MIRA 17:12)

1. Nauchno-issledovatel'skiy institut organicheskikh poluprovod-  
nikov i krasiteley i Institut khimicheskoy fiziki AN SSSR.

IOFFE, I.I.; KAMENEVA, L.S.; SLAVINSKAYA, V.A.

Kinetics of heterogeneous catalytic processes inhibited by a side reaction product. Kin. i kat. 6 no.2:333-335 Mr-Apr '65. (MIRA 18:7)

1. Nauchno-issledovatel'skiy institut organicheskikh poluproduktov i krasiteley i Institut organicheskogo sinteza AN Latvyskoy SSR.



L 19372-66 --- EWT(m)/EWP(-j) --- RM  
ACCESSION NR: AP5015461

UR/0318/64/000/008/0022/0023

AUTHOR: Sharipov, A. Kh.; Golovanenko, B. I.; Ioffe, I. I.; Borshchenko, V.P., B  
Fatkullina, N.S.

TITLE: Preparation of phthalic anhydride by oxidation of the naphthalene fraction of crude oils

SOURCE: Neftepererabotka i neftekhimiya, no. 8, 1964, 22-23

TOPIC TAGS: crude petroleum, naphthalene, oxidation

Abstract: Noting that in the USA the amount of crude-oil naphthalene is almost as large as that produced from coke, the authors describe their studies of the vapor-phase catalytic oxidation of the crude-oil naphthalene fraction yielding phthalic anhydride. They show that, relative to the naphthalene content, the phthalic-anhydride yield may reach 94% of the theoretical. However, this is achieved at the cost of a catalyst productivity decrease of 15-20%. Orig. art. has 2 tables.

ASSOCIATION: VNIineftekhim, Leningrad; NIIneftekhim, Ufa

SUBMITTED: 00

ENCL: 00

SUB CODE: FD, GG

NO REF SOV: 002

OTHER: 002

JPRS

Card 1/1

IOFFE, I.L., prof.

Modification of dermatomic technic. Khirurgia 35 no. 5:136-137  
My '59. (MIRA 13:10)

1. Iz kafedry operativnoy khirurgii (zav. - prof. I.L. Ioffe)  
Saratovskogo meditsinskogo instituta (dir. - dotsent B.A. Nikitin).  
(SURGICAL INSTRUMENTS AND APPARATUS)

KRUGLIKOVA, G.N.; IOFFE, I.L.

Use of plastics in the Gorkiy Economic Region. Mashinostroitel.  
no.5:7-8 My '62. (MIRA 15:5)  
(Gorkiy Province--Plastics)

IOFFE, I. L.

Ioffe, I. L. "The surgical anatomy of the root of the trifacial nerve", Voprosy  
neyrokhirurgii, 1949, No. 1, p. 56-64, - Bibliog: p. 63-64.

SO: U - 3042, 11 March 53, (Letopis 'Zhurnal 'nykh Statey, No. 7, 1949).

IOFFE, I. L.

24254 IOFFE, I. L. Opyt primeneniya organicheskogo stekla dlya izgotovleniya korrozionnykh preparatov. Vracheb. delo, 1949, No. 2, STB. 747-48.

SO: Letopis, No. 32, 1949.

**IOFFE, I.L.**

Technic of radiocotomy of the trigeminal nerve by occipital approach.  
Vopr.neirokhir. no.2:43-51 Mr-Apr '50. (OLML 19:3)

1. Of the Department of Operative Surgery (Head — Prof. M.A.Sreneli),  
First Leningrad Medical Institute imeni Academician I.P.Pavlov).

IOFFE, I. L., Prof.

Tendons

Anatomicosurgical survey of rational methods of surgical therapy of tendovaginitis of digital flexors in the wrist, Khirurgiia No. 12, 1952.

9. Monthly List of Russian Accessions, Library of Congress, May 1953. Unclassified.

1. IOFFE, I. L., Prof.
2. USSR (600)
4. Tendons
7. Anatomicosurgical survey of rational methods of surgical therapy of tendovaginitis of digital flexors in the wrist. *Khirurgiya* No. 12, 1953.

9. Monthly List of Russian Accessions, Library of Congress, May 1953, Uncl.



IOFFE, I.L., professor

Effective topographical scheme for exposure of the femoral artery  
and of the femoral vein at various levels. Khirurgiia no.6:74  
Je '54. (MIRA 7:9)

1. Iz kafedry operativnoy khirurgii i topograficheskoy anatomii  
Turkmenkogo meditsinskogo instituta imeni I.V.Stalina.

(ARTERIES, FEMORAL, surgery,  
\*exposure at various levels)  
(VEINS, FEMORAL, surgery,  
\*exposure at various levels)

USSR/Human and Animal Morphology - General Problems

Q-1

Abs Jour : Referat Zhur - Biologii, No 16, 1957, 70223

Author : Ioffe, I.L.

