L 45214-65 EWT(m)/T/EWP(t)/EWP(b)/[illegible](c) IJP(c) JD
ACCESSION NR: AP5007664 S/0020/65/160/006/1355/1357

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19
B

AUTHOR: Shchukin, Ye. D., Zanozina, Z. M., Kochanova, L. A., Likhtman, V. I., Rebinder, P. A. (Academician)

TITLE: The possibility of preparing alloys with a highly dispersed structure by hardening alloy emulsions

SOURCE: AN SSSR. Doklady, v. 160, no. 6, 1965, 1355-1357, and insert facing p. 1333

TOPIC TAGS: alloy structure, dispersed alloy, alloy emulsion hardening, zinc alloy, lead alloy, tin alloy, cast alloy

18 27 21 27

ABSTRACT: The authors studied the possibility of controlling the structural dispersion of a solid prior to its formation from an emulsion with low interphase tensions, using the Zn-Pb-Sn system as a convenient, readily melting, model (see Fig. 1 of the Enclosure). Samples with ≥ 99.99% Zn, Pb and Sn and having a combined weight of 40 g were intensively mixed by vibration, and heated, in tightly closed, cylindrical 70 x 20 mm steel crucibles, to temperatures 50-100C higher than that of the liquid-phase stratification region. Then the temperature was reduced to a selected point (T1) within the stratification region. After maintaining the temperature for half an hour to achieve equilibrium the crucibles were cooled at a rate of

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ACCESSION NR: AP5007664

15C/sec to the ambient temperature and cut along the cylinder generatrices. The metallographic sections, prepared by electrolytic etching from the halves of the casts, were then examined with an MIM-8 microscope. The different structural patterns obtained in several series of experiments, by varying Tl, the concentration of and the ratio between the components, are believed to indicate a possibility of effectively controlling structural patterns by this method. Orig. art. has: 4 figures.

ASSOCIATION: Institut fizicheskoy khimii Akademii nauk SSSR (Physical Chemistry Institute, Academy of Sciences, SSSR)

SUBMITTED: 26Sep64 ENCL: 01 SUB CODE: MM

NO REF SOV: 002 OTHER: 002

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ACCESSION NR: AP5007664

ENCLOSURE: 01

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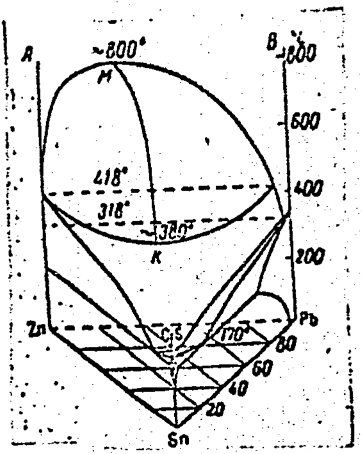

Fig. 1. Phase diagram of the Zn-Pb-Sn system.

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L 10771-66 EWT(m)/EPF(n)-2/T/EWP(t)/EWP(z)/EWP(b)/EWA(c) IJP(c) JD/WW/HW/JG
ACC NR: AP5027140 SOURCE CODE: UR/0126/65/020/004/0555/0560

66

AUTHOR: Kochanova, L. A.; Zanozina, Z. M.; Shchukin, Ye. D.; Likhtman, V. I.; Rebinder, P. A.
44,55 44,55 44,55 44,55 44,55 60

ORG: Institute of Physical Chemistry AN SSSR (Institut fizicheskoy khimii AN SSSR)
44,55

TITLE: Use of emulsification for refining the structure of alloys with a limited solubility of components in the liquid state 44,55 14

SOURCE: Fizika metallov i metallovedeniye, v. 20, no. 4, 1965, 555-560

TOPIC TAGS: alloy, alloy structure, structure refining, alloy emulsification

ABSTRACT: An attempt has been made to refine the structure of alloys whose components have a limited solubility in the liquid state by emulsification, i.e., vibration applied at temperatures above the liquidus curve. The experiments were carried out with Zn-Pb-Sn alloys melted from components of no less than 99.99% purity. The crucible containing 40 g of molten alloy metal was heated to a temperature 50—100C higher than that of "layering" and subjected to intensive vibration, then cooled to a temperature below that of layering, held for 30 min, again subjected to vibration and water cooled. It was found that this treatment produced a fine-grained alloy structure, especially when final vibration was applied at 400—600C. This opens the possibility of using colloid chemistry in the field of metal science to control the structure of alloys. The experiments should be expanded to higher melting alloys.

Card 1/2 UDC: 548.5

L 10771-66

ACC NR: AP5027140

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such as Cu-Co, Cu-Mo, Cu-Cr, using nickel and iron as the third component in order to lower the interphase tension. Orig. art. has: 4 figures. [AZ]

SUB CODE: 11/ SUBM DATE: 20Oct64/ ORIG REF: 003/ OTH REF: 002/ ATD PRESS: 4168

Card 2/2

L 04460-67 EWT(m)/EWP(t)/ETI IJP(c) JD/WW/JG/WB

ACC NR: AP6020908 SOURCE CODE: UR/0369/66/002/002/0133/0142

AUTHOR: Shchukin, Ye. D.; Yushchenko, V. S.

ORG: Institute of Physical Chemistry, AN SSSR, Moscow (Institut fizicheskoy khimii AN SSSR)

92
67
B

TITLE: Relationship between the selectivity of adsorption-induced strength deterioration under the effect of liquid metals and interatomic reactions

19

SOURCE: Fiziko-khimicheskaya mekhanika materialov, v. 2, no. 2, 1966, 133-142

TOPIC TAGS: metal surface, metal melting, liquid metal, ductility, electron structure, phase diagram

ABSTRACT: Adsorption-induced reduction of the free surface energy of solids at the solid-gas or solid-liquid interface and its effect on the processes of deformation and fracture of solids are two of the main problems of the physicochemical mechanics of materials. Liquid metal-induced embrittlement of solid metals is of particular interest, since it represents a case of relatively "pure" adsorption effect, physically reversible and free from accompanying phenomena (for instance, general corrosion in the case of stress corrosion). These phenomena have been studied thoroughly and therefore represent the easiest direction for further research on the nature and mechanism of the adsorption-induced intensification of deformation and

L 04460-67

ACC NR: AP6020908

fracture of solids.

The effect of molten metals on mechanical properties of solid metals has been the subject of intensive studies by Soviet and Western scientists during the last decade. Many of these studies have shown that the character and intensity of the phenomena resulting from the adsorption-induced reduction of free surface energy depend on numerous physicochemical and mechanical factors. These factors can be divided into three main groups: 1) factors closely related to the interatomic reactions, such as chemical composition of solid and liquid phases, affinity of components with each other, and the crystal lattice of solid metals; 2) factors associated with the microstructure of the solid metal, such as structure of grain boundaries and presence of dislocations and other structural defects; and 3) kinetic factors, such as temperature of the liquid medium, deformation rate, method of stressing, and duration of the contact between solid and liquid metals. Most of the research effort has been devoted to the second and third group, although the first group is the most interesting, since it represents the factors which predetermine the very possibility of a reaction between a liquid and a solid metal, i. e., the selectivity in the effect of the given liquid metal on solid metals and alloys. The present study is an attempt to fill the gap and to establish some ways for at least approximate quantitative evaluation of the part played by interatomic

ACC NR: AP6020908

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reactions in the reduction of solid metal strength by liquid metals.

According to the concepts of P. A. Rebinder's school, the microscopic effect of interatomic reactions in the liquid metal-induced deterioration of a solid metal appears as a more or less intensive reduction of free surface energy of solid metal, σ, at the solid metal-liquid metal interface. Since deformation and fracture of a solid are always associated with the generation of new free surfaces, every reduction in the magnitude of σ, i. e., of the work required for the generation of new surfaces, intensifies and accelerates the processes of deformation and fracture. Several approaches have been used in the approximate evaluation of σ.

An investigation of brittle fracture of zinc single crystals 1 mm in diameter, either coated with a thin layer of mercury or gallium and tested at room temperature or uncoated and tested at liquid nitrogen temperature, showed that in both cases the strength is characterized by the same invariant magnitude $K = (p_c \tau_c)^{1/2}$, where p_c and τ_c are respective values of normal and shearing stresses in the cleavage plane. Also $K = \text{const} \cdot \sigma^{1/2}$. The value of σ calculated from the experimental data was 800 erg/cm^2 for uncoated and 120—200 erg/cm^2 for mercury- or gallium-coated single crystals.

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ACC NR: AP6020908

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Investigation of the fracture stress dependence on the grain size established the magnitudes of σ for iron in liquid lithium and brass in mercury as 730 and 280 erg/cm^2, repectively, compared with 1000 and 1525 erg/cm^2 for iron-iron vapor and brass-brass vapor interfaces.

