

PCLTORAK, Jerzy; MDRZEWJSKI, Andrzej

Si-Al fast switching diodes. Przegl elektroniki 3 no. 5:256-260.
My '62

POLTORAK, Lech

Trichloroethylene anesthesia. Pielki przegl. chir. 32 no.11:
1067-1071 '60.

1. Z Miejskiego Szpitala Chirurgii Urazowej w Warszawie Dyrektor:
dr Z. Deka.

(TRICHLOROETHYLENE anesth & analg)

POLTORAK, LECH

DEKA, Zenon; POLTORAK, Lech

The treatment of pathological fractures resulting from tumors.
Chir. narz. ruchu 13 no.2:121-127 1958.

1. Z Miejskiego Szpitala Chirurgii Urazowej w Warszawie Dyrektor:
dr Z. Deka. Warszawa, ul. Pulawska 48 m. 11.

(BONE AND BONES, neoplasms
causing fract., surg. ther (Pol))

(FRACTURES, etiology & pathogenesis
bone tumors causing fract., surg. ther. (Pol))

DEKA, Zenon; POLTORAK, Iech; RYZEWSKA, Alicja

Studies on prevention of tetanus with the aid of simultaneous application of anti-tetanus serum and tetanus anatoxin. Polski przegl. chir. 31 no.1:3-14 Jan 59.

1. Z Miejskiego Szpitala Chirurgii Urazowej w Warszawie Dyrektor:
dr Z. Deka i z Zakladu Badania Surowic i Szczepionek PZH w Warszawie
Kierownik: prof. dr H. Meisel. Adres autora; Warszawa 12, ul. Pulawska
48 m. 11.

(TETANUS, prev. & control.
anatoxin & immune serum, simultaneous application (Pol))

POLTORAK, Lech; ZWIERZCHOWSKA, Anna

Anesthesia in traumatic surgery with special reference to anesthesia in transtrochanteric and neck fractures of the femur. Chir.narz.ruchu ortop.polska 25 no.6:561- 567 '60.

1. Z Miejskiego Szpitala Chirurgii Urazowej w Warszawie,
Dyrektor: dr Z. Deka.

(FEMUR NECK fract & disloc)

(FEMUR fract & disloc)

(BARBITURATES anesth & analg)

(MEPERIDINE anesth & analg)

POLTORAK, M.I.

[Advanced practices of the Moscow Automated Bakery No.15]
Peredovoi opyt Moskovskogo khlebozavoda - avtomata No.15.
Moskva, TSentr. in-t nauchno-tekhn. informatsii pishche-
voi promyshl., 1963. 62 p. (MIRA 17:10)

POLTORAK, G. [Poltorak, H.]

We are using slag blocks made by ourselves. Sil'bud. 9 no.7:15
J1 '59. (MIRA 12:9)

1. Tekhnichnyy kerivnik Novo-Mirgorods'koi mizhkolgospnoi budivel'-
noi organizatsii Kirovograds'koi oblasti.
(Novyy Mirgorod--Building blocks)

1. KOBOZEY, N. I.: POLTORAK, G. M.
2. USSR (60)
4. Entropy
7. Thermodynamics of "ensembles" and theoretical basis for entropy regularities. Part 1. Application to chemical processes. Zhur. fiz. khim. 26 no. 10. 1952.

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

POLTORAK, O.M.

The active forms of the cathodic hydrogen and the stationary state of the polarized cathode. Zhur. Fiz. Khim. 27, 599-606 '53. (MIRA 6:5)
(CA 47 no.21:11049 '53)

1. M.V. Lomonosov State Univ., Moscow.

POKTORAK, O. H.

✓ 11289 AEC-17-2820
ACTIVATION ENERGY OF HYDROGEN ION DISCHARGE
AND THE THEORY OF A DELAYED DISCHARGE. O. H.
Pektorak. Translated from Zhur. Fiz. Khim. 33, 1645-
51(1954). 12p.

In the usual theoretical calculation of the activation
energy of metals with high overvoltage, the basic assump-
tion of the retarded discharge theory is made. This
assumption is shown to be incorrect. (D.E.B.)

SFL
PM

Chow

POLTORAK, O.M.

K-5

Category : USSR/Optics - Physical Optics

Abs Jour : Ref Zhur - Fizika, No 1, 1957, No 2388

Author : Poltorak, O.M., Lavrov, A.V.

Inst : Moscow State University, USSR

Title : On the Structure of the Glow Center of Crystal Phosphors

Orig Pub : Zh. fiz. khimii, 1955, 29, No 7, 1254-1264

Abstract : The fluctuation-analysis method, developed by N.I. Kobozev (Zh. fiz. khimii, 1939, 13, I; Uch. zap. MGU, 1946, No 86, bk 1, 13, No 1) for the determination of the structure of active centers, is applicable to the investigation of the glow centers of crystal phosphors. The authors propose that the crystal consists of blocks, each containing p atoms or molecules of the base and n atoms or ions of the activator. The combination of $p + n$ is the glow center. The following equations:

$$A/c = \text{const.} \exp(-pc) \quad (1)$$

and

$$A/A_{\max} = \nu \exp(1 - \nu) \quad (2)$$

are obtained, where A is the activity of phosphor, gauged by the glow brightness in the maximum radiation band, A_{\max} is the maximum of A at the optimum value of the activator concentration c , $\nu = cp$ is the average number of atoms (ions) of the activator in one block. Using experimental values of A and c in equation

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TO RAK, O. M. 7 6-4-62

Activity of Heterogeneous Catalysts from the Viewpoint of the Theory of Active Centres. I. Metallic Crystals. O. M. Peltorak (*Zhur. Fiz. Khim.*, 1953, 29, (9), 1650-1687). (In Russian). The at. phase on the surface of a crystal can be regarded as a sp. type of surface defect. Concentration of surface defects as distinct from vol. defects depends to a large extent on the size of the crystal and the surface energy. Formulae are derived that permit the concentration of at. phase on ideal and actual crystals to be calculated. On actual crystals this concentration can be higher than calculated. The equilibrium concentration of the at. phase on actual crystals prepared at 300°-350° C. can reach fractions of 1%. On ideal crystals this concentration is lower. Preferential activities of edges of tetragonal crystals of α -Ni and α -Co for hydrogenation reactions are explained by a max. catalytic activity when the grain size is reduced, and an optimum depending on the temp. of prepn. of the catalyst. The data favour an at. and not a cryst. phase of the catalyst. If the hypothesis of activity of at. centres is accepted, the presence of such centres on the surface of the actual crystal can explain all catalytic properties, give theoretical explanation to a number of experimental facts relating to the activity of the cryst. catalyst, and provide a guide to the method of prepn. of active catalysts. This method depends on increase of concentration of the at. phase on the surface (small crystals with

large surface energy were obtained by considerable super-
saturation and optimum temp. - 25 ref. - A. W.

PM Recall
Moscow State Univ. im M.V. Lomonosov

POLTORAK, O.M.

Activation energy of the hydrogen-ion discharge and the absolute potential in electrochemical kinetics. Zhur.fiz.khim. 29 no.12: 2249-2255 D '55. (MLRA 9:5)

1. Moskovskiy gosudarstvennyy universitet imeni M.V. Lomonosova. (Hydrogen) (Electrochemistry)

USSR/Physical Chemistry - Electrochemistry.

B-12

Abs Jour: Referat. Zhurnal Khimii, No 2, 1958, 3965.

These curves of the majority of cathodes (W, Mo, Ta, Pd, Cu, for a short time polarized Pd) are situated above the theoretical curve (i.e., the curve of discharge process of a condenser, the capacity of which equals the capacity of the double layer), the curves of some cathodes (Pb, Sn) are near the theoretical, and sometimes they are below the latter (Pd polarized for a long time, Pd poisoned with corrosive sublimate, Pt, Fe). Basing on the analysis of experimental dependences of ($\Delta \eta$, $\log i_{ot}$) and their comparison with theoretical, the authors arrive at the conclusion that the presence of atomic hydrogen on polarized cathodes in concentrations above the equilibrium concentrations is the most usual case.

Card : 2/2

-9-

ACCESSION NR: AP4040438

S/0189/64/000/003/0009/0013

AUTHORS: Adamenkova, M. A.; Folterak, O. M.