Title : Of Surgical Anatomy of the Palm Skin Creases.

Orig Pub : Tr. Turkm. med. in-ta 1955, 5-6, 92-94

Abstract : By the method of layer preparation and X-ray-40 hands of adults of both sexes were studied. If you divide the distal crease (rascetta) in four equal parts by three points, then the radial artery goes to the radial point, the middle nerve to the middle point - and the elbow nerve and artery go to the elbow point. The last one runs parallel to the proximal palm crease, (linea vitalis), at the middle it turns laterally, forming the surface palm arch. The proximal part of linea vitalis corresponds to the medial edge of the middle nerve. If the two ends of the crease are connected by a straight line and the latter is divided in three parts by two points -

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USSR/Human and Animal Morphology - General Problems

Q-1

Abs Jour : Referat Zhur - Biologii, No 16, 1957, 70223

then to the proximal one is directed the muscular branch of the third nerve, the damage of which leaves the thumb incapable of resistance. "The closed to the knife" zone forms here a quadrangle with a side approx. 1.5 cm long. If the radial end of the proximal palm crease and the elbow end of the distal crease (linea mensalis) are connected by a straight line than it will pass on the level of the distal parts of the metacarpal bones, and the proximal parts sinovial cavities of the tendons of flexors II-LV, and sometimes V fingers, and may serve as a proximal limit for the incision to unsheath the volvulus of the sinovial cavity.

Card 2/2

- 46 -

~~IOFFE, I. L., prof.~~

Modification of the technic of osseous plastic leg amputation. Ortop.,  
travn.protes. 19 no.1:59-61 Ja-F '58. (MIRA 11:4)

1. Iz kafedry operativnoy khirurgii (sav. - prof. I.L.Ioffe)  
Saratovskogo meditsinskogo instituta (dir. - dots. B.A.Wikitin)  
(AMPUTATION  
leg, modification of bone plastic technic (Rus))

IOFFE, I.L., prof.

Some problems of appendectomy technic. Sov. med. 22 no.12:47-53 D '58.  
(MIRA 12:1)

1. Is kafedry operativnoy khirurgii (zav. - prof. I. L. Ioffe) Saratov-  
skogo meditsinskogo instituta (dir. - dots. B.A. Nikitin).

(APPENDECTOMY

technic, problems (Rus))

IOFFE, I.L., prof. (Saratov)

"Methods in examining surgical patients" by I.S. Lindenbaum. Reviewed  
by I.L. Ioffe. Klin.med. 37 no.11:150-152 N°159. (MIRA 13:3)  
(SURGERY) (IOFFE, I.L.)

ANTONOV, A.M., prof., red.; VOL'FKOVICH, M.P., prof., red.;  
ZAKHAROVA, G.N., dots., red.; IVANOV, N.R., dots., red.;  
IOFFE, I.L., prof., red.; FOY, A.M., prof., red.;  
SHAMARIN, P.I., prof., red.; SHERISHORINA, S.I., prof., red.

[Transactions of the First City Conference of Young Scientists, Medical Section] Trudy Pervoy gorodskoy konferentsii molodykh nauchnykh rabotnikov. Meditsinskaya sektiia. Saratov, Saratovskii meditsinskii in-t, 1963. 295 p. (MIRA 18:5)

1. Gorodskaya konferentsiya molodykh nauchnykh rabotnikov. Meditsinskaya sektiia. 1st, Saratov.

IOFFE, I.L., prof.

Device for external determination of internal sizes of the  
blood vessels. ~~K~~hirurgiia no.1:136-137 '63. (MIRA 17:5)

1. Iz kafedry operativnoy khirurgii (zav. - prof. I.L. Ioffe)  
Saratovskogo meditsinskogo instituta.

CHUYKO, N.M., doktor tekhn.nauk; RUTKOVSKIY, V.B., inzh.; DANICHEK, R.Ye.,  
inzh.; PEREVYAZKO, A.T., inzh.; BORODULIN, G.M., inzh.;  
TREGUBENKO, A.F., inzh.; SHAMIL', Yu.P., inzh.; FRANTSOV, V.P.,  
inzh.; VOLOVICH, V.G., inzh.; Prinimali uchastiye: IOFFE, I.M.,  
inzh.; LAVRENT'YEV, M.I., inzh.; PARKHOMENKO, G.P., inzh.;  
DEMIDENKO, V.I., inzh.; RYSIN, Ye.M., inzh.; VOROB'YEVA, T.M., inzh.