14 21 21 18

The respective magnitudes of σ at copper-liquid bismuth and brass-liquid bismuth interfaces were evaluated from the temperature of transition from brittle to ductile behavior and were found to be 90—160 and 500—900 erg/cm^2. Evaluation based on the magnitude of the dihedral angle at the interface between liquid metal and two grains of solid metal yielded magnitudes of 280 erg/cm^2 for copper-bismuth and 330 erg/cm^2 for brass-bismuth.

A direct determination of σ by the Tamman-Udin method showed that σ of zinc coated with gallium drops to 200 erg/cm^2.

These and numerous other results show clearly that in all the cases when a contact of a solid metal with a liquid metal causes a deterioration of the former the magnitude of σ drops sharply. On the other hand, a solid metal could be expected to retain its strength and ductility if the magnitude of σ remains unaffected by the contact with a liquid metal. In a general case involving a liquid adsorption-active metal A being in contact with a solid metal

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L 04450-67
ACC NR: AP6020908

B, the part played by interatomic reactions A-A, B-B, and A-B in the deterioration of metal B amounts to a gradual weakening, breakdown, and rearrangement of the B-B atomic bonds. Analysis of several A-B binary systems revealed that the deterioration of B occurs, as a rule, if A and B have a simple eutectic-type phase diagram with a relatively low solubility of A in solid B. In all such systems the heat of mixing is positive, which indicates that the bonds in the B-A-B chain are considerably weaker than in the B-B-B chain or, in other words, that atoms of liquid A facilitate the breakdown of the B-B bonds.

The heat of mixing has been determined experimentally for numerous binary systems, including those of the above A-B type. This has opened the way for further development of the thermodynamic method for an approximate quantitative analysis of the interatomic reactions and the part they play in the effect of liquid metals on solid metals.

All the concepts discussed above are, of course, of a phenomenological nature. A direct solution of the problem, i. e., an evaluation of reaction forces based on the specific features of electron structure of the metals involved and their solutions would naturally be much more interesting. At

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present, such a direct approach is still unrealistic because of the lack of necessary data. It is possible, however, to establish a relationship between the way a liquid metal affects a solid metal and the electron structure of both metals involved. The first such attempt was made by the authors and their co-workers, who found that, in all but a few cases in which liquid metal A brought about an embrittlement of a solid metal B, both A and B were nontransition metals, e. g., copper-lithium, copper-bismuth, aluminum-indium, germanium-gallium, and many others, which have no partially filled inner shells. However, this is not the only factor which determines the qualitative and quantitative nature of the interatomic reactions. Atomic (ionic) radius, valency, crystal lattice, and electronegativity are all of importance. For instance, in all binary systems in which the adsorption-induced effects were observed, the atomic radii of components differed by 10—15%. No deterioration of copper in liquid cadmium (the atomic radii differ only slightly) was observed, even though both are nontransition metals. Some other interesting deviations were also noted. Pure iron (transition metal) is not susceptible to deterioration under the effect of liquid metals. However, liquid alkali metals, some solders, and bearing alloys lower significantly the strength of steels. Mercury causes embrittlement of

L 04460-67
ACC NR: AP6020908

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Constantan (60% copper, 40% nickel) but does not affect either component.

Thus the specific nature of the interatomic reactions, which is responsible for a sharp decline of the free surface energy and, consequently, for a deterioration of mechanical properties of a solid metal exposed to a contact with a liquid metal, can be definitely attributed to three factors, i. e., the electron structure, the magnitude of the heat of mixing, and the type of phase diagram.

It could be assumed that all the above aspects are applicable not only to a solid metal-liquid metal interface but also to the case of an excess concentration of component A in the surface layer of a solid metal B in vacuum or in air. Experiments showed that a sharp decline in free surface energy may occur under such conditions.

The liquid metal-induced deterioration of solid metals may also occur when the concentration of liquid metal atoms in the region of the crack propagation is below the equilibrium concentration. In this case the actual effect of liquid metal will be considerably stronger than could be expected from the drop of surface energy calculated under static conditions. The

L 04460-67

ACC NR: AP6020908

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amount of liquid metal supplied to the front of a propagating crack is another factor which should be taken into consideration. This amount can be greatly reduced by the diffusion of liquid metal into the solid metal. In case the supply of liquid metal is limited the crack would stop, not because of the low activity of the liquid metal but because of an insufficient concentration. Orig. art. has: 2 formulas and 1 table. [FSB: v. 2, no. 9]

SUB CODE: 11, 20 / SUBM DATE: 26Jan66 / ORIG REF: 048 / OTH REF: 024

surface - active agents 18

Card 3/8 egk

ACC NR: AP6020910 SOURCE CODE: UR/0369/66/002/002/0149/0151

AUTHOR: Mirkin, L. I.; Shchukin, Ye. D.

ORG: MGU im. M. V. Lomonosov; Institute of Physical Chemistry, AN SSSR, Moscow (Institut fizicheskoy khimii AN SSSR)

TITLE: Formation of a solid solution during a quasi-spontaneous internal dispersion of tin in the presence of liquid gallium

SOURCE: Fiziko-khimicheskaya mekhanika materialov, v. 2, no. 2, 1966, 149-151

TOPIC TAGS: solid solution, tin alloy, gallium alloy, liquid metal, chemical dispersion

ABSTRACT: Changes in the lattice constants of tin in the presence of liquid gallium were investigated. Alloys thought to contain a solid solution were obtained in two ways: (1) deposition of a layer of gallium on the surface of a tin single crystal, and (2) mixing tin and gallium in the liquid state, then cooling at various rates. The lattice constants were measured with a URS-50I x-ray apparatus. The size of the unit cell of tin was found to decrease upon introduction of gallium: a decreased from 5.816 to 5.778 Å, i. e., by 0.7%, and c from 3.183 to 3.164 Å, i. e., by 0.6%. The observed substantial decrease in lattice parameters, associated with the formation of a solid solution of gallium in tin, is considered to be quite natural, since the lattice of tin is not close-packed, the radii of atoms and ions of tin are larger than

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ACC NR: AP7008695 SOURCE CODE: UR/0020/67/172/005/1137/1140

AUTHOR: Portsov, A. V.; Goryunov, Yu. V.; Portsov, N. V.; Shchukin, Yo. D.; Rebinder, P. A.

ORG: Moscow State University im. M. V. Lomonosov (Moskovskiy gosudarstvennyy universitet)

TITLE: Fine pulverization of metals in the presence of strongly adsorption-active metallic melts

SOURCE: AN SSSR. Doklady, v. 172, no. 5, 1967, 1137-1140

TOPIC TAGS: gallium, zinc, powder metal production, molten metal

ABSTRACT: On the basis of the assumption that the mechanical dispersion of solid metals should be accelerated in the presence of adsorption-active metallic melts, the pulverization of solid zinc in the presence of liquid gallium was studied. It was noted that quenched zinc alloys containing 1-6% Ga are converted after 5 min of pulverization into a powder with a particle size from one to several tens of microns. At higher Ga concentrations the pulverization ceased because a paste was formed. To prevent this, the particles formed by the pulverization were stabilized with butyl acetate. Gallium was found to speed up the pulverization and decrease the size of the particles formed. The effectiveness of its action (i. e., the decrease of the work of dispersion) was evaluated by determining the specific surface of the powder

Card 1/2 UDC: 541.18.053 : 546.3 + 532.6

ACC NR: AP7008695

formed as a function of time on the basis of sedimentation analysis. It was found that the introduction of even 1% Ga into zinc causes a 200-fold decrease of the work of dispersion. For the alloy with 10% Ga, the maximum surface is 0.3 m^2/g, which corresponds to a mean particle size of about 1.5 µ. Gallium also accelerates the pulverization of tin, cadmium, aluminum and bismuth. It is expected that the proposed method of preparing metal powders (fusion with small amounts of an adsorption-active metal followed by pulverization in a stabilizing medium) will find broad applications, especially in powder metallurgy. Orig. art. has: 3 figures.

SUB CODE: 11/ SUBM DATE: 14Apr66/ ORIG REF: 006/ OTH REF: 004

Card 2/2

PATYCHENKO, V.S., inzh.; SHCHUKIN, Ye.M., inzh.

Concerning V.M. Biman's article "Sectionalizing of gas-oil operated boilers for 300 to 800 Mw. superhigh-capacity units. Teploenergetika 8 no.7:80-81 Jl '61. (MIRA 14:9)

1. Taganrogskiy zavod "Krasnyy kotel'shchik".
(Boilers)
(Biman, V.M.)

SHCHUKIN Ye. P.

SHAKH, A.D.; SHCHUKIN, Ye.P.