TITLE: The catalytic properties of platinized silica gels in the reaction of hydrogen peroxide decomposition

SOURCE: Moscow. Universitet. Vestnik. Seriya 2. Khimiya, no. 3, 1964, 9-13

TOPIC TAGS: catalyst, silica gel catalyst, hydrogen peroxide decomposition, platinized silica gel, chloroplatinic acid, platinum ammonium chloride, specific catalytic activity, crystalline platinum coating, platinized catalyst aging, platinum particle dispersion

ABSTRACT: Standardizing the catalytic process measurements and the effect of platinized silica gel preparation on its catalytic action are discussed. The techniques used are reported in the 13 cited Soviet publications. The authors explain the difficulty of comparing data of various investigators on the kinetics of the decomposition of hydrogen peroxide by platinized silica gel. These difficulties are: 1) the lack of information on the grain size of the catalyst; 2) the failure of other investigators to take into consideration the aging of the

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POLTORAK, O. M.

Journal of Physical Chemistry

Vol XXXI, Nr 1, 1957

ON THE CONCEPTION OF THE "REGION OF MIGRATION" IN THE THEORY OF ACTIVE ENSEMBLES

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O. M. Poltorak (Moscow)

Summary

In this paper the law of the distribution of small quantities of substance on an energetically heterogeneous adsorbent surface has been investigated. It has been shown that for a sparsely covered surface the stable distribution of the applied substance among the adsorption centers follows the Poisson law, whereas the equilibrium distribution with account made of the σ -law is not established during the time of observation.

The results obtained have been used in proof of the validity of the theory of catalytically active ensembles. It has been shown that the fluctuational analysis developed in this theory is applicable not only in calculating the active centers of adsorption catalysts, the surface of the carrier of which may be conceived of as an aggregate of confined "regions of migration", but also on applying a catalytically active substance to an adsorbent surface of non-uniform energy.

Moscow State U.

KLL aoy

POLTORAK, O.M.
POLTCRAK, O.M.

Symmetry of molecules. Part 1: On a general stereochemical regularity
[with summary in English]. Zhur.fiz.khim. 31 no.9:1949-1958 S '57.
(MIRA 11:1)

1. Moskovskiy gosudarstvennyy universitet im. M.V. Lomonosova.
(Stereochemistry)

POLTORAK, O.M.

AUTHOR: Poltorak, O.M.

76-11-15/35

TITLE: The Thermodynamics of Crystals (Termodinamika kristallov)
I. Generalization of the Gibbs-Curie Principle (I. Obobshcheniye printsipa Gibbsa-Kyuri)

PERIODICAL: Zhurnal Fizicheskoy Khimii, 1957, Vol. 31, Nr 11, pp. 2477-2484
(USSR)

ABSTRACT: It is shown here that if, instead of the Gibbs-Curie principle, the general condition for the extremum (here - for the maximum) of the thermodynamical potential of a system in equilibrium is used, it is possible to investigate not only the stable faceting shapes at which the free surface energy of the crystals is at a minimum, but also the metastable shapes and crystals the outer appearance of which can be represented in form of regular geometric polygons with flat surfaces. The contribution made in the thermodynamical functions at the expense of the properties of the substance located along the crystal edges is taken into account. The following was found in this connection: 1.) It follows from considerations concerning dimensions that an increase of the chemical potential of small crystals is expressed in comparison with the infinitely great increases of the

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76-11-15/35

The Thermodynamics of Crystals. I. Generalization of the Gibbs-Curie Principle

chemical crystal potential $\Delta\mu$ by the free energy of the surfaces $Z_{\Omega}^{(m)}$ and that of the edges $Z_{\ell}^{(m)}$ according to the equation

$3\Delta\mu = 3Z_{\Omega}^{(m)} + 2Z_{\ell}^{(m)}$. The multiplicands 3, 2 and 1 are the numbers of volume-, surface-, and length measurements. 2.) The work of crystal formation from the alloy or vapor Z is determined by the following equation: $\Delta Z = \frac{1}{3} Z_{\Omega} + \frac{2}{3} Z_{\ell}$ 3.) Crystal formation

must, in general, satisfy the following conditions:

$$\frac{B_i}{A_i} \frac{2G_i}{r_i} + \frac{\ell_i}{A_i r_i^3} = \text{const} \quad , \quad i = 1, \dots, N$$

N denotes the number of crystal surfaces, A_i , B_i are coefficients found on the strength of geometrical considerations, r_i - the

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The Thermodynamics of Crystals. I. Generalization of the Gibbs-Curie Principle

distance from the center of mass of the crystal up to the i surface along the vertical, σ_i - specific free surface energy of the i surfaces. For crystals with limited surfaces the following conditions apply:

$$\frac{2\sigma_i}{r_i} + \frac{\epsilon_i}{3A_i r_i^3} = \text{const}'' \quad , \quad i = 1, \dots, N$$

The const-value is the same for all N -surfaces. ϵ_i is the energy of the edges of the i -surface.

The generalized Gibbs-Thomson equation has the following appearance:

$$RT \ln \frac{p_r}{p_{co}} = \frac{2\sigma_i V^{(m)'}}{r_i} \frac{B_i}{3A_i} + \frac{\epsilon_i}{3A_i r_i^3}$$

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The Thermodynamics of Crystals. I. Generalization of the Gibbs-Curie Principle

(For crystals with flat surfaces $B_i/3A_i$ is always equal to 1.)

The equations mentioned here are intended to be used in practice only if it is of any purpose to take the free surface of the crystals into account.

$v^{(m)}$ - the molar volume, p_r - volatility of the crystals, the order of which is determined by r_i , p_{∞} - the same order for infinitely large crystals. There are 5 references, 2 of which are Slavic.

ASSOCIATION: Moscow State University imeni M.V.Lomonosov (Moskovskiy gosudarstvennyy universitet im. M.V. Lomonosova)

SUBMITTED: August 2, 1956

AVAILABLE: Library of Congress

Card 4/4

POLTORAK, O.M.

AUTHORS: Poltorak, O.M., Panasyuk, G.P.

76-12-6/27

TITLE: Mass Spectrometric Determination of the Heat of Sublimation of Real Crystals (Mass-spektrometricheskoye opredeleniye teplot sublimatsii real'nykh kristallov). I. Zino (I. Tsink).

PERIODICAL: Zhurnal Fizicheskoy Khimii, 1957, Vol. 31, Nr 12, pp.2644-2648 (USSR)

ABSTRACT: Reference is made to the paper [Ref.1] of one of the authors (Poltorak) of the present work. There, a value of orientation for the decrease of the heat of sublimation with real crystals $\Delta\lambda_{\text{real}} = 10\,000 - 15\,000$ cal/mol was obtained for the most active samples. This evaluation, however, was indirect there. Here it is tried to re-examine this assumption by means of a test. This is carried out by determining the heat of sublimation of the metals which was obtained under conditions analogous to that of the synthesis of metallic catalysts. The mass-spectroscopic method for the determination of vapor pressure was applied for the determination of the heat of sublimation. This method allows, in contrast with other methods, to investigate the properties of the crystalline surface layer at extraction of a minimum amount of material. This peculiarity is of decisive importance with the investigation of faceted samples which are not in equi-

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Mass Spectrometric Determination of the Heat of Sublimation
of Real Crystals. I. Zinc.

76-12-6/27

librium. The present work was performed in connection with the investigation of the properties of metallic catalysts. The relatively easily volatile metal zinc, the heat of sublimation of which can be examined at sufficiently low temperatures and, moreover, according to various methods, was selected as object. The data for the catalytic properties of zinc, however, cannot be compared with the test data on physical properties of the crystals, since the catalytic activity in the case of zinc is usually correlated with the properties of the zinc oxide film which always covers the surface of the crystal. It is shown that the heat of sublimation with coarse-crystalline zinc which was obtained by distillation in vacuum, amounts to 30 000 cal/g-atom. This number agrees with the data from reference 2. This value was assumed here as λ_{∞} , whereas the value $\Delta\lambda_{\text{real}}$ was determined, starting from $\Delta\lambda_{\text{real}} = \lambda_{\infty} - \lambda_{\text{test}}$. It is shown that with the most active zinc dust crystals, the decrease in the heat of sublimation attains the value of 10 000 - 15 000 cal/g-atom, in which case the obtaining of crystals with $\Delta\lambda = 10\ 000$ makes no special difficulties. It is shown that the processes taking place at an increase of temperature lead to a reduction of $\Delta\lambda$, since the conversion takes place in first line in that part of the system

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Mass Spectrometric Determination of the Heat of Sublimation
of Real Crystals. I. Zinc.