Inert gas blowing of metal in the ladle in vacuum. Stal' 22  
no.9:809-811 S '62.

(MIRA 15:11)

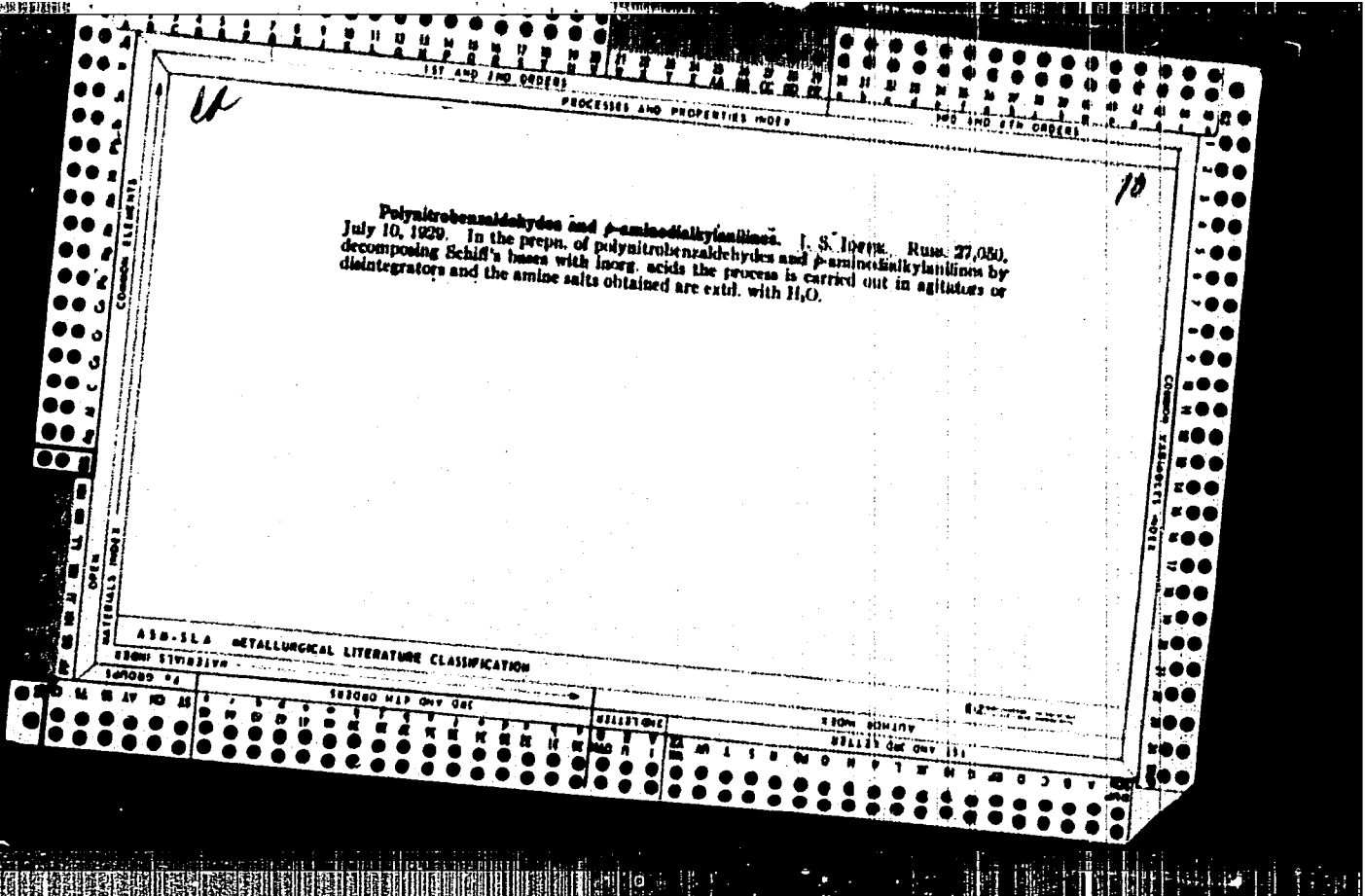
(Vacuum metallurgy) (Protective atmospheres)