Technical and economic efficiency of the repairing of tires.
Kauch. i rez. 16 no.11:22-26 N '57. (MIRA 11:2)
(Tires, Rubber--Repairing)

64-58-2-16/16

AUTHORS: Fedorenko, N. P., Shchukin, Ye. P., Markevich, V. A.

TITLE: Synthetic Ethanol Industry Abroad (Promyshlennost' sinteticheskogo etilovogo spirta za rubezhom)

PERIODICAL: Khimicheskaya Promyshlennost', 1958, Nr 2, pp. 58 - 63 (USSR)

ABSTRACT: This paper only contains only data on foreign production methods, output capacities, economic data etc. After giving statistical details on the use of ethanol the development of this industry during the last years is mentioned. Then the enterprises in the USA producing synthetic ethanol are given, mentioning the first year of production, the kind of synthesis, as well as some more production data. This is done in form of a table. Also data on the processing, a diagram on the production of technical ethanol in the USA in 1957 as well as commercial considerations are mentioned. Besides these enterprises in the USA the European plants for the production of technical ethanol in England, Denmark and the German Federal Republic are given; in this connection it is pointed out that in Europe exclusively the method of direct hydration and not, as in the USA, that of sulfuric acid

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64-58-2-16/16

Synthetic Ethanol Industry Abroad

hydration is used. Economic hints are mentioned with respect to the production of ethanol, the fermentative as well as the synthetic one, mainly in the USA, statistical data and diagrams of the raw material consumption being given. There are 4 figures, 2 tables, and 32 references, 0 of which are Soviet.

ASSOCIATION: Nauchno-issledovatel'skiy institut sinteticheskikh spirtov i organicheskikh produktov
(Scientific Research Institute for Synthetic Alcohols and Organic Products)

AVAILABLE: Library of Congress

1. Ethanol--Synthesis

Card 2/2
USCOMM-DC-55967

FEDORENKO, N.P.; SHCHUKIN, Ye.P.; MARKEVICH, V.A.

Synthetic ethyl alcohol industry abroad. Khim. prom. no.2:122-127 Mr '58. (MIRA 11:5)

1. Nauchno-issledovatel'skiy institut sinteticheskikh spirtov i organicheskikh produktov.

(Ethyl alcohol)

FEDORENKO, N.P.; SHCHUKIN, Ye.P.; FRIDMAN, L.A.

Production and use of glycerin in the U.S.A. Biul. tekhn.-ekon. inform. no.8:94-96 '58. (MIRA 11:10)
(United States--Glycerol)

SHCHUKIN, Ye.P

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SOV/64-59-5-25/28

5(1)

AUTHOR: Zlotin, L.

TITLE: Conference of Workers of the Synthetic Ethyl Alcohol Industry Branch

PERIODICAL: Khimicheskaya promyshlennost', 1959, Nr 5, p 459 (USSR)

ABSTRACT: The regular branch conference took place this year in Novokuybyshevsk from July 14th to 17th, to discuss problems of the industry of synthetic ethanol. The conference was convened by Upravleniye komiteta Soveta Ministrov SSSR po khimii (Administration of the Committee for Chemistry of the Council of Ministers of the USSR) and by the Kuybyshev sovnarkhoz. Delegates from all plants of synthetic alcohol, of the Gosplan program SSSR and of the Gosplan program RSFSR and of the Goskhimkomitet as well as leading workers of the Novokuybyshevsk and of a number of research institutes (Fiziko-khimicheskiy institut imeni Karpova (Institute of Physical and Chemical Sciences), VNIIneftekhim, NIISS and others), of the Kuybyshevskiy industrial'nyy institut (Kuybyshev Institute of Industry), of the Planning Institutes (Giprokauchuk, Giprogaztopprom), of the petroleum refineries, etc. participated in this conference, which

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Conference of Workers of the Synthetic Ethyl Alcohol SOV/64-59-5-25/28
Industry Branch

was attended by 300 persons. It was opened by Comrade I. M.
Burov, Secretary of the Kuybyshevskiy oblastnyy komitet KPSS
(Kuybyshev oblast' Committee of the CPSU). Lectures were held
in the plenary sessions concerning the tasks of the industry
of synthetic ethanol (L. I. Zlotin (Goskhimkomitet)), and
reports were made on the work of the plants during the year
1958 and during the first quarter of 1959 (I. A. Valushko -
Kuybyshevskiy zavod sinteticheskogo spirta (Kuybyshev Plant of
Synthetic Alcohol)), A. P. Litvin - Groznenskiy khimicheskiy
zavod (Groznyy Chemical Plant), I. A. Anisimov - Saratovskiy
zavod sinteticheskogo spirta (Saratov Plant of Synthetic Alco-
hol), A. V. Likhachev - Orskiy zavod sinteticheskogo spirta
(Orsk Plant of Synthetic Alcohol), M. M. Ryabova - Ufimskiy
zavod sinteticheskogo spirta (Ufa Plant of Synthetic Alcohol),
M. Ya. Klimenko - NIISS). Lectures were also held on the follow
ing subjects: On the decrease of the prime cost of alcohol
(Ye. P. Shchukin - NIISS), on the optimum conditions of ethylene
hydration (Corresponding Member of AS USSR G. K. Boreskov), on
foreign investigations concerning the production of synthetic
alcohol and their analysis in the USSR (Doctor of Technical Sciences

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M. A. Dalin), on the utilization of by-products of the production of synthetic ethanol (Director of TsZL Orskogo zavoda S. D. Razumovskiy (Central Plant Laboratory of the Orsk Plant S. D. Razumovskiy)), on further automation of alcohol production (V. V. Aranovich - Giprokauchuk), on rust protection (A. B. Neyman - NIISS), on production of ethylene (T. I. Bogolepova - Giprokauchuk). During the conference 5 study groups discussed the following problems: Preparing of raw material, ethylene production, alcohol production, the economic, automatic and production control. 30 lectures were held. It was decided, among others, to disregard the building of 2-3 new plants and the workers were appealed to accomplish the new 7-Year Plan in 6 years.

S/064/60/000/03/04/022
B010/B008

AUTHORS: Fedorenko, N. P., Shchukin, Ye. P., Fridman, L. A.

TITLE: On the Economy of Acetone Production

PERIODICAL: Khimicheskaya promyshlennost', 1960, No. 3, pp. 202-204

TEXT: The further development of acetone production with respect to its most favorable economic aspects is discussed. An increase of acetone production by 4.5 times in the period from 1959 to 1965 is provided in the new Seven-year Plan, and the cumene method is to be used mainly. It is pointed out in connection therewith that the problem of the simultaneous production of phenol is of special importance. A comparison of the production of acetone and phenol by various methods (Table 1) shows that the cumene method is the most suitable one. This may also be seen from an explanation of the calculations of the production cost which is still inaccurate. Corresponding applications of acetone must be provided for, since a large increase in the production of phenol by the cumene method is also provided for, and the applications of acetone are becoming more and more numerous. Acetic anhydride can be produced by pyrolysis from

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On the Economy of Acetone Production

S/064/60/000/03/04/022
B010/B008

acetone and acetic acid. Although this method is not the most suitable one economically (Table 2), it is to be preferred to the other methods for various reasons. A treble use of acetone as a solvent in the production of cellulose ester is provided for 1965. Acetone is also increasingly applied in the synthetic materials industry. Calculations showed that, provided the increased demand for phenol in 1965, 1970, and 1975 be covered with the help of the cumene method, the consumption of the quantities of acetone produced is safeguarded. The production increase of phenol and acetone by the cumene method exclusively, planned for 1975, is thus completely justified. There are 2 tables.

Card 2/2

FEDORENKO, N.P.; FRIDMAN, L.A.; SHCHUKIN, Ye.P.

Production and uses of aromatic hydrocarbons in the U.S.A.
N.P.Fedorenko, L.A.Fridman, E.P.Shchukin. Khim. prom. no. 7:604-612 O-N '60. (MIRA 13:12)
(Unites States--Hydrocarbons)

FEDORENKO, N.P.; FRIDMAN, L.A.; SHUMSKAYA, N.N.; SHCHUKIN, Ye.P.

Certain problems related to the economics of the phenol production. Khim.prom. no.3:163-166 Mr '61. (MIRA 14:3)
(Phenols)

BAKUMENKO, T.L.; FEDORENKO, N.P.; SHCHUKIN, Ye.P.

Economic aspects of the industry of polymerization plastics. Plast.-massy no.9:52-56 '61. (MIRA 15:1)
(Plastics industry) (Polymers)

S/0064/64/000/005/0339/0344

ACCESSION NR: AP4039228

AUTHORS: Fedorenko, N.P.; Braginskiy, O.B.; Fridman, L.A.; Shchukin,
Ye.P.