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containing the least stable structures. It is shown that the annealing of the samples below 250° C does not change the heat of sublimation, whereas already at 280° C the recrystallization takes place quickly and the λ values approximate to the λ_{∞} . The cause for this phenomenon might be in the recrystallization of the zinc oxide covering the zinc crystals at approximately 250° C (according to the data of electronographic investigations, [Ref. 4]). With deeper temperatures, the ZnO-layer is compact and shows the lattice structure of metallic zinc. At 250° C the zinc oxide obtains its specific characteristic structure. It is assumed that the stabilizing action of the compact and thin layer of zinc oxide reduces after its recrystallization.

The author was advised by L.N. Gorokhov with respect to the method applied with mass spectroscopic tests. There are 4 figures, 2 tables, and 4 references, 2 of which are Slavic.

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Mass Spectrometric Determination of the Heat of Sublimation
of Real Crystals. I. Zinc.

76-12-6/27

ASSOCIATION: Moscow State University imeni M.V.Lomonosov (Moskovskiy
gosudarstvennyy universitet im. M.V. Lomonosova).

SUBMITTED: July 11, 1956

AVAILABLE: Library of Congress

Card 4/4

POLTORAK, O.M., Doc Chem Sci -- (diss) "Thermodynamics of real crystals and the active centers of catalyzers." Mos, 1958. 14 pp (Mos Order of Lenin and Order of Labor Red Banner State U in L.V.Lomonosov. Chem Faculty. Chair of Physical Chemistry), 100 copies (KL,44-58, 120)

- 8 -

21

5(4)

AUTHOR:

~~Poltorak, O. M.~~

SOV/55-58-5-25/34

TITLE:

Thermodynamics of Dispersion Systems (Termodinamika dispersnykh sistem)

PERIODICAL:

Vestnik Moskovskogo universiteta, Seriya matematiki, mekhaniki, astronomii, fiziki, khimii, 1958, Nr 5, pp 165 - 170 (USSR)

ABSTRACT:

By the restriction to crystals, the free surface energy of which is minimal, the theory of Gibbs-Curie-Wulf cannot describe many real structures. The author proposes a new way basing on considerations of dimension and similarity, and he gives explicit expressions for the complete potential of the material in the dispersive phase for an arbitrary crystal form (also for boundaries to which there corresponds no minimum of the surface energy). Also crystals, the single areas of contact of which vanish during the growth, are comprehended by introduction of corresponding corrections. The author thanks Professor Ya.I. Gerasimov, Academician, for several advices.

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Thermodynamics of Dispersion Systems

SOV/55-58-5-25/34

There are 3 references, 2 of which are Soviet, and 1 English.

ASSOCIATION: Kafedra fizicheskoy khimii (Chair of Physical Chemistry)

SUBMITTED: November 28, 1957

Card 2/2

AUTHORS: Poltorak, O. M., Panasyuk, G. P.

76-32-2-36/38

TITLE: On the Sintering of Catalysts
(K voprosu o spekanii katalizatorov)

PERIODICAL: Zhurnal Fizicheskoy Khimii, 1958, Vol. 32, Nr 2, pp. 470-471
(USSR).

ABSTRACT:

The results given here were obtained in 1955. The properties of silver catalysts were investigated which had been obtained by a thermal decomposition of $(COOAg)_2$. The decomposition lasted for 5 hours, the temperature gradually rising from 150 to 200°C. The earthy argentite samples obtained were sintered at from 350 to 700°C for 3 hours in a furnace previously heated to the demanded temperature at a residual gas pressure (air) of 0,1 torr. After sintering, the catalysts were crushed and sieved in an agate mortar. As control process the decomposition of hydrogen peroxide (at $20 \pm 0,05^\circ C$) was used. The "sintering curve" is given. From it can be seen that the sintering activity decreases almost linearly with the rise of temperature but a relative activity maximum can be found within the range of 570°C. The data

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On the Sintering of Catalysts

76-32-2-36/38

obtained clearly show just as well as those of Maxted and Moon (reference 5) another picture than that obtained in references 1 - 3. It is assumed that this difference is dependent upon the characteristic features of experimental methods. It is pointed out that the samples obtained at high temperatures do not reproduce the process of samples sintered at low temperatures. It is demanded to standardize the initial earthy metallite by means of previous crystallization at an arbitrarily fixed temperature. There are 1 figure, and 6 references, 4 of which are Soviet.

ASSOCIATION: **Moscow State University** imeni M. V. Lomonosov
(Moskovskiy gosudarstvennyy universitet im. M. V. Lomonosova)

SUBMITTED: June 25, 1957.

1. Silver catalysts--Sintering 2. Sintered catalysts--Effectiveness

Card 2/2

AUTHOR: Poltorak, O. M. 76 32-3-7/43

TITLE: The Activity of Heterogeneous Catalysts (Aktivnost' geterogennykh katalizatorov) II. Semiconductor Catalysts (II. Poluprovodnikovyye katalizatory)

PERIODICAL: Zhurnal Fizicheskoy Khimii, 1958, Vol 32, Nr 3, pp 534-542 (USSR)

ABSTRACT: In the considerations connected with the general conception of the nature of active centers in semiconductor catalysts, the theory of the active groups (groups of metal atoms) according to N. I. Kobozev (Ref 1) can be applied. Here, the assumption of a certain group of n ($n \geq 1$) atoms of the catalyst, which are not a part of the ideally-periodic space lattice of the carrier, is generally to hold. A table is mentioned from which the similarity between the semiconductor catalysts and the metallic catalysts is to be seen. In this connection, the problem of the cause of the similarity and the nature of the active centers of the crystalline ions is raised. From the chemical point of view, the semiconductors represent polyvalent bodies, without being stoichiometric crystals, since they contain, in the ionic lattice, an excess of atomic disperse

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76-32-3-7/43

The Activity of Heterogeneous Catalysts. II. Semiconductor Catalysts

metal or metalloids, which is present as lattice "defect". The latter differs from the adsorption groups by a "penetrating structure". Here, it can be assumed that this atomic group is active not only on the surface, but shows its activity also after penetration into the lattice of the semiconductor. By this means, the similarity between the metallic and the semiconductor catalysts can be explained, because an analogy between the active centers ("metal groups") exists. In determining the resistance of this excess metal in the ionic lattice, it has to be considered that the metallic lattice is not ideal. The latter is mentioned in a mathematical derivation of the determination of the defect concentration in the crystal structure. The calculation data show that the amount of metal groups is very small and that their resistance is closely connected with the formation mechanism of the non-stoichiometric ionic crystal, and therewith with the theories of defects according to Shottky (Ref 8) for anions, and according to Frenkel' (Ref 10) for cations. The latter are employed in calculating the surface activity, under application of a calculation according to Jost (Ref 9). Formulae for the determination of the concentration equilibrium at different forma-

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76-32-3-7/43

The Activity of Heterogeneous Catalysts. II. Semiconductor Catalysts

tion mechanisms of the metal groups on the catalyst surface are mentioned. From the calculations, it can be seen that the value of about 10^3 for the number of metal groups is sufficient for the catalytic reactions. The formation of polyatomic active centers is considered the consequence of the presence of surplus metal quantities. In this connection, according to F. F. Vol'kenshteyn (Ref 11), a second assumption of another mechanism must not be followed. There are 2 figures and 11 references, 7 of which are Soviet.

ASSOCIATION: Moskovskiy gosudarstvennyy universitet im. M. V. Lomonosova
(Moscow State University imeni M. V. Lomonosov)

SUBMITTED: August 30, 1956

Card 3/3

76-32-3-39/43

AUTHOR: Poltorak, O. M.

TITLE: The Thermodynamics of Crystals. II.
(Termodinamika kristallov. II.)