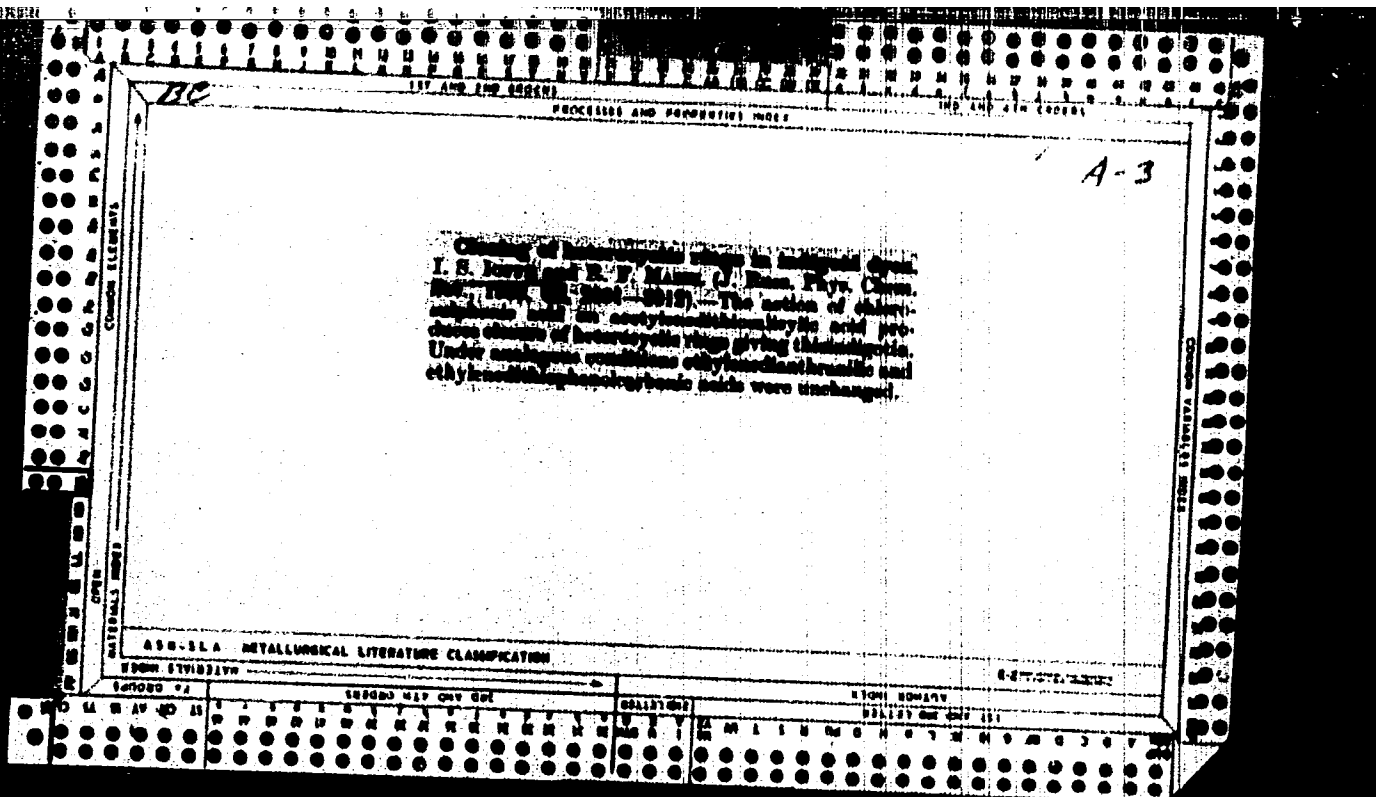


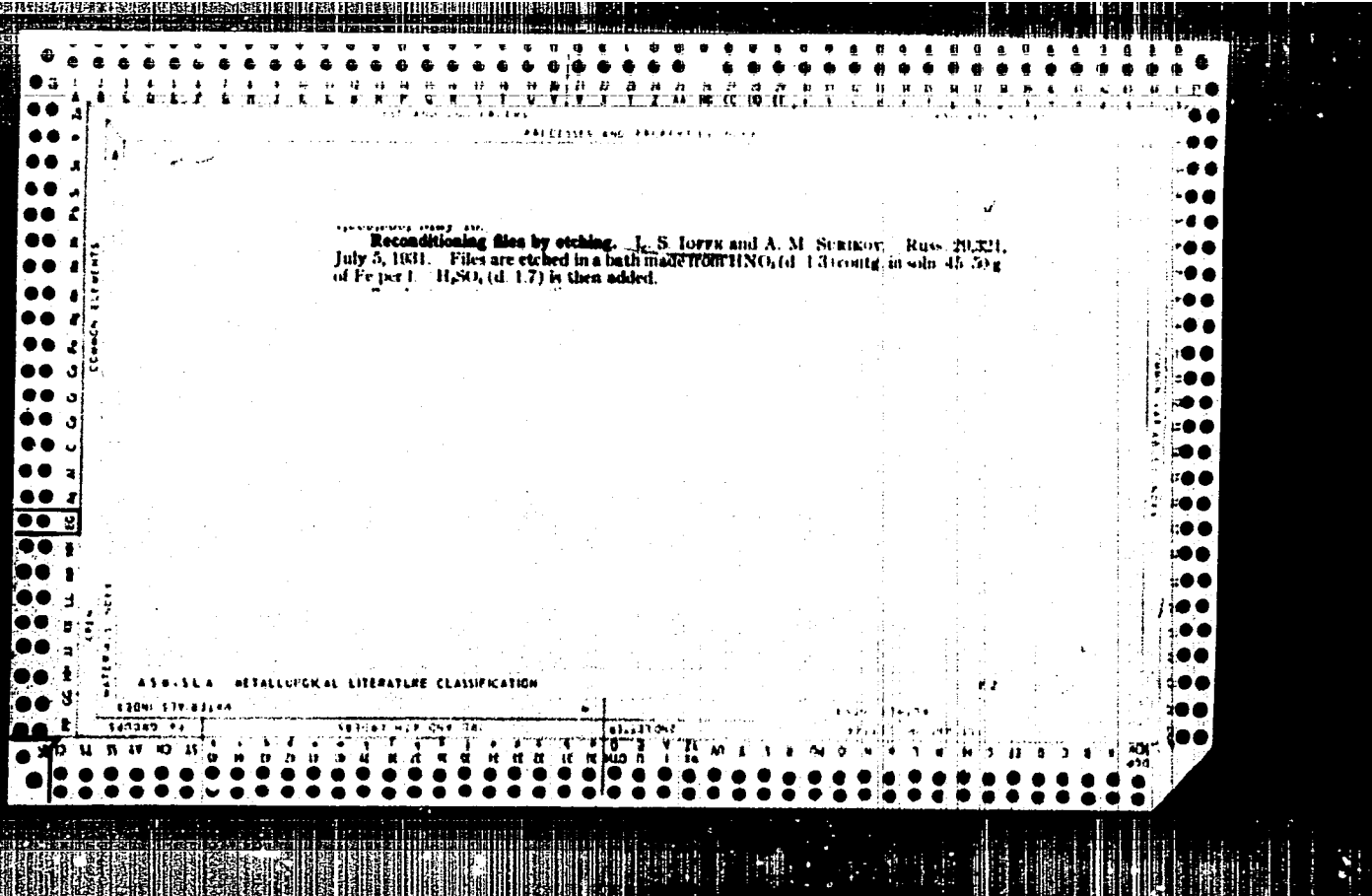
ZELINSKIY, V.M., kand. tekhn. nauk; RUKMAN, G.L., inzh.; FEL'DMAN, G.B., inzh.;  
DENISENKO, S.A., inzh.; SMOLINA, Z.K., inzh.; KOSTOGRYZ, P.L., inzh.;  
IOFFE, I.M., tekhnik

Experience in introducing remote control of pumps in drainage boreholes  
at the S.M.Kirov mine. Shakht. stroi. 9 no.10:27-28 Q '65. (MIRA 18:9)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut organizatsii i  
mekhanizatsii shakhtnogo stroitel'stva (for Zelinskiy, Rukman,  
Fel'dman). 2. Institut Avtomatuglerudprom zavoda "Krasnyy metal-  
list" (for Denisenko, Smolina, Kostogryz) 3. Yakovlevskoye stroitel'no-  
montazhnoye upravleniye tresta Soyuzshakhtoosusheniye (for Ioffe).







IOFFE, I. S.

Sulfonic acids of dihydronaphthyls or their deriva-  
tives. I. S. Ioffe. Russ. 31,079, Sept. 30, 1953. Sul-  
fonic acids of dihydronaphthyls or their deriva-  
tives are prepd. by the action of FeCl<sub>3</sub> or other oxidizing agent on  
naphthalene, 6- or poly-sulfonic acids or their salts.

Tetrahydroxycompounds of their derivatives. I. S.  
Ioffe and I. V. Gerasim. Russ. 31,081, Sept. 30, 1953.  
The tetrahydroxy deriva. of 1,1-dinaphthyl or their  
derivatives are heated with AlCl<sub>3</sub>.