TITLE: Economic efficiency of the pyrolysis of low octane gasolines

SOURCE: Khimicheskaya promy*shlennost', no. 5, 1964, 339-344

TOPIC TAGS: low octane gasoline, pyrolysis, high octane gasoline, aromatic hydrocarbon, naphthalene, naphthene, liquid pyrolysate, liquid hydrocarbon pyrolysis, production cost, petrochemical, chemical intermediate, hydrogenation, absorption oil, plasticizer

ABSTRACT: Work in various scientific institutes and experimental industrial laboratories had shown the low octane gasoline fraction to be the most valuable liquid petrochemical crude--in its chemical processing there are obtained a series of intermediates including divinyl and aromatic hydrocarbons in addition to ethylene and propylene. Various liquid hydrocarbons obtained in the production, stabilization and processing of petroleum (gaseous gasoline fractions, condensate, directly distilled gasoline, raffinates, products from cracking and subsequent dearomatization) had been evaluated to

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determine the material most suitable for pyrolysis. Processing of the liquid products from the pyrolysis of low octane gasolines yielded a predominant amount of high molecular olefinic and diolefinic hydrocarbons, about 30 weight% aromatics and about 20 weight % naphthenes. The products may be recovered by intensive processing of the pyrocondensates, or high octane gasoline products may be obtained by hydrogenation of the fraction boiling below 200C at low pressures (10-20 atm). At the NIISS (Scientific Research Institute of Synthetic Alcohols and Organic Products) calculations were made of the costs involved in processing the pyrocondensates to produce either the high octane gasoline or to obtain the aromatic hydrocarbons, resins and other products. For the latter the calculations were based on a complex scheme for most completely recovering all the pyrolysis resin components. Such a scheme, derived from various methods described in the Russian literature, involves the separation of the components in the six fractions: to 70C (mostly unsaturated C_5 hydrocarbons); 70-120C (high percent of aromatics, subjected to catalytic cracking at 3-5 atm., 400-450C, 0.5-0.75 sec^{-1} space velocity), 120-200C (unsaturated hydrocarbons for polymeric resins, to

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ACCESSION NR: AP4039228

be polymerized with diisopropylbenzene peroxide), 200-230C (naphthalene, to be recovered by methods used in the coal tar chemical industry), 230-320C (to be subjected to high temperature hydrogenation; the 200-230C fraction to be used for naphthalene recovery, the higher boiling products, as absorbtion oils), and pitch (for resin plasticizers). The calculations confirmed the suitability, from the standpoint of the national economy, of using the liquid hydrocarbons in petrochemical processing. The expenses for the recovery, preparation and distillation of the additional petroleum required to obtain the directly distilled gasoline fraction for the complex pyrolysis process are rapidly recovered. Orig. art. has: 5 tables.

ASSOCIATION: None

SUBMITTED: 00

ENCL: 00

SUB CODE: FP

NR REF SOV: 008

OTHER: 006

Card 2/2

BAKUMENKO, T.L.; FEDORENKO, N.P.; SHCHUKIN, Ye.P.

Polystyrene production economics. Plast.massy no.5:40-44 '61.
(MIRA 14:4)

(Styrene)

FEDORENKO, N.; SHCHUKIN, Ye. E.

Economic problems of the comprehensive use of chemistry in the national economy ("Economics of the chemical industry" by N.N. Nekrasov. Reviewed by N.Fedorneko, E.Shchukin). Vop.ekon. no.5: 103-106 My '61. (MIRA 14:5)
(Chemical industries) (Nekrasov, N.N.)

L 32199-65 EWT(1) Peb GW/GS

ACCESSION NR: AT5005426 S/0000/64/000/001/0098/0099

15
B+1

AUTHOR: Drumya, A. V.; Shchukin, Yu., K.

TITLE: Seismic characteristics of the Moldavian SSR and the adjacent sections of the Eastern Carpathians

SOURCE: Nauchnaya konferentsiya molodykh uchenykh Moldavii, 3d. Trudy, no. 1: Yestestvenno-tekhnicheskiye nauki (Natural and technical sciences). Kishinev, Gosizdat Kartya Moldovenyaske, 1964, 98-99

TOPIC TAGS: seismology, Moldavian seismic region, Carpathian seismic region, earthquake cause

ABSTRACT: In view of the strong earthquakes (up to 8-9 units) that have occurred in the past on Moldavian territory, the authors studied the entire Carpathian region with respect to 1) earth layer thickness and types of layers; 2) tectonic mobility; 3) deep ruptures; 4) quake seats; 5) perturbations due to the formation of new superposed layers; 6) location of groups of seismic centers; 7) strength versus depth of quakes; 8) isoseism shape during shallow quakes. The paper does not present the chart of seismic dangers which has been prepared on the basis of the above investigations.

Card 1/2

L 32199-65

ACCESSION NR: AT5005426

0

ASSOCIATION: None

SUBMITTED: 07Feb64 ENCL: 00 SUB CODE: ES

NO REF SOV: 000 OTHER: 000

Card 2/2

DRUMYA, Anatoliy Vasil'yevich, kand. geol.-miner. nauk; USTINOVA, Tat'yana Ivanovna, kand. geogr. nauk; SHCHUKIN, Yuriy Konstantinovich; EDEL'SHTEYN, A.Ya., kand. geol.-miner. nauk, red.; MAL'TSEVA, L., red.

[Problems of the tectonics and seismology of Moldavia]Problemy tektoniki i seismologii Moldavii. Kishinev, Kartia moldoveniaske. No.2, 1964. 119 p. (MIRA 19:1)

Shchukina, A.G.

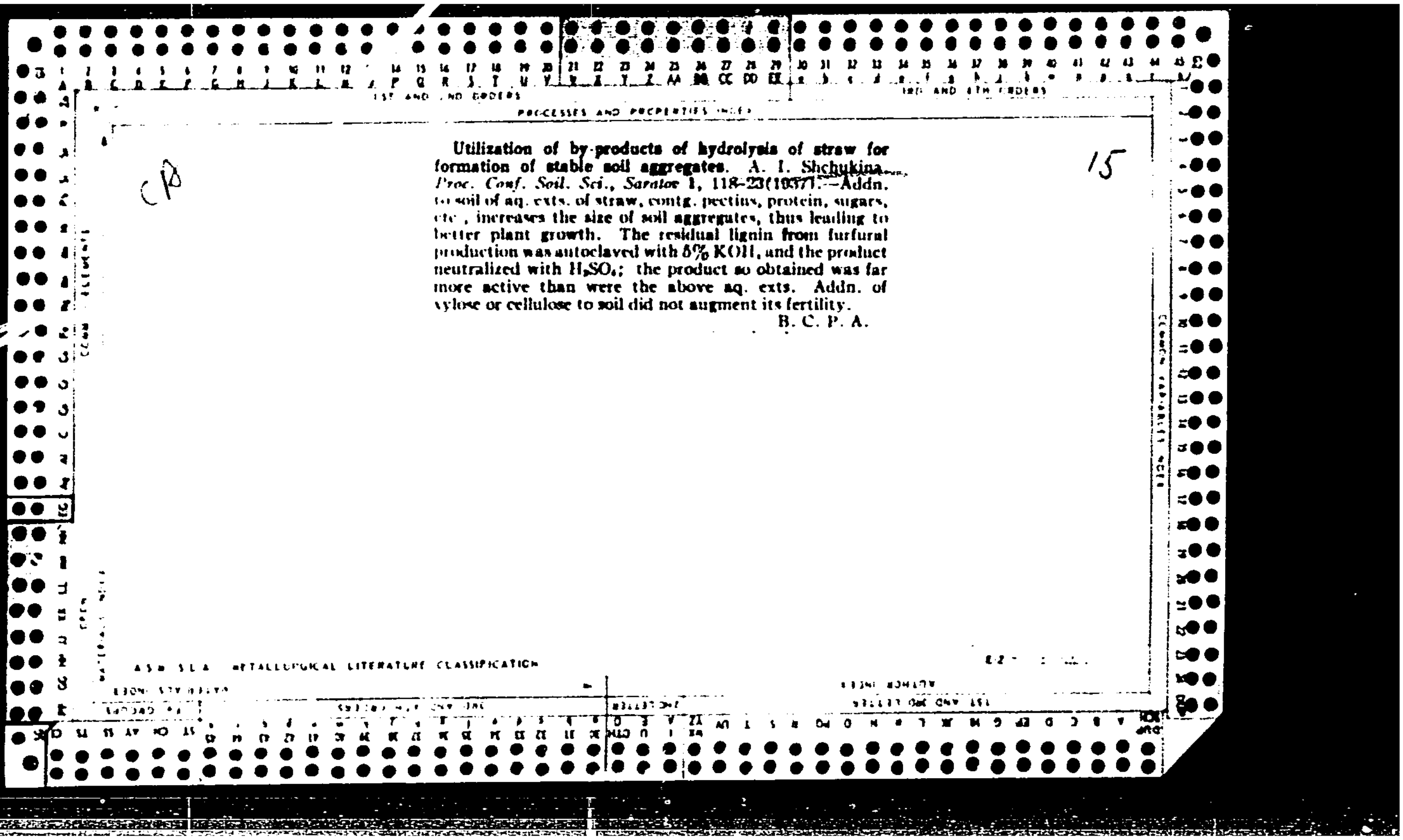
Salt-meter without degassing for water with low salt concentrations. E. N. Krasotkin and A. G. Shchukina. *Priborostroenie* 10, 11-12(1957).—The construction of a continuous instrument to measure salt concns. of 0–0.5 mg./l. is described. The usual calibration with the help of standard solns. was impossible as solns. below 1 mg./l. absorb gases, causing deviations in the electrocond. of the soln. The described instrument permits calibration by measuring resistances. The principal element of the instrument is a transmitter, consisting of an outside and inside electrode hooked into one branch of an unbalanced resistance bridge, the diagram of which is given. The external electrode (I) consists of a stainless-steel tube 48 mm. in diam. × 3 mm. thick, polished inside. A threaded conical nipple screwed on the bottom of the tube admits the soln. to be measured through another tube. The bottom of I is closed by an insulating insert (II), one side of which is conical and the reverse flat with a nest for the internal electrode. Eighteen 3 mm. diam. holes through II admit the soln. to the inside of the electrode chamber. The internal electrode consists of a tube 25 mm. in diam. and 1 mm. thick, closed at one end, mounted in the nest of II concentrically with I. Into this tube a Cu resistance thermometer is tightly fitted in. The coil of the thermometer consists of 0.07–0.10 mm. thick wire (resistance at 0° of 1575 ohm). The whole assembly is capped by a split head made of an insulating material with tangential holes to release the soln. A shunting resistance for temp. compensation of 1385 ohm and 2 terminals are attached to one side of the head. The normal vol. that can be handled is 20 l./hr., but it can be raised to 150 l./hr. without affecting accuracy. B. Krawiec