PERIODICAL: Zhurnal Fizicheskoy Khimii, 1958, Vol 32, Nr 3,
pp 722-724 (USSR)

ABSTRACT: In connection with a preceding paper, equations for the thermodynamics of crystal equilibria are given, a graphic representation being given for explanation. The case of an undercooled liquid is assumed, and the changes produced thereby are analyzed. In the final formula a potential of the type of form is introduced, due to the equilibrium of the change of shape of the branching during the growth of the crystal. The occurrence of these quantities has not been provided for in the theory according to Gibbs. It is also stated that the boundary energy plays the part of the activation energy in the change of shape of the branching of crystals and thus causes its special part played in the theory of real crystals. Its numerical correction is in this connection not as important as the

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The Thermodynamics of Crystals. II.

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effect caused by it of the stabilization of the types of forms which are not in equilibrium.

There are 2 references, both Soviet.

ASSOCIATION: Moskovskiy gosudarstvennyy universitet im. M. V. Lomonosova (Moscow State University imeni M. V. Lomonosov)

SUBMITTED: October 29, 1957

Card 2/2

66867

SOV/76-33-11-27/47

5.1190

5(4)
AUTHOR:

Poltorak, G.M.

TITLE:

Thermodynamics of Crystalline Catalysts

PERIODICAL:

Zhurnal fizicheskoy khimii, 1959, Vol 33, Nr 11, pp 2524-2538
(USSR)

ABSTRACT:

The explanation of many "structure sensitive" properties of crystals by the theory of the thermal dissociation of an ideal lattice (simple theory of the defects) is often entirely inadequate, because the defects calculated in this manner are smaller by several orders of magnitude than the values obtained by experiments. This drawback may be eliminated if the formation of the defects on lattices of real crystals, which are not in equilibrium, is taken into consideration. The equilibrium: the lattice not in equilibrium \rightleftharpoons the active centers (1) is analyzed; this makes possible to operate with experimental values. To be able to regard the equilibrium (1) thermodynamically, the macroscopic properties of the "lattice not in equilibrium" must not change during the formation and the disappearance of the defects in the system, which is the case at not too-high temperatures. Thus the only variable parameter is the molar portion of the defects (equation (4))

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Thermodynamics of Crystalline Catalysts

and the equilibrium shift (1) at the transition from the ideal to the real crystal can be described by equation (6). In the theory of Gibbs-Wolf (Refs 6-8) only crystals, which are in equilibrium, are taken into account. The author proved (Refs 4,9,10) that the thermodynamic theory of crystals (with practically any desired shape) can only be determined with simultaneous consideration of the properties of the crystal edges and -faces, and that for crystals, which are not in equilibrium, equation (7b) holds, which is distinguished by the size of the "edge energy" from the one (7a) holding for the theory (Refs 6-8). The article contains data from the paper of Oriani (Ref 11) concerning the dependence of the surface energy on the sublimation temperature in metals (Fig 2), and the experimental results of the author and G.P.Panasyuk (Ref 12) of mass spectrometric determinations of the sublimation temperature from the vapor pressure of zinc black at various temperatures. In the explanations concerning the nature of the active centers the statements of A.A.Balandin (Refs 14,15) and N.I.Kobozev (Refs 16,17) are discussed. It is mentioned that the "ensembles" of Kobozev may be regarded the most efficient representation of a model of the active

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Thermodynamics of Crystalline Catalysts

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centers. In the present case, however, they are considered to be in equilibrium with the crystal lattice on metallic lattices. One paragraph deals with the sintering of catalysts and, based on the results of investigations carried out by the author and V.S.Nikulin on silver catalysts, it is established that the values obtained by experiments and those obtained by calculation based on the equilibrium of the surface-defects of real crystals (metallic catalysts) correspond with the theory. Explanations on semiconductor catalysts - in this connection the theory of defects according to Shottki and Frenkel are mentioned - lead to the conclusion that a distribution of the metal between the surface and the interior is very favorable for the catalysis. The lattice-defects must be considered surface-active. There are 4 figures and 21 references, 18 of which are Soviet.

ASSOCIATION:

Moskovskiy gosudarstvennyy universitet, Khimicheskij fakul'tet
(Moscow State University, Chemistry Department)

Card 3/3

S/076/60/034/01/001/044
B010/B014

5 (4)
AUTHOR:

Poltorak, O. H.

TITLE:

Thermodynamics of Disperse Systems (Generalization of the
Gibbs - Curie - Wulf Theory)

PERIODICAL:

Zhurnal fizicheskoy khimii, 1960, Vol 34, Nr 1, PP 3 - 22 (USSR)

ABSTRACT:

This paper deals with general problems of the thermodynamics of disperse systems on the basis of the so-called dimension method which was devised by the author. Particles of the disperse phase are schematically represented in figure 1. The dimension method allows to express the mutual relations of the coordinates from equation (1) in a general form without the necessity of studying details of the structural model. Furthermore, it is possible to express all usual transformations of thermodynamic relations in a general form. Examples of the application of this method are given. Furthermore, this method permits a generalization of the basic results of the Gibbs-Curie-Wulf theory. Contrary to Curie's and Wulf's conception, the crystal theory considers the whole variety of types and not only those to which the absolute minimum of free crystal energy corresponds. This is achieved by simultaneous consideration of the face- and edge

Card 1/3

Thermodynamics of Disperse Systems (Generalization of the Gibbs - Curie - Wulf Theory) S/076/60/034/01/001/044
B010/B014

energy (Figs 4 and 5), as it is the edge energy which allows to determine the thermodynamically possible face types. General equations are derived for the total chemical potential of the substance in the disperse phase (Fig 2). This paper further deals with traditional problems of the energy of formation of crystals from supercooled liquids (Fig 3). It is shown that Gibbs's well-known equations for the increase in the chemical potential and formation energy are very inexact even for drops, since the variation in molar volume with the dispersion degree of particles is not taken into account. The conception of the minimum of free surface energy is discussed. It is shown that in this case a certain multitude of the relative Z^{Ω} minima is present and not an absolute Z^{Ω} minimum as usually assumed. Thus, it is possible to study even crystals with dislocations within the framework of thermodynamics. Furthermore, this paper deals with the variation in adsorption of components at the surface layer, which results from a change in the dispersion degree of particles. An equation (43) is derived which is a generalization of Gibbs's adsorption equation. Figure 6 illustrates the

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Thermodynamics of Disperse Systems (Generalization of the Gibbs - Curie - Wulf Theory) S/076/60/034/01/001/044
B010/B014

equilibrium of crystals of different face structure. There are 6 figures and 26 references, 11 of which are Soviet.

ASSOCIATION: Moskovskiy gosudarstvennyy universitet im. M. V. Lomonosova
(Moscow State University imeni M. V. Lomonosov)

SUBMITTED: June 26, 1959



Card 3/3

POLTORAK, O.M.

Thermodynamics of disperse systems. Zhur.fiz.khim. 34 no.1:
3-22 Ja '60. (MIRA 13:4)

1. Moskovskiy gosudarstvennyy universitet im. M.V.Lomonosova.
(Thermodynamics) (Crystals)

FALTOVA, G.M., SOVIET UNION

Chemisorption and catalysis on platinum particles
Part 1. Zhur. fiz. khim. 59 no.6(1476-1481) 1983

(NBA 12,11)

I. Moskovskiy gosudarstvennyy universitet imeni M.V. Lomonosova
Submitted July 22, 1983.

ZHMUD', Ye.S.; BORONIN, V.S.; POLTORAK, O.M.

Dispersity of platinum on silica gel from X-ray study and hydrogen chemisorption data. Zhur. fiz. khim. 39 no.3:809-811 Mr '65.
(MIRA 18:7)

1. Moskovskiy gosudarstvennyy universitet imeni Lomonosova.

BORONIN, V.S.; NIKULINA, V.S.; POLTORAK, O.M.

Adsorption of hydrogen on platinized silica gels. Vest. Mosk.
un. Ser. 2: Khim. 18 no. 2:24-28 My-Je '63. (MIRA 16:6)

1. Kafedra fizicheskoy khimii Moskovskogo universiteta.
(Hydrogen) (Adsorption) (Silica)

ADAMENKOVA, M.D.; POLTORAK, O.M.