Tetrahydroxycompounds of their derivatives. I. S.  
Ioffe. Russ. 32,225, Oct. 31, 1953. The method is  
characterized by the action of a salt of FeCl<sub>3</sub> on a salt of  
2,7- or 2,8-dihydronaphthalenes or their deriva.

2,2-Dihydroxy-1,1-dinaphthyl compounds. I. S.  
Ioffe. Russ. 32,124, Nov. 23, 1953. 2-Naphthyl-2-  
carboxylic acid or its crystals are treated with an aq. or  
other salt of FeCl<sub>3</sub>.

Dihydroxy diaryls. I. S. Ioffe. Russ. 32,124, Nov. 23,  
1953. Dihydroxy diaryls are prepd. by the action of aq.  
and other salts of FeCl<sub>3</sub> on hydroxy deriva. of phen-  
anthrene, anthracene or naphthalene. They can form  
azo dyes with arylidiamine compounds.

197 AND 1980 SERIES PROCESSES AND PROPERTIES INDEX

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CA

**Kinetics of the reaction of sulfonation and nonsulfonation of naphthalene.** I. S. Ioffe. *Azidobromatskaya* *Prora.* 3, 200-204 (1937).—Evidance is given, contradicting the observation of Guyot (C. A. 16, 404), that the concn. of spent H<sub>2</sub>SO<sub>4</sub> depends not only on the temp. of the reaction and the nature of the sulfonated compd., but also on the proportions of the 2 reagents. In the sulfonation of *p*-MeC<sub>6</sub>H<sub>4</sub>NO<sub>2</sub>, studied by Martensen (C. A. 2, 2040), the observed process is the algebraic sum of the reactions of sulfonation and hydrolysis;  $dx/dt = (dx_1/dt) - (dx_2/dt) = k_1(A-x)(S-x) - (H+x)x$ , in which  $k_1$  and  $k_2$  are variables and are detd. by the acidity of the medium, or  $x$ . These equations apply only to the initial stage of sulfonation and to the compds. giving only 1 isomer. By direct sulfonation of C<sub>10</sub>H<sub>8</sub> at a moderate temp. the equil. in the ratio of  $\alpha$ - to  $\beta$ -C<sub>10</sub>H<sub>7</sub>SO<sub>3</sub>H, and thereby the equil. of the sulfonation, is reached after a very prolonged heating with formation of considerably smaller proportion of  $\beta$ - in the mixt. of the isomers than is claimed by Ewers (C. A. 3, 2702). The ratio  $\alpha$ - to  $\beta$ -C<sub>10</sub>H<sub>7</sub>SO<sub>3</sub>H at the state of equil. is equal to the ratio of the velocity coeffs. of the formation of the 2 isomers divided by velocity coeffs. of their hydrolysis, and depends only on these coeffs. The formula is applicable to all cases of sulfonation producing several isomers. At the state of equil. there must be 21.5%  $\alpha$ -C<sub>10</sub>H<sub>7</sub>SO<sub>3</sub>H, as generally claimed, which value closely approximates 29.3%  $\alpha$ -C<sub>10</sub>H<sub>7</sub>SO<sub>3</sub>H obtained by prolonged heating of C<sub>10</sub>H<sub>8</sub> with H<sub>2</sub>SO<sub>4</sub> at 100°. Math. analysis of the process of sulfonation shows that with a mixt. of 2 unequally hydrolyzable isomers the ratio of the 2 is vari- able, whereby the proportion of the more easily hydrolyzed isomer is gradually decreased. Chas. Blanc