1/1

KVYATKOVSKIY, V.M., kand.tekhn.nauk; SHCHUKINA, A.G., inzh.;
MATSKEVICH, G.V., inzh.

Automatic proportioning of reagents at the water treating installations of electric power plants. Teploenergetika 8 no.4:15-19 Ap '61. (MIRA 14:8)

1. Vsesoyuznyy teplotekhnicheskiy institut.
(Electric power plants)
(Feed-water purification)



cB

15

Utilization of by-products of hydrolysis of straw for formation of stable soil aggregates. A. I. Shchukina. *Proc. Conf. Soil. Sci., Saratov* 1, 118-23(1937).—Addn. to soil of aq. exts. of straw, contg. pectins, protein, sugars, etc., increases the size of soil aggregates, thus leading to better plant growth. The residual lignin from furfural production was autoclaved with 5% KOH, and the product neutralized with H_2SO_4; the product so obtained was far more active than were the above aq. exts. Addn. of xylose or cellulose to soil did not augment its fertility.

B. C. P. A.

The carbon nitrogen ratio in [illegible] soils of the [illegible] shev province. A. Shchukina and A. Stepanov. [illegible] *Socialist.* Agr. (U.S.S.R.) **1939**, No. [illegible]

Ratios of 10 to 13 were found in the surface soil of a series of chernozems. Loss on ignition was found to be a good method of detg. org. matter in these soils. A correlation was found between the loss on ignition and total N of the soils. With the increase of [illegible] the percentage of N of the org. matter decreases. J. S. Joffe

A S M - S L A METALLURGICAL LITERATURE CLASSIFICATION

C-

15

Organic colloids in the soils of the Kuibyshev regions in connection with their fertility. A. I. Shchukina. *Pedology (U. S. S. R.)* No. 0, 92-104(1939).—A series of soils was analyzed for the various org. fractions by the Tyulin method, as well as for the effect of grass sod on the loosely combined org. fraction. The latter was found to be a good index for detg. the fertility of the soil. J. S. Joffe

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

PROCESSES AND PROPERTIES INDEX

A comparative evaluation of methods for determining mobile potassium in soils. A. Shchukina and E. Vaeni [illegible] *Chemisation Socialist. Agr.* U.S.S.R. 1939, No. 12, 63-6; *Khim. Referat. Zhur.* 1940, No. 5, 58.—The method of Neive for detg. mobile K in chernozem and podzol of the Kuibyshev region was compared with modifications of the Kirsanov method (with 0.2 N HCl and N NaCl). Best results were obtained with the second modification. The method is based on forcing out the exchange K by means of NaCl (15 g. of soil + 75 cc. of N NaCl) and detn. of K (in 50 cc. of the filtrate) by the volumetric cobaltinitrite method. W. R. Henn

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

1ST AND 2ND ORDERS

PROCESSES AND PROPERTIES INDEX

3RD AND 4TH ORDERS

B-3-1

BC

[redacted]

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

MATERIALS INDEX

3RD AND 4TH ORDERS

1ST AND 2ND ORDERS

SUBJECT INDEX

1ST ONE LETTER

I-2

[illegible]

USSR/Physiology of Plants. Photosynthesis.

APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001548920016-5

Abs Jour: Ref. Zhur-Biologiya, No 1, 1958, 1125.

Author : Shchukina, A.I.
Inst : Kuybyshev State Pedagogical Institute.
Title : The Productivity of Photosynthesis in Leaves In Connection with Soil Moisture and Mineral Nourishment.

Orig Pub: Uch. zap. Kuybyshevsk. gos. ped. in-t, 1956, No 16, 31-43.

Abstract: Lutescens 62 wheat was grown in vegetation pots in which 0.2 g. N, 0.075 g. P_2O_5, and 0.1 g. K_2O per kilogram of soil had been placed at planting. In part of the 6/VI pots 1/2 N, 1/2 K_2O, and $2P_2O_5$ of the dose introduced at planting were added for nutrition. The soil moistures used were 80% and 40% of full moisture capacity. In the period of appearance of shoots, for 14 days, the moisture in the first variant declined to 40% and in the second variant rose to 80%. The leaf surface was measured and the dry weight of the above ground mass of the plant

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Card : 1/2

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Abs

I-2

-giya, No 1, 1958, 1125.

taken seven times during the course of the experiment, and then the productivity of assimilation was cal
to the formula of R

SHCHUKINA, Avgusta Ignat'yevna, dotsent; TIMOFEYEV, V.Ye., dotsent, red.;
SHCHERBAKOV, A.I., tekhn.red.

[Methodological directions for practical summer field work in plant physiology] Metodicheskie ukazaniia k provedeniiu letnei polevoi praktiki po fiziologii rastenii. Kuibyshev, Kuibyshevskii gos.pedagog.in-t im. V.V.Kuibysheva, 1960. 83 p.
(MIRA 14:1)

(Plant physiology--Study and teaching)

SHCHUKINA, A.I.

Effect of gibberellin on the growth and yield of alfalfa.
Fiziol. rast. 8 no.4 495-497 '61. (MIRA 14:11)

1. Kuybyshev Pedagogical Institute, Kuybyshev.
(Gibberellin)
(Alfalfa)

SHCHUKINA, A.I.

Effect of potassium on the water balance and yield of Leukurum wheat. Uch. zap. Kuib. gos. ped. inst. no.35:47-56 '61. (MIRA 15:9)

(Wheat--Fertilizers and manures)
(Plants, Effect of potassium on)

LAPTEVA, L.; SHCHUKINA, A.I., dotsent, nauchnyy rukovoditel'

Physiological difference in the quality of the caryopses in the corn ear. Uch.zap.Kuib.gos.ped.inst. no.37:57-59 '62.
(MIRA 16:1)

(Corn (Maize))

SHCHUKINA, A.I.

Effect of potassium on the drought resistance of wheat. Fiziol. rast. 10 no.3:313-318 My-Je '63. (MIRA 16:6)

1. Kuybyshev State Pedagogical Institute, Kuybyshev.
(Plants, Effect of aridity on)
(Plants, Effect of potassium on)

SHCHUKINA, A.I.

Drought and concomitant changes in the water balance of corn. Fiziol.rast. 12 no.6:1069-1074 N-D '65.