Catalytic properties of platinized silica gels as dependent
on the conditions of their preparation. Vest. Mosk. un. Ser.
2: Khim. 18 no.5:12-16, S-0 '63. (MIRA 16:11)

1. Kafedra fizicheskoy khimii Moskovskogo universiteta.

YEREMIN, Ye.N., prof.; KISELEV, A.V., prof.; KOBOZEV, N.I., prof.;
PANCHENKOV, G.M., prof.; POLTORAK, O.M., prof.; SKURATOV, S.M., prof.;
TATEVSKIY, V.M., prof.; TOPCHIEVA, K.V., prof.; FIGUROVSKIY, N.A.,
prof.; FILIPPOV, Yu.V., prof.; SHAKHPARONOV, M.I., prof.

Iakov Ivanovich Gerasimov; on his sixtieth birthday. Zhur. fiz.
khim. 37 no.12:2803-2804 D '63. (MIRA 17:1)

1. Kafedra fizicheskoy khimii Moskovskogo gosudarstvennogo
universiteta.

ACCESSION NR: AP3001603

S/0189/63/000/003/0024/0028

AUTHORS: Boronin, V. S.; Nikulina, V. S.; Poltorak, O. M.

TITLE: Hydrogen adsorption on platinum coated silica gels

SOURCE: Moscow. Universitet. Vestnik. Seriya 2. Khimiya, no. 3, 1963, 24-28

TOPIC TAGS: silica gel, platinum coated silica gel, hydrogen, hydrogen adsorption on silica gel, adsorption, desorption, platinum coating, platinum dispersion on silica gel

ABSTRACT: The adsorption of H_2 on Pt/SiO_2 was studied, and the data obtained was used to evaluate the degree of the platinum layer dispersion in samples obtained under various conditions. The catalyzers were prepared by adsorption of Pt ammine on silica gel. The material was prepared by adding 25% of ammonia to the H_2PtCl_6 solution heated to 80-90C. All the catalyzers contained 2% (by wt) of Pt, but were differently synthesized. This caused the variation in Pt dispersion on SiO_2 . The H_2 adsorption was studied at -196 to +200C and at hydrogen pressure 10-1.7 mm Hg. It was established that at -76 to +200C the hydrogen adsorption was small

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ACCESSION NR: AP3001603

and almost independent of temperature. At -196°C the adsorption increased substantially and proceeded rapidly at 20°C ($P = 1.0$ mm Hg). Under the latter conditions 90% of total H_2 was absorbed in the first-minute, and the adsorption equilibrium was reached within an hour. The isotherms of the adsorption were measured under two conditions. The first involved the adsorption on the catalyzers which were vacuum cooled to -196°C ; in the second case the samples were reheated to 20°C and then recooled to -196°C before the adsorption isotherm was measured. The reverse adsorption isotherms on the catalyzers at -196°C differed slightly from the adsorption isotherm on SiO_2 , and the structure of the adsorption layer on Pt at -196°C was different on the variously treated samples. However, the saturation of the Pt surface by hydrogen was complete in all cases. The authors conclude that platinum dispersion in the platinum-covered silica gels depends strongly on the method of sample synthesis, but, for samples obtained under optimal conditions, practically the whole Pt is available for chemical sorption of hydrogen. Orig. art. has: 1 table and 4 figures.

ASSOCIATION: Moskovskiy universitet, Kafedra fizicheskoy khimii (Moscow University, Department of Physical Chemistry)

Card 2/3

BORONIN, V.S.; NIKULINA, V.S.; POLTORAK, O.M.

Conditions of the preparation and the dispersity of platinum
in platinized silica gels. Zhur. fiz. khim. 37 no.5:1174-
1177 My '63. (MIRA 17:1)

1. Moskovskiy gosudarstvennyy universitet imeni M.V. Lomonosova.

ADAMENKOVA, M.D.; POLTORAK, O.M.

Dependence of the catalytic properties of platinized silica
gels on the conditions of their preparation. Zhur. fiz. khim.
37 no.6:1388-1390 Ja '63. (MIRA 16:7)

1. Moskovskiy gosudarstvennyy universitet imeni Lomonosova.
(Silica) (Platinum catalysts)

POLTORAK, O. M.; BORONIN, V. S.; DIMITRIYENKO, N. M.

Estimation of the number of active centers by processing the experimental data by the method of the theory of ensembles.
Vest. Mosk. un. Ser. 2: Khim. 16 [i.e.17], no.6:39-40
N-D '62. (MIRA 16:1)

1. Kafedra fizicheskoy khimii Moskovskogo universiteta.

(Catalysis)

POLTORAK, O. M.

Negative surface tension as a factor in the stabilization of
biological structures. Zhur. fiz. khim. 36 no.12:2777-2780
D '62. (MIRA 16:1)

(Cells) (Biochemistry)

S/076/62/036/012/011/014
B101/B180

AUTHOR: Poltorak, O. M.

TITLE: Negative surface tension as a factor in the stabilization of biological structures

PERIODICAL: Zhurnal fizicheskoy khimii, v. 36, no. 12, 1962, 2777 - 2780

TEXT: Membrane biocrystals and the organelles of cells are assumed to be metastable equilibrium systems differing from low-molecular systems in that there is negative interfacial tension between biocrystal and plasma. A thermodynamic definition of the occurrence of negative surface tensions is given by $T\Delta S^{\Omega} > \Delta U^{\Omega}$, where ΔU^{Ω} is the energy change and ΔS^{Ω} is the entropy change on formation of the crystal surface. Negative surface tension may occur in macromolecules consisting of a rigid principal chain and flexible lateral substituents. An "anticrystalline state" forms in which neither crystal nor solution is stable, but only the supermolecular structure composed of a small number of macromolecular layers which form membranes or threads, and in which lateral chains are turned toward the

Card 1/2

CA POLTORAK, V. A.

Experimental study of the slow reaction of the oxidation of hydrogen and of the third ignition limit. V. A. Poltorak and V. V. Voronikhin (Univ. Moscow). *Zh. Fiz. Khim.* 24: 300-310(1950); *cf. C.A.* 43, 1625d.—The ignition temp. T of a mixt. $2\text{H}_2 + \text{O}_2$ in a glass vessel washed with HNO_3 and then H_2O was approx. 588° at 720, 594° at 620, and 605° at 517 mm. Hg. Addn. of 2 mol. % of H_2O lowered T by about 3° . In glass and quartz vessels coated with KCl T was $15\text{--}30^\circ$ higher. The ignition occurred after a latent period τ which was shorter the higher the pressure and the temp. and was independent of the nature of the surface. In clean glass the slow combustion at T was autocatalytic, whereas in the KCl -coated glass the rate of slow combustion was const. in time. The energy of activation was 25,000 and 38,000 in clean and coated glass, resp. The rate const. of the reactions $\text{H} + \text{H}_2 = \text{H}_2 + \text{H}$ and $\text{HO}_2 + \text{H}_2\text{O} = \text{H}_2\text{O}_2 + \text{OH}$ were calcd. to be 1.7×10^{-10} exp. $(-24,000/RT)$ and 2×10^{-10} exp. $(-20,000/RT)$ cc./sec. The energy of activation of the reaction $\text{H}_2 + \text{O}_2 = 2\text{OH}$ was about 40,000 cal./mol. The duration of τ in clean quartz was independent of whether the gas did or did not contain intermediate reaction products, thus showing the thermal nature of the ignition. The ignition in a coated vessel had a chain mechanism. J. J. Biharian

5-1150

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23008
S/189/61/000/004/001/002
5051/D112AUTHORS: Poltorak, O.M., Boronin, V.S.