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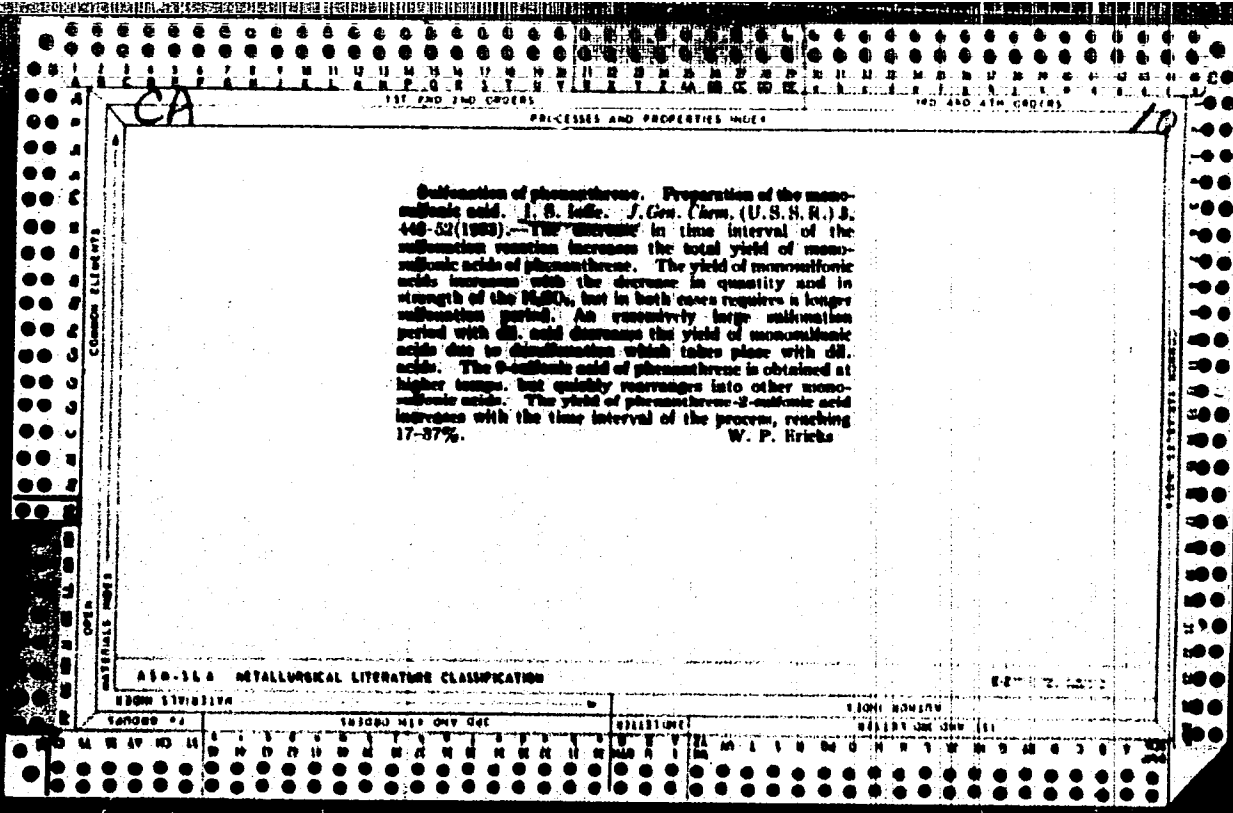
PROCESSES AND PROPERTIES UNIT

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CA

(Sulfonation reaction. I. S. Ioffe. *J. Gen. Chem.* (U.S.S.R.) 3, 457-47(1943).—Sulfonation is a reversible reaction. The strength of the spent  $H_2SO_4$ , depends upon the ratio between the substance that sulfonates and the substance being sulfonated and therefore is not const. Sulfonation with fuming  $H_2SO_4$ , takes place with the free  $SO_3$  at a considerably higher rate than with  $H_2SO_4$ , and proceeds according to a second-order reaction. II. Equilibrium between  $\alpha$ - and  $\beta$ -naphthalenesulfonic acids. *Ibid.* 506-12.—The const. ratio between  $\alpha$ - and  $\beta$ -isomers is reached only during a long duration of the reaction at  $100^\circ$  or  $110^\circ$ . Thus it is seen that in sulfonating naphthalene at  $100^\circ$  or  $110^\circ$  for several days, an unchanging ratio between the isomers, i. e. equal, of the system, is not attained. W. P. Eriks

ASAC, SLA METALLURGICAL LITERATURE CLASSIFICATION







TEST AND ANALYSIS PROCESSES AND PROPERTIES

2

*Handwritten:* A

**Publication number: 22. Kinetics of the mono-**  
**oxidation of benzene. J. S. Led. J. Gen. Chem,**  
**(U. S. S. R.) 2, 100-72(1958).—See C. A. 20, 957.**  
**H. J. C.**

ASTM 514 METALLURGICAL LITERATURE CLASSIFICATION

FROM 514 BELOW

1ST AND 7TH COLUMNS

PROCESSES AND PROPERTIES INDEX

10

CA

Estimating glass-transition. I. S. Jaffe and I. G. Matveeva. Russ. Rev. 24, 200, Feb. 1964. The information is carried out with DT-4076, RADA.