(MIRA 18:12)

1. Pedagogicheskiy institut imeni V.V.Kuybysheva, Kuybyshev. Submitted November 20, 1964.

SHCHUKINA, A.S.:

SHCHUKINA, A.S.: "Increasing the winter-resistance of winter wheat by sexual hybridization with heteropollination". Leningrad, 1955. Min Higher Education USSR. Leningrad Agricultural Inst.
(Dissertations for the Degree of Candidate of Agricultural Sciences.)

So. Knizhnaya letopis'. No. 49, 3 December 1955. Moscow.

[illegible]

[illegible]

[illegible]

[illegible] (Dr).

R

COUNTRY : USSR

CATEGORY : Diseases of Farm Animals. Diseases Caused by Helminths

ABS. JOUR. : RZhBiol., No. 6 1959, No. 25939

AUTHOR : Shchukina, A. V.

INST. : Kazan Veterinary Institute

TITLE : Clinical Course and Operative Treatment in Onchocercous Lesion of the Poll in Horses

ORIG. PUB. : Uch. zap. Kazansk. vet. in-ta, 1957, 68, 47-56

ABSTRACT : The results of roentgenography of the poll of horses affected with onchocercosis and the technique of operative intervention in this disease are described.

CARD: 1/1

20

BELEVTSEV, A.N.; MILOVANOV, L.V.; SHCHUKINA, G.A.

Purification of plating plants' waste water containing chromium.
Ochis. stoch. vod. no.3:17-38 '62. (MIRA 16:5)
(Chromium) (Industrial wastes—Purification)

AKOL'ZIN, L.Ye.; LISHBERGOV, V.D.; SHCHUKINA, G.F.; TSOY, D.; DUGIN, Ye.V., otv.red.; DUKALOV, M.F., red.; BUBYR', V.A., red.; TYUTYUNIK, Ya.I., red.; MONIN, M.I., red.; PANCHENKO, A.I., red.; VARSHAVSKIY, I.N., red.; BELYAYEV, F.R., red.; RABINKOVA, L.K., red.izd-va; KOROVENKOVA, Z.A., tekhn.red.

[Standard cross sections of mine workings]Tipovye secheniia gornykh vyrabotok. Moskva, Gos.nauchno-tekhn.izd-vo lit-ry po gornomu delu. Vol.1. [Cross section of timber-supported workings for 1, 2, and 3-ton cars] Secheniia vyrabotok, zakreplennykh derevom dlia 1, 2 i 3-tonnykh vagonetok. 1960. 345 p. (MIRA 13:11)

1. Moscow. Gosudarstvennyy proyektnyy institut Yuzhgiproshakht. (Mining engineering)

BEDILO, V.Ye.; KALINCHUK, I.G.; LISHBERGOV, V.D.; NIKOLAYEV, G.P.; TSOY, D.; SHCHUKINA, G.F. Prinimali uchastiye: KOLESNIKOV, V.F.; OSTAPENKO, P.V.; SEDOVA, M.P.; TKACHEV, M.V. DUGIN, Ye.V., otv.red.; RABINKOVA, L.K., red.izd-va; KOROVENKOVA, Z.A., tekhn.red.; SABITOV, A., tekhn.red.

[Types of mine cross section] Tipovye secheniia gornykh vyrabotok. Moskva, Gos.nauchno-tekhn.izd-vo lit-ry po gornomu delu. Vol.6. [Cross section of mines lined with steel arches and anchor bolting for 1-, 2- and 3-ton railroad cars] Secheniia vyrabotok, zakreplennykh stal'noi arochnoi i shtangovoi krep'iu, dlia 1-, 2- i 3-tonnykh vagonetok. 1960. 503 p. (MIRA 13:12)

1. Khar'kov. Gosudarstvennyy proyektnyy institut Yuzhgiproshakht. (Mine timbering)

SHCHUKINA, G.I., kand. med. nauk

Ballistocardiographic observations in chronic pulmonary diseases. Trudy Kaf. proped. vnutr. bol. LPMI no.3:40-53 '64.

Coagulation and cup tests in rheumatic fever. Ibid.: 132-138 (MIRA 19:1)

S[illegible]INA, [illegible]. I.

"The Use of Venous Tourniquets as a Method for Treating Hypertonia," Klin. Med., 27, No. 3, 1949. Chr., Propaedeutic Therapeutic Clinic, Leningrad Pediatrics Med. Inst., -c1949-.

SHCHUKINA, G. I.

Coagulation test in myocardial infarct. Ter. arkh., Moskva 25 no.5:
24-29 Sept-Oct 1953. (CIML 25:4)

1. Candidate Medical Sciences. 2. Of the Propedeutic Therapeutic Clinic (Head -- Prof. S. Ya. Kofman), Leningrad State Pediatric Medical Institute.

SHCHUKINA, G.I., kand.med.nauk

Dynamics of indexes of cutaneous temperature in hyperteinsion during prolonged sleep therapy. Terap. arkh. 30 no.5:54-55 My '58
(MIRA 11:6)

1. Iz kafedry propedevtiki vnutrennikh bolezney (zav.-prof. S.Ya. Kofman) Leningradskogo pediatricheskogo meditsinskogo instituta.
(HYPERTENSION, ther.
sleep ther., eff. on skin temperature (Rus))
(SLEEP, ther. use.
hypertension, eff. on skin temperature (Rus))
(BODY TEMPERATURE,
skin, eff. of sleep ther. of hypertension (Rus))

SHCHUKINA, G.I., kand. med. nauk; FICHTIK, A.A.

Coagulation test in influenza A_2. Trudy Kaf. proped. vnutr. bol. LPMI no.3:102-110 '64. (MIRA 19:1)

KOLOSKOVA, A.V.; SHCHUKINA, G.N.

Physicochemical properties of water-stable aggregates of various size. Nauch. dokl. vys. shkoly; biol. nauki no. 1:198-202 '61.
(MIRA 14:2)

1. Rekomendovana kafedroy pochvovedeniya Kazanskogo gosudarstvennogo universiteta im. V.I. Ul'yanova-Lenina.
(SOIL PARTICLES)

ACC NR: AP6032953 SOURCE CODE: UR/0363/66/002/010/1876/1877

AUTHOR: Nikol'skaya, G. F.; Berger, L. I.; Yevfimovskiy, I. V.; Kagirova, G. N.; Shchukina, I. K.; Kovaleva, I. S.

ORG: Institute of General and Inorganic Chemistry im. N. S. Kurnakov, Academy of Sciences, SSSR (Institut obshchey i neorganicheskoy khimii Akademii nauk SSSR)

TITLE: Electric conductivity of $CdSnAs_2$ in solid and liquid states

SOURCE: AN SSSR. Izvestiya. Neorganicheskiye materialy, v. 2, no. 10, 1966, 1876-1877

TOPIC TAGS: cadmium tin arsenide, arsenide electric conductivity, liquid arsenide viscosity, liquid arsenide conductivity, cadmium compound, tin compound, arsenide, electric conductivity test

ABSTRACT: Cadmium-tin arsenide $CdSnAs_2$ was synthesized by fusion of stoichiometric quantities of high-purity components. All the specimens had a single-phase structure. Heating and cooling curves indicated no structural changes, except for melting and solidification at 595 and 592±5C, respectively. The conductivity of the compound undergoes a change from impurity-type to intrinsic (see Fig. 1). The shape of the conductivity-inverted temperature curve indicates that the compound remains semiconductive, melts without decomposition, and maintains a close order in the liquid

Card 1/2 UDC: 546.48'811'191:537.311

Ca

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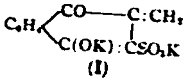
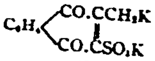
Vitamin "K" group. II. Tautomeric and oxi reduction transformations of 2-methyl-1,4-naph none and its derivatives. L. A. Shukina, Yu. B. S and M. M. Shemyakin. *J. Gen. Chem.* (U. S. S. R.) 13, 327-30(1943)(English summary); cf. C. A. 38, 572; Fieser, *et al.*, C. A. 35, 4065¹.—The authors investigated some properties of 2-methyl-1,4-naphthoquinone and re-lated compds. The quinone on prolonged boiling with water yields phthalic anhydride and a deep violet, cryst. solid (does not m. 350° (from AcOH)). Boiling with 10% KOH leads to similar results with a greater amt. of the violet product. Boiling with concd. HCl leads only to the violet solid, with only traces of phthalic acid. K 2-methyl-1,4-naphthoquinone-3-sulfonate (20 g.) boiled for 5 hrs. with 2 l. H_2O and cooled, yields the *quinhydrone* which is filtered off (3.3 g., m. 243-4° (from water)), while evapn. of the water soln. yields 0.8 g. phthalic an-hydride. The K sulfonate (5 g.) was stirred with 55 cc. of 25% KOH for 4-5 min. and immediately filtered; the filtrate rapidly deposited the *enolate* (I), which was filtered off and dried after washing with EtOH and Me_2CO. I (5 g.) in 20 cc. water rapidly darkens and precipitates the quinhydrone described above (1.8 g.) and phthalic acid; 5 g. of the enolate are shaken with 100 cc. 25% KOH for 2 hrs. and filtered; on standing there occurs


(I)


(II)

crystn. of 0.5 g. of an orange-red compd. (II). The mother liquor on acidification yields the original K sul-fonate.