TITLE: The theory of preparing model adsorptive catalysts

PERIODICAL: Moskva. Universitet. Vestnik. Seriya II Khimiya, no. 4,
1961, 3-15

TEXT: Continuing the studies of N.I. Kobozev (Ref. 1: Zhurn. fiz. khimii, 1, 1939; Ref. 2: Uspekhi khimii, 25, 545, 1956), who in his theory of active ensembles proposed a method of determining the structure of active centers by examining the properties of a series of adsorptive catalysts obtained by application of an active substance to an inert carrier, the authors investigated the conditions for the synthesis of model catalysts, i.e. catalysts allowing serial analysis of their properties. They confined themselves to the study of the state of the active substance prior to its reduction to metal, the discussion of the reduction process having been reserved for a second publication. The investigation is based on the assumption of irreversible adsorption of the active substance on a carrier consisting of equal spherical granules with the radius R, the granules containing chaotically arranged pores of $2r$ in diameter. The character of carrier surface saturation by active matter was basically determined by means of the quantity L,

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23008

S/189/61/000/004/001/002
D051/D112

The theory of preparing model adsorptive catalysts

which is defined as the effective "depth of penetration" and as the distance from the opening of a model pore over which the initial concentration C_0 of the active substance diminishes by e times. The final expression found for this quantity is

$$L = \frac{3D\tau_{1/2}}{\gamma R 0.69}, \quad (10)$$

where D is the diffusion coefficient of the active substance; γ - the ratio of the total volume of the solution to the volume of the carrier; $\tau_{1/2} = \frac{\ln 2}{K_{ef}}$, K_{ef} - effective constant of the rate of change in concentration of the active substance taking place within a volume of solution absorbed by 1 granule. For the adsorption of ammonia complexes of nickel and platinum the authors found that $\tau_{1/2}$ does not exceed 10 seconds for specimens with

$R \sim 10^{-1}$ cm, and for finer specimens the rate of sorption was commensurable with the rate of external diffusion to the granule surface. Assuming that $\tau_{1/2} \sim 10$ sec, $D \sim 10^{-5}$ cm²/sec, $\gamma \sim 10^2$ for granules with $R \sim 10^{-1}$ the authors obtained $L \sim 5 \cdot 10^{-5}$ cm and $\frac{R}{L} = 2000$. This proves irregular carrier saturation and justifies the use of equations based on a law of distribution

Card 2/6

2300B

S/189/61/000/004/001/002

DO51/D112

The theory of preparing model adsorption catalysts

given type. Briefly summarizing their system of investigation at the end of the article, they underline that the present analysis represents a necessary complement to the methods of the theory of active ensembles, which are ineffective when in the case of only weak saturation a catalyst reveals extreme properties. For this reason they examined first such properties at low α values and tried to find experimental data suitable for a qualitative verification of the theory. Thus, they were not confined to specific methods of synthesizing model adsorptive catalysts. They could select data where the conformity between theory and experiment makes fluctuation analysis of active centers possible. One of the basic conclusions to be drawn from the present work is the fact that the idea of irreversible adsorption of active substance is hardly compatible with the postulates of the theory of active ensembles. In § 1 of the article, which concerns the postulates of this theory, reference is made to V. I. Shekhalova (Ref. 4: Kandidatskaya dissertatsiya [Candidate's thesis]. MGU, 1960), who made qualitative observations of the irregularity of saturation of alumogels by H_2PtCl_6 . There are 3 figures and 9 references: 8 Soviet and 1 non-Soviet-bloc. The reference to the English language publication reads as follows: R. Maatman, C. Preter, *Industr. and Engng. chem.*, 49, 253, 1957.

Card 4/6

POLTORAK, O.M.; BORCHIN, V.S.

Chemisorption and catalysis on pretreated silica gels.
Part 2. Zhur.fiz.khim. 39 no.10:2491-2498 1965. (MIRA 18:12)

1. Moskovskiy gosudarstvennyy universitet imeni Lomonosova.
Submitted July 22, 1964.

GLUSHCHENKO, A.S., inzh.; PONOMAREVSKO, E.V., inzh.; POLTORAK, P.A., inzh.

Improvement of torches for low pressure gas cutting. Svar. proizvod.
no.7:21-22 Ji '65. (MIRA 18:8)

1. Kustovoy otdel svarki Donetskogo soveta narodnogo khozyaystva.

ZHIGULA, A.V.; KOROTKOV, G.I.; KUCHERENKO, V.O.; GLUSHCHENKO, A.S.;
POLTORAK, P.A.

Semiautomatic cutting of thick sheet. Metallurg 10 no.6:32
Je '65. (MIRA 18:6)

1. Zavod im. Il'icha i Donetskiy sovet narodnogo khozyaystva.

GLUSHCHENKO, A.S., inzh.; MASLOV, V.A., inzh.; POLTORAK, P.A., inzh.

Converting the RR-600 cutters for operation on natural gas. Svar.
prcizv. no.10:36 0 '64. (MIRA 18:1)

1. Kustovoy otdel svarki Donetskogo soveta narodnogo khozyaystva.

L 41176-65 EWG(j)/EWT(d)/EWG(r)/EWT(l)/FS(v)-3/EEC(k)-2/ENG(v)/EEC-4/
s/0275/64/000/007/V004/V004

ACCESSION NR: AR4045748

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EWG(a)-2/EEC(c)-2/EEC-2/ENG(s) Pe-5/Pq-4/Pac-4/Pae-2
SOURCE: Ref. zh. Elektronika i yeye primeneniye. Svodnyy tom, Abs. TV29

8

AUTHOR: Gumener, P. I.; Poltorak, S. A.; Rapoport, K. A.; Raykhman, S. P.

TITLE: Methods of radiotelemetric investigations of the temperature of skin, body, and air

CITED SOURCE: Sb. Radiotelemetriya v fiziol. i med., Sverdlovsk, 1963, 101-108

TOPIC TAGS: telemetry, telemeter, physiological test

TRANSLATION: The transmitting part of a modified system intended for radiotelemetric study of the temperature of the body, skin, air under and over clothing consists of 17 semiconductor sensors, an automatic switch (time relays and a step selector), an RC electron-tube oscillator, an amplifier, and a semiconductor AM USW transmitter. Each sensor excites the RC oscillator in its own frequency band. The oscillator, the amplifier, and the supply batteries are fastened to the belt of the subject, while the transmitter is mounted as the subject's headgear. The receiving part comprises a receiver and a dekatron pulse counter. A time relay

Cord 1/2

L 41176-65

ACCESSION NR: AR4045748

starts the counter for 10 minutes on appearance of a sensor signal. The counter is cleared by the investigator. The signal's origin can be determined either visually, or on a cathode-ray oscilloscope, or by hearing. Tests have shown that the temperature can be measured at a distance of 20 m with an error of 0.1C. Bibliography: 3 titles.

SUB CODE: EC,LS

ENCL: 00

MLL
Card 2/2

AKSYUK, A.F., kand.med.nauk; POLTORAK, S.A., inzh.; LEVKO, A.P., tehnik

Electronic device for the determination of the rate of reflex
reactions simultaneously in several subjects. Gig.1 san. 26
no.12:47-50 D '61. (MIRA 15:9)

1. Iz Moskovskogo nauchno-issledovatel'skogo instituta gigiyeny
imeni F.F.Erismana.
(REFLEXES) (PHYSIOLOGICAL APPARATUS)

POLTCRAK, V.A. (Moscow)

Kinetics of propane cracking in the presence of oxygen additions.
Zhur. fiz. khim. 35 no.2:284-286 F '61. (MIRA 16:7)

1. Moskovskiy gosudarstvennyy universitet imeni Lomonosova.
(Cracking process) (Propane) (Oxygen)

POLTORAK, V.A.; VOYEVODSKIY, V.V.

Kinetics of propane cracking in the presence of oxygen additions.
Part 1: Dependence on the treatment of the vessel walls with HF.
Zhur. fiz. khim. 35 no.1:176-180 Ja '61. (MIRA 14:2)

1. Moskovskiy gosudarstvennyy universitet im. M.V. Lomonosova.
(Hydrofluoric acid) (Propane)
(Cracking process)

POLTORAK, V. A.

Reaction of deuterium atoms with alkenes. Relation of deuterium to the concentration of deuterium atoms in the system. R. B. Mardaleishvili, G. B. Pariiskii, V. A. Poltorak, and V. I. Voevodskii (M. V. Lomonosov State Univ., Moscow). *Dokl. Akad. Nauk S.S.S.R.* 1956, 516. Further support the conclusion reached in previous work that deuterium is not with D atoms: D_2 was passed through an elec. discharge tube and then mixed with C_2H_4 , C_2H_2 , or iso- C_4H_8 . The deuterated methanes in the product were determined by mass spectrometry. Extrapolation of the curve relating percentage deuteriation at $[D] \rightarrow 0$, compared with 75.6% calcd. on the basis of deuteriation by D_2 mols. Similar results were obtained with C_2H_2 and iso- C_4H_8 . In the disproportionation of free radicals, the mobility of H or D on the α carbon of the radical increases from primary to tertiary C. C. E. Renzel

phys 4

POLTORAK, V. A.