COMMON ELEMENT

OPEN

MATERIALS INDEX

ASB-51A METALLURGICAL LITERATURE CLASSIFICATION

1964 DIVISION

1964 MET DIV

1964 DIVISION

1964 DIVISION

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
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*CO*

The action of salts of trivalent iron on  $\beta$ -naphthol derivatives. 1. *Ioffe-Trudis Leningrad. Khim.-Tekhnol. Inst. No. 1, 61-116(116-17 in German)(1964)*—The following new compds. were prepd. by the oxidizing action of 30% FeCl<sub>3</sub> on various naphthols in weakly acid solns: 2,3'-Dihydroxy-1,1'-binaphthyl-7,7'-disulfonic acid, colorless crystals from H<sub>2</sub>O, 6 H<sub>2</sub>O of crystn., from 2-naphthol-7-sulfonic acid. 1-Chloro-2-naphthol-6-sulfonic acid from 2-naphthol-6-sulfonic acid, colorless anhyd, crystals from water, giving blue color with FeCl<sub>3</sub>. Salt of Na salt 2.7 g. in 100 cc. H<sub>2</sub>O at 20°. Ba salt dihydrate, insol. 2,2'-Dihydroxy-1,1'-binaphthyl-6,6'-disulfonic acid from 2-naphthol-6-sulfonic acid by cold slow oxidation, anhyd. when dried at 110°, sol. in H<sub>2</sub>O, insol. in alc., gives heptahydrate from 80% alc. giving 2,2'-dihydroxy-1,1'-binaphthyl by loss of sulfonic groups. 2,7,2',7'-Tetrahydroxynaphthalene; with FeCl<sub>3</sub> gives brown ppt. 2,6,2',6'-Tetrahydroxy-1,1'-binaphthyl, reacting with atm. O<sub>2</sub>, prepd. either in aq. or alc. soln. 3,3',6,6'-Tetra-sulfonic acid of 2,2'-dihydroxybinaphthyl, Na salt, colorless crystals, from 2-naphthol-3,6-disulfonic acid. 2,2'

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Dihydroxy-1,1'-binaphthyl, m. 123-5°, difficultly sol. in ether, alc., insol. in petrol, ether and benzene, from 2-hydroxybinaphthyl. 2,3,10,11-Dibenzoperylene, m. 215-18°, from 2,2'-dihydroxy-1,1'-binaphthyl, yellow needles, sol. in hot xylene and benzene, solns. give blue fluorescence; violet color with H<sub>2</sub>SO<sub>4</sub>. 2,2,8,11-Dibenzoperylene, m. 340-3°, from phenanthrene by bromination in benzene and condensation with AlCl<sub>3</sub>, crystals from xylene. 8-Bromo-2,7-dihydroxynaphthalene, m. 135°, sol. in H<sub>2</sub>O, alc., ether, benzene, from 2,7-dihydroxynaphthalene and Br<sub>2</sub> in glacial AcOH at 5°. 3,6-Dibromo-2,7-dihydroxynaphthalene (II) by bromination with 2 mols. Br<sub>2</sub>, crystals from glacial AcOH, m. 155-9°, slightly sol. in H<sub>2</sub>O, sol. in benzene and alc. 3,6,8-Tribromo-2,7-dihydroxynaphthalene (III) by bromination with 3 mols. Br<sub>2</sub>, heating at 100°, crystals from benzene, m. 205-8°. 2,2'-Dihydroxy-1,1'-binaphthyl (I) sol. in most org. solvents; sol. solns. turn yellow in air. Tetraoxo-2,7-dihydroxynaphthalene by bromination in presence of anhyd. AlCl<sub>3</sub>, crystals from acetone, m. 215°. Azo dye,  $\beta$ -naphthyl-2-amino-6,6'-trichloro-2,7-dihydroxynaphthalene from (II) and phosphorus trichloride and its diazotization; green needles from water, brown in soln.  $\beta$ -Nitrobinaphthylamine; 3,6-dibromo-2,7-dihydroxynaphthalene from (I) and the diazotium salt of  $\beta$ -nitroaniline could not be recrystallized, but Br analysis checked. A mixt. of penta- and hexa-bromo-2,7,2',7'-tetrahydroxy-1,1'-binaphthyl by bromination of I in glacial AcOH at 20°, m. 220-31°. It was converted to the quinone salts, (a) yellow ppt., m. 222-5°, difficultly sol. in H<sub>2</sub>O, and (b) sol. in H<sub>2</sub>O, m. 141-55°, 178° when pure;  $[\alpha]_D^{20}$  for a = -84°, for b = -248°. P. H. R.