G. M. Kosolapoff

ASM-SLA METALLURGICAL LITERATURE

CA

11E

PROCESSES AND PROPERTIES INDEX

The vitamin K group. III. The biological action of vitamin K and of its synthetic analogs. M. M. Shemyakin, L. A. Shukina and Yu. B. Shvetsov. *J. Gen. Chem.* (U. S. S. R.) 13, 398-402(1943)(English summary); cf. C. A. 38, 572¹.—After consideration of known data on the biol. activity of the vitamin K group, the authors believe that vitamin K and its analogs are provitamins, while the actual vitamin K carrier is phthalic acid, which is probably formed from vitamin K and its analogs in the course of operation of the oxidation-reduction system. **IV. Structure of the products of reaction of 1,4-naphthoquinones with bisulfites of alkali metals.** D. A. Bochvar and M. M. Shemyakin. *Ibid.* 403-7(English summary).—The authors studied the reaction between 1,4-naphthoquinones with alkali bisulfites. Soln. of 4 g. 92% $KHSO_3$ in 10 cc. water was added to 6 g. 2-methyl-1,4-naphthoquinone-3-sulfonic acid (as K salt) suspended in 10 cc. water at 40-5°. There was formed a white ppt. of $C_{11}H_9O_5SK.KHSO_3$ (55%), which is crystd. from hot water and is readily sol. in water. On heating it suffers partial dissociation and its soln. treated with $BaCl_2$ yields a ppt., sol. in HCl. K_2CO_3 or KOH cause rapid decompn. of the complex, whereas dil. HCl effects decompn. rapidly only on warming, with formation of a red-violet ppt. Treated with H_2O_2, this complex adds a mol. of O, indicating its probable structure as a complex equil. mixt. of the component salts. The oxidized (bisulfate) complex crystallizes readily from EtOH as large needles and yields $BaSO_4$ on treatment with $BaCl_2$ only extremely slowly. Aqueous pastes of 2-methyl-1,4-naphthoquinone treated with a soln. of $KHSO_3$ at 40-5°, after filtration and evapn., gave 51% of a complex, $C_{11}H_8O_2.KHSO_3.H_2O$. For practical use, it is advised that 2 mols. of $KHSO_3$ or $NaHSO_3$ be used and the soln. evapd. to dryness, without sepn. of excess bisulfite. The complex can be crystd. from water or EtOH. $BaCl_2$ causes slow pptn. of Ba sulfite, heating with HCl yields SO_2 and a deep-violet ppt.; strong alkali ppts. the quinone instantly; Cl leads only to traces of K 2-methyl-1,4-naphthoquinone-3-sulfonate (I). The bisulfite complex of the I on treatment with various quinones rapidly ppts. I.

G. M. Kosolapoff

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

SHCHUKINA, L. A.

"Experimental Study of the Mechanism Underlying the Biological Action of Quinones of the Vitamin K Type," Dokl. AN SSSR, 45, No.4, 1944

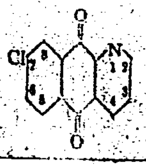
SHCHUKINA, L. A.

1ST AND 2ND ORDERS

AND 4TH ORDERS

4

The condensation of quinolinic acid anhydride with chlorobenzene. I. M. Kogan and L. A. Shchukina (Mendeleev Chem.-Tech. Inst., Moscow). J. Applied Chem. (U.S.S.R.) 19, 925-30(1946)(in Russian).—When 20 g. quinolinic acid is heated with 30 g. Ac_2O at 100° 5 hrs. it gives 15.6 g. of the anhydride (I), m. 133-4°. When 4 g. I, 64 g. PhCl, and 14 g. $AlCl_3$ are heated 2 hrs. at 100°, treated with 70 ml. HCl, and steam-distd. to remove PhCl, they give 5.7 g. *3-p-chlorobenzoylpicolinic acid-HCl* (II), m. 164°. If H_2SO_4 is used instead of HCl, the *H_2SO_4 salt*, m. 165°, is formed. When II is crystd. from H_2O it forms the monohydrate of the free acid, which after drying at 110° gives *3-p-chlorobenzoylpicolinic acid* (III), m. 147°. III forms a complex *Cu salt*, m. 281°. The Co, Ni, Fe, Zn, and Pb salts are slightly sol. in H_2O, the Na, Ca, Ba, and Al salts are very sol. Oxidation of III with alk. $KMnO_4$ gives $p\text{-}ClC_6H_4CO_2H$. III and $SOCl_2$ give a yellow acid chloride (IV) which with NH_3 gives the *amide*, m. 176°. IV does not give ring closure with $AlCl_3$ in CS_2 or $PhNO_2$. Heating III with H_2SO_4 at 250° for 1 hr. gives 10.8% V, m. 246° (*HCl salt* m. 261°). Reduction with Zn dust and NaOH gives a green soln. of the corresponding hydroquinone which regenerates V when shaken with air.



(V)

COMMON VARIABLES INDEX

SHCHUKINA, L. A.

"The Condensation of the Quinolinic Acid Anhydride with Chloro-Benzine," Zhur. prik. khim., 19, No.9, 1947

SHCHUKIN, L. A.

USSR/Chemistry - Quinones
Oxidation

Nov 48

"Oxidizing and Oxidizing-Hydrolytic Conversions of Organic Molecules: I, Hydrolytic and Oxidizing-Hydrolytic Conversions of Quinones," M. M. Shemyakin, L. A. Shchukin, Lab of Org Chem, Inst of Biol and Med Chem, Acad Med Sci USSR, 19¼ pp

"Zhur Obshch Khim" Vol XVIII, No 11

Discusses reactions of the hydrolytic and oxidative-hydrolytic clevage of quinones. Submitted 2 Nov 47.

PA 67/49T24

SHCHUKIN, L. A.

PA 67/49T23

USSR/Chemistry - Quinones   Nov 48
Oxidation

"Oxidizing and Oxidizing-Hydrolytic Conversions of Organic Molecules: II, Oxidizing-Hydrolytic Conversions of 1,4-Naphthoquinone and 2-Alkyl-1,4-Naphthoquinones," L. A. Shchukin, A. P. Kondrat'yeva, M. M. Shemyakin, Lab or Org Chem, Inst of Biol and Med Chem, Acad Med Sci USSR, 10 ½ pp

"Zhur Obshch Khim" Vol XVIII, No 11 - p. 1945

Prolonged heating of aqueous solutions of 1,4-naphthoquinone, and its 2-methyl and 2-ethyl derivatives led to the formation of phthalic acid. In addition,

[redacted]   67/49T23

USSR/Chemistry - Quinones   (Contd)   Nov 48

phthiocol was formed from 2-methyl-1,4 naphthoquinone. Submitted 2 Nov 47.

[redacted]   67/49T23

SHCHUKINA, L. A.

L. A. Shchukina, A. P. Kondratieva and M. M. Shemiakin, Oxydizing and oxydizing-hydrolytic transformations of organic molecules. III. Hydrolytic transformations of 2-methyl-3-oxy-1,4-naphthoquinone. p. 2121.

It is shown that the quinone ring of 2-methyl-3-oxy-1,4-naphthoquinone is capable of undergoing hydrolytic splitting. This process proceeds at boiling of the quinone with water if the pH is above 7.

Lab. of Organic Chemistry of the
Institute of Biologic and Medical Chem.
Academy of Medical Sciences, USSR.
November 2, 1947

SO: J. Gen. Chem. (USSR) 28, (80) No. 12, 1948

SHCHUKINA, L. A. [redacted]

58/49T35

USSR/Chemistry - 1,4-Naphthoquinone Jan 49
Chemistry - Hydrolysis

"Oxidation and Oxidation-Hydrolysis Conversions of Organic Molecules: IV, Oxidation-Hydrolysis Conversion of 2-Methyl-1, 4-Naphthoquinone Oxide," L. A. Shchukina, A. P. Kondrat'yeva, M. M. Shemyakin, Lab of Org Chem, Inst of Biol and Med Chem, Acad Med Sci USSR, 8 pp

"Zhur Obshch Khim" Vol XIX, No 1

Boiling of this compound with water ultimately results in formation of phthiocol, 2-methyl-1, 4-naphthoquinone, and o-lactyl-phenylglyoxylic

[redacted] 58/49T35

USSR/Chemistry - 1,4-
Naphthoquinone (Contd) Jan 49

acid. Studies the third compound and its cyclization into 2-oxy-1, 4-naphthoquinone. Submitted 2 Nov 47.