1455. Uniform chain mechanism of thermal decomposition of hydrocarbons. V. A. Poltorak and V. V. Yermolaki. Dokl. Akad. Nauk SSSR, 1972, 231, 102-104. Cracking of $C_{12}H_{26}$ at 570-650° C in presence of $C_{12}H_{26}$ (60 min), static conditions. $C_{12}H_{26}$ and $D_2 + NO$. All test run to 10% conversion. $C_{12}H_{26}$ and D_2 (latter < 0.5%) separated from reaction products, burnt, and resultant water analyzed for D_2O . Results indicate that both in presence and absence of NO , thermal decomp of $C_{12}H_{26}$ occurs via free radicals. V. B.

2

4000

PM

POLTORAK, V.A.

USSR/Physical Chemistry - Kinetics, Combustion, Explosions, Topo-chemistry, Catalysis.

B-9

Abs Jour: Referat.Zhurnal Khimiya, No 3, 1958, 7186.

Author : R. Ye. Mardaleyschvili, G.B. Pariyskiy, V.A. Poltorak, V.V. Vovodskiy.

Inst : Academy of Sciences of USSR.

Title : Reaction of Deuterium Atoms with Alkenes. Dependence of Methane Deuterization on Concentration of Deuterium Atoms in System.

Orig Pub: Izv. AN SSSR. Otd. khim. n., 1956, No 5, 516-524.

Abstract: The exchange reaction of alkyl radicals with D₂ (RZh-Khim, 1956, 74392) was studied with the application of the mass-spectrometric analysis of D content in the being produced methane. The radicals were formed according to the reaction $D + M \rightarrow R$, where M was C₂H₄, C₃H₆, and iso-C₄H₈. In the cases of C₂H₄ and iso-C₄H₈, the D content in methane increased,

Card : 1/2

-4-

MARDALEYSHVILI, R.Ye.; PARIYSKIY, G.B.; POLTORAK, V.A.; VOYEVODSKIY, V.V.

Deuterium atom reactions with alkenes. Relation of methane deuteration to the concentration of deuterium atoms in the system. Izv.AN SSSR Otd. khim.nauk no.5:516-524 My '56. (MIRA 9:9)

1.Moskovskiy gosudarstvennyy universitet imeni M.V.Lomonosova i Institut khimicheskoy fiziki Akademii nauk SSSR.
(Deuterium) (Methane)

POLTORAK, V. A.

Dissertation: "Research Into the Kinetics of the Cracking of Propane." Cand Chem
Sci, Moscow State U, Moscow 1953.

W-30928

SO: Referativnyy Zhurnal, No. 5, Dec 1953, Moscow, AN USSR (~~XXXXXX~~)

POLTORAK, V. A.

USSR.

A single chain mechanism for the thermal decomposition of hydrocarbons. V. A. Poltorak and V. V. Yoevodskii (M. V. Lomonosov State Univ., Moscow). *Doklady Akad. Nauk S.S.S.R.* 91, 589-91(1963).—Mol. D₂ was added to propane in expts. to det. if cracking of propane proceeds by a mol. or a radical mechanism. Since free radicals exchange their H with the D at a rapid rate, the reaction mechanism can be detd. by detg. the amt. of D present in the reaction products. Cracking was carried out both in the presence and absence of NO acting as inhibitor. The results show that in both cases decompn. proceeds by a free radical mechanism.

J. Rovtar Leach

POLTORAK, V.A.; SILAYEV, A.B.

Chemical and physicochemical properties of janthinellin. Antibiotiki
9 no.1:25-27 Ja '64. (MIRA 18:3)

1. Laboratoriya antibiotikov biologo-pochvennogo fakul'teta
Moskovskogo universiteta.

POLTORAK, V.A.; SILAYEV, A.B.

Method for the isolation and chemical refining of an antifungal
polyene candicine-type antibiotic. Vest.Mosk.Un.Ser.2: khim. 16
no.6:73-74 N-D '61. (MIRA 14:11)

1. Laboratoriya antibiotikov biologo-pochvennogo fakul'teta
Moskovskogo gosudarstvennogo universiteta.
(Antibiotics)

S/076/61/035/001/011/022
B004/B060

AUTHORS: Poltorak, V. A. and Voyevodskiy, V. V.

TITLE: Kinetics of propane cracking in the presence of oxygen additions. I. Dependence on the treatment of the vessel surface with HF

PERIODICAL: Zhurnal fizicheskoy khimii, v. 35, no. 1, 1961, 176-180

TEXT: Experiments conducted by Z. K. Mayzus, V. G. Markovich, and M. B. Neyman (Ref. 2) have shown that small oxygen additions (about 0.15%) greatly accelerate the butane decomposition. The authors of the present paper have earlier advanced (Ref. 3) a hypothesis concerning the heterogeneous character of the formation and destruction of radicals of the cracking reaction of hydrocarbons. According to this hypothesis, the effect of oxygen would also be based upon a heterogeneous process. A study has been made here of the effect of oxygen additions upon the propane cracking with and without NO additions. The vessel walls were either left untreated or were treated with boiling HF. The experiments were conducted in a quartz-vacuum apparatus. The initial propane pressure was 30-60 mm Hg, and the

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Kinetics of propane cracking in ...

S/076/61/035/001/011/022
B004/B060

temperature was 600°C. The effect of NO was found to be independent of the succession provided for its addition (prior or after O₂). Experimental data are given in Figs. 1,2. A treatment of the vessel walls with HF increases the effect of the oxygen addition upon the cracking. When the HF-treated vessel was checked with nontreated quartz, the reaction rate dropped from curve 3 to curve 1 of Fig. 1. The initial rate w of cracking follows the law $w \sim (C_3H_8)^2$. For initial C₃H₈ pressure of 30, 40, 50, and 60 mm Hg, a ratio of reaction rates 0.1 : 1 : 1.5 : 2.3 was found. It follows from Fig. 2 that slight NO admixtures have an accelerating effect. The results are discussed on the basis of the hypothesis of the heterogeneous formation of radicals. Equations are derived for the reaction rate in the presence of O₂: $w = B(O_2) / [1 + C(O_2)]$ and for the presence of NO: $w_{NO}^0 = B_1(NO) / [1 + C_1(NO)]^2$. The curves determined experimentally were obtained by a suitable choice of constants B, C, B₁, and C₁. There are 2 figures and 4 references: 3 Soviet-bloc and 1 non-Soviet-bloc.

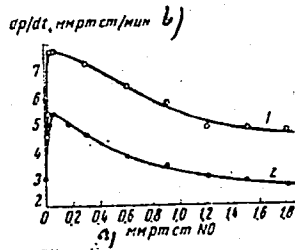
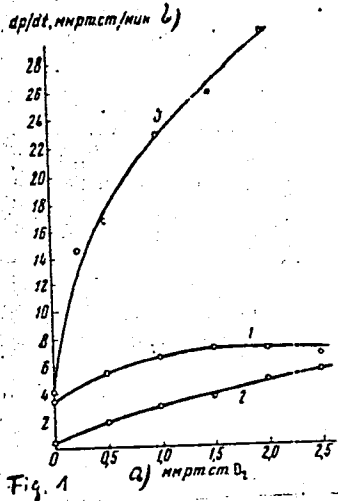
Card 2/4

Kinetics of propane cracking in ...

S/076/61/035/001/011/022
B004/B060

ASSOCIATION: Moskovskiy gosudarstvennyy universitet im. M. V. Lomonosova
(Moscow State University imeni M. V. Lomonosov)

SUBMITTED: May 7, 1959



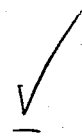
Card 3/4

Kinetics of propane cracking in ...

S/076/61/035/001/011/022
B004/B060

Legend to Fig. 1. 1: C_3H_8 , vessel untreated; 2: $C_3H_8 + 20\% NO$, vessel treated with HF; 3: C_3H_8 , vessel treated with HF; a) mm Hg O_2 ; b) mm Hg/min.

Legend to Fig. 2. 1: 50 mm Hg C_3H_8 ; 2: 40 mm Hg C_3H_8 ; a) mm Hg NO; b) mm Hg/min.



Card 4/4

POLTORAK, V.A.

Colorimetric determination of trichothecin. Antibiotiki 8 no.7:
638-640 JI'63 (MIRA 17:3)

1. Laboratoriya antibiotikov biologo-pochvennogo fakul'teta
Moskovskogo gosudarstvennogo universiteta.

POLTORAK, V.A.

Inactivation of janthinellin in alkaline solutions. Vest.
Mosk. un. Ser. 2:Khim. 20 no. 5:85-88 S-0 '65. (MIRA 18:12)

1. Biologo-pochvennyy fakul'tet Moskovskogo gosudarstvennogo
universiteta. Submitted August 5, 1964.

BEKKER, Z.E.; LISINA, Ye.S.; POLTORAK, V.A.; SILAYEV, A.B.

Iantinellin, an antibiotic with antifungal properties produced
from *Penicillium janthinellum* Biourge. *Antibiotiki* 8 no.3:
207-212 Mr'63 (MIRA 17:4)

1. Laboratoriya antibiotikov biologo-pochvennogo fakul'teta
Moskovskogo universiteta imeni Lomonosova.

5 (4)

AUTHORS:

Poltorak, V. A., Leytis, L. Ya.,
Voyevodskiy, V. V.

05826

SOV/76-33-10-24/45

TITLE:

On the Part Played by the Surface in Thermal Propane Decomposition

PERIODICAL:

Zhurnal fizicheskoy khimii, 1959, Vol 33, Nr 10, pp 2259 - 2263
(USSR)

ABSTRACT:

The fact that thermal decomposition is never completely inhibited by various inhibitors is ascribed by Hinshelwood (Ref 1) to the two parallel mechanisms of decomposition, namely, the chain mechanism (inhibited by the inhibitor) and the molecular mechanism (which is not inhibited at all). This assumption is, however, irreconcilable with experimental results obtained from the cracking of hydrocarbons in the presence of deuterium-bearing molecules. Hinshelwood et al. (Ref 9) found that the rate of thermal decomposition of 2-methyl pentane was independent of a variation in the ratio S:V (S = surface of the reaction vessel, V = its volume). Rice and Hertzfeld (Ref 10) have, however, shown that the absence of any dependence of the reaction rate on the ratio S:V is not indicative of the homogeneity of a chain formation or destruction. Since the hypothesis of a homogeneous

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On the Part Played by the Surface in Thermal Propane
Decomposition

mechanism of chain formation or destruction could not explain experimental observations, V. V. Voyevodskiy and V. A. Poltorak (Ref 11) assumed that the formation and destruction of the chains be heterogeneous processes and the observations are to be attributed to variations in the surface of the reaction vessel. Consequently, they suggested a definite course of this process. In order to check this hypothesis, the authors investigated systematically the influence exerted by the ratio S:V on the kinetics of propane cracking. Further, they examined the possibility of intoxicating or activating the vessel surface. The reaction rate was determined from the pressure rise (measured by means of a diaphragm gauge) at a propane pressure of 25 torr and a temperature of 610 C. For this purpose, they used a quartz tube with and without content (twelve-fold variation of the S:V value). When the S:V value was increased by twelve times, the reaction rate dropped to one-fourth. Experimental pretreatment of the vessel surface with various salt solutions indicated that an $Mg(ClO_4)_2$ solution increases the reaction rate (Fig 4). Intoxication of the reaction vessel by pretreatment with a mixture

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Relationship between the biological activity and structure
of janthinellin. Antibiotiki 9 no.9:844-845 S '64. (MIRA 19:1)

1. Laboratoriya antibiotikov biologo-pochvennogo fakul'teta
Moskovskogo universiteta imeni Lomonosova.

POLTORAK, W.

Some neighborly problems between inland and watershed fisheries.
p. 17. GOSPODARKA RYBNA (Polskie Wydawnictwa Gospodarcze) Warszawa.
Vol. 7, no. 10, 1955.

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ZEL'TSERMAN, I.M., spets. red.; POLTORAK, Ye.L., red.

[Modernization of bakery ovens]Modernizatsiia pechei v
khlebopekarnoi promyshlennosti. Moskva, GOSINTI, 1962. 96 p.
(MIRA 15:11)

1. Russia (1917- R.S.F.S.R.)Gosudarstvennyy komitet po ko-
ordinatsii nauchno-issledovatel'skikh rabot.
(Ovens)

POLTORAK, Ye.TS.; LESHCHINSKIY, A.I.

OSh2-400/1 plug-in signal light relay. Avtom., telem. i sviaz' 5
no.11:40-41 N '61. (MIRA 14:11)

1. Glavnyy konstruktor Leningradskogo elektrotekhnicheskogo zavoda
Ministerstva putey soobshcheniya (for Poltorak). 2. Zamestitel'
glavnogo konstruktora Leningradskogo elektrotekhnicheskogo zavoda
Ministerstva putey soobshcheniya (for Leshchinskiy).
(Railroads--Signaling) (Electric relays)

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MARENKOVA, G.I., red.

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1965. 315 p. (MIRA 18:8)

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1. Glavnyy konstruktor Leningradskogo elektrotekhnicheskogo zavoda (for Poltorak).
(Railroads--Electric equipment) (Electric rays)

MURAVIN, Veniamin Moiseyevich; POLTORAK, Yefim Tsalikovich; RAKITO, E.N.,
red.; KHITROV, P.A., tekhn.red.

[Repair of the equipment and mechanisms of signaling, centralized
control and block systems] Remont priborov i mekhanizmov STsB.
Moskva, Gos.transp.zhel-dor.izd-vo, 1958. 299 p. (MIRA 12:3)
(Railroads--Electric equipment--Maintenance and repair)

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How book on the military activities of V.I. Lenin ("V.I. Lenin at the head of the Soviet national defense by N.F. Kuzmin. Reviewed by N. Poltorakov). Voen.vost. 39 no.4:90-93 Ap '56. (MIRA 12:7)

(Lenin, Vladimir Il'ich, 1870-1924)

(Kuzmin, N.F.)

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N. Poltorakov. Tyl i snab. Sov. Voor. Sil 21 no.4:93-96
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Commander of a road building battalion: Tyl i snab. Sov. Voor.
S11 21 no.9:73-77 S '61. (MIRA 14:12)
(Military engineers)

POLTORAKOV, N.

Military Publishing House for readers in 1964. Voenn. vest 43 no.1:125-
126 Ja '64. (MIRA 17:1)

POLTORAKOV, N., gvardii polkovnik

Veteran of the "Aurora." Voен.znan. 33 no.10:7-9 O '57. (MIRA 10:11)
(Lipatov, Timofei Ivanovich) (Russia--Revolution, 1917-1921)

POLTORAKOV, N.

Brilliant image of a revolutionary colonel. "Arsenii's career" by
S.A. Sirotinskii. Reviewed by N. Poltorakov. Voen. znan. 33 no.2:
40 P '57. (MLBA 10:4)

(Frunze, Mikhail Vasil'evich, 1885-1925)
(Sirotinskii, S.A.)

POLTORANIN, G.

84-9-26/47

AUTHORS: Poltoranin, G., and Zaytsev, A.

TITLE: What Investigation Reveals About Reconditioned Engine Mounts (Chto pokazali issledovaniya vosstanovlennykh motornykh ram)

PERIODICAL: Grazhdanskaya Aviatsiya, 1957, Nr 9, pp. 28-29 (USSR)

ABSTRACT: The endurance tests of Il-12 and Li-2 engines have shown that their strength is 30 per cent higher than calculated. If they operate at 50 per cent of their calculated strength, they withstand 30,000 load cycles. These figures refer only to static conditions and do not account for vibration effect. The present article reports on another aspect of these experiments, viz., on endurance of reconditioned mounts, tested on a vibrating machine. These tests aimed at establishing whether it pays to recondition mounts with big dents on struts and cracks along welded seams. Prior to laboratory tests, the vibrations were measured in flight. It has been established that resonance begins at 1850-1900 rpm, and that the vibration stress on one of the shafts is up to 3 kg per square mm, and the amplitudes - up to 0.3 mm. Thereafter laboratory tests followed, conducted on a special vibration stand (see photo) whose resonance corresponded to that of the aircraft under normal operational conditions. It was established that reconditioned mounts have 60 per cent of the resistance of new mounts,

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