58/49T35

SHUKINA, L. A.

62/49T9

USSR/Chemistry - Hooker Reaction Mar 49

"Oxidation and Oxidation-Hydrolysis Conversions of Organic Molecules: VI, Study of S. Hooker's Reaction," L. A. Shukina, A. P. Kondrat'yeva, M. M. Shemyakin, Lab of Org Chem, Inst of Biol and Med Chem, Acad Med Sci USSR, 11 3/4 pp

"Zhur Obshch Khim" Vol XIX, No 3

In oxidation by an alkaline solution of $KMnO_4$, phthiocol is subjected to a series of oxidative hydrolytic transformations, which can be interrupted at the stage of formation of o-pyruvylphenylglyoxylic acid. Describes conditions for converting the latter compound to 2-hydroxy-1, 4-naphtho-quinone. Discusses mechanism of Hooker's reaction on the basis of the experiments. Submitted 2 Nov 47.

62/49T9

[illegible], L. A.

"Oxidizing and oxidizing-hydrolitic conversions of organic molecules: VIII. Hydrolitic conversions of oxi- and acetoxytriketones of a tetra-hydronaphthalene series." Shvetsov, IU. [illegible] and Shukina, L. A. and Shemiakin, M. M. (p. 498)

SO: Journal of General Chemistry (Zhurnal Obshchei Khimii) 1949, Vol. 19, No. 3.

SHCHUKINA, L. A.

SHCHUKINA, L. A.

"Oxidative and oxidative-hydrolytic transformations of organic molecules. XI. The mechanism of the Hooker reaction." by L. A. Shchukina, Yu. B. Shvetsov, and M. M. Shemyakin. (p.346)

SO: Journal of General Chemistry (Zhurnal Obshchei Khimii) 1951, Volume 21, No.2

0.7.

Oxidative and oxidative-hydrolytic changes of organic molecules. XIV. Hydrolytic cleavage of 3-hydroxy-1,4-naphthoquinone. L. A. Shchukina, A. S. Khokhlov, and M. M. Shemyakin. *Zhur. Obshchei Khim.* (J. Gen. Chem.) 21, 908-17(1951); cf. *C.A.* 45, 7556h; 46, 1081.—3-*Hydroxy-1,4-naphthoquinone* (I) readily splits on boiling in aq. solns. at pH 7.3-9.2, yielding o-$AcC_6H_4COCO_2H$ (II). The conditions and the nature of the cleavage of I are essentially identical with those of previously described reactions of 2-methyl-3-hydroxy-1,4-naphthoquinone (cf. *C.A.* 43, 4000i). Aeration of a boiling soln. of 3 g. I in pH 7.3 phosphate buffer for 48 hrs. gives a red color and acidification yields 1.5 g. I and 1.1 g. (30%) II.H_2O, m. 72°; a similar reaction at pH 9.17 gave 16% II, and at pH 6.82 5% phthalic acid, 22% II, and unreacted I, along with a black insol. material. At pH 7.4 in the absence of air, 47% I is recovered and 30% II isolated. II forms a poorly sol. *Pb salt;* the poorly sol. *Ag salt* with MeI yields the *Me ester;* m. 92° (from iso-Am_2O), hydrolyzed with 10% H_2SO_4 in 10 min. to II; II *semicarbazone*, m. 158-60° (monohydrate). II with aq. I_2-KI-Na_2CO_3 yields 32% CHI_3, while CrO_3 oxidation of II gives 1,3-indandione, m. 131°, phthalic acid, and 3% phthalonic acid. Aeration of 1,4-naphthoquinone in boiling 1% aq. NaOH 8 hrs. gives a black soln. from which is isolated 20% phthalic acid, along with 0.9% phthalonic acid. **XV. Transformations of 1,4-naphthoquinone oxide** *Ibid.* 917-25.—The reactions of *1,4-naphthoquinone oxide* (I) in boiling in aq. solns. were studied. The initially formed glycol undergoes a 2-fold change: dehydration to 3-hydroxy-1,4-naphthoquinone and oxidation to isonaphthazarin, the relative proportions of the products depending on the conditions. The products are both subject to further changes under the conditions employed, the former being cleaved to o-$AcC_6H_4COCO_2H$ (II) in the absence of air at pH above 7, while the naphthazarin is changed in the presence of air into a series of products yielding ninhydrin, hydrindantin, and phthalonic acid. Hence, the cleavage schemes of I differ from those of the 2-Me analog. In the absence of O_2 boiling 6 g. I with H_2O 24 hrs. gives a red color and working up the soln. gives 1.85 g. *3-hydroxy-1,4-naphthoquinone*, m. 188-9°, 3.3 g. insol. *isonaphthazarin*, m. 282°, and 0.22 g. 1,4-naphthoquinone. Repetition for 48 hrs. in a buffered soln. at pH 7.4 gave 68% 3-hydroxy-1,4-naphthoquinone, 8% II, and a trace of dark tar. Boiling I in H_2O with aeration 30 hrs. gave 17% *isonaphthazarin*, 22% ninhydrin, and 33% phthalonic acid (isolated as the quinoxaline deriv., m. 240°), the sepn. of the latter substances being accomplished via the Pb salts; some 4% *hydrindantin*, m. 229°, was also isolated. If the reaction is run but 6 hrs. 85% isonaphthazarin is formed, along with traces of phthalonic acid (isolated as the quinoxaline deriv.). G. M. Kosolapoff

CR

Oxidative and oxidative-hydrolytic transformations of organic molecules. XVI The oxidative-hydrolytic transformations of 2,3-dihydroxy-1,4-naphthoquinone and 1,2,3,4-tetraoxotetrahydronaphthalene. A. S. Khokhlov, L. A. Shchukina, and M. M. Shemyakin. *J. Gen. Chem. U.S.S.R.* 21, 1113-28(1951)(Engl. translation).—See C.A. 46, 1523f XVII. The oxidative-hydrolytic transformations of substituted hydroxynaphthoquinones. D. P. Vitkovskii and M. M. Shemyakin. *Ibid.* 1131-41.—See C.A. 46, 1524d B. R.

SHCHUKINA, L. A.

USSR/Chemistry - Quinones Jun 51

"Oxidative and Oxidative-Hydrolytic Transformations of Organic Molecules," A. S. Khokhlov, L. A. Shchukina, M. M. Shemyakin, Lab Org Chem, Inst Biol and Med Chem, Acad Med Sci USSR

"Zhur Obshch Khim" Vol XXI, No 6, pp 1016-1033

Studied conditions, character, and mech of above reaction on 2,3-dioxy-1,4-naphthoquinone (i-naphthazarin) and 1,2,3,4-tetraoxotetraline. In presence of oxidizers and hydrolyzing media these compds can undergo number of alternating oxidative and hydrolytic reactions which are additionally

186T21

USSR/Chemistry - Quinones (Contd) Jun 51

complicated by transformations of intermediate products. Detd basic stages of this type of processes and their dependence on pH of the medium, on temp and on presence of oxidants.

186T21

SHCHUKINA, L. A.

191T47

USSR/Chemistry - Biological Sep 51

"Oxidation and Oxidative-Hydrolytic Conversion of Organic Molecules. XVIII. Synthesis and Properties of Certain Quinone Oxides," L. A. Shchukina, Ye. I. Vinogradova, M. M. Shemyakin, Lab Org Chem, Inst Biol and Med Chem, Acad Med Sci USSR

"Zhur Obshch Khim" Vol XXI, No 9, pp 1661-1667

Synthesized several oxides of 1,4-benzoquinones and 1,4-naphthoquinones; studied certain of their properties: namely, their oxidizing ability and their capacity for being converted into esters of the corresponding glycols.

191T47

SHCHUKINA, L. A.

191T48

USSR/Chemistry - Biological Sep 51

"Oxidation and Oxidative-Hydrolytic Conversions of Organic Molecules. XIX. Relation Between the Degree of Oxidation of Carbocyclic Compounds and the Capacity of Their Ring Groupings to Undergo Hydrolytic Splitting," M. M. Shemyakin, L. A. Shchukina, Yu. B. Shvetsov, D. P. Vitkovskiy, A. S. Khokhlov, Lab Org Chem, Inst Biol and Med Chem, Acad Med Sci USSR

"Zhur Obshch Khim" Vol XXI, No 9, pp 1667-1677

Clarified principles and nature of relation between deg of oxidation and capacity for hydrolytic splitting. Showed expediency of use of concept of

191T48

USSR/Chemistry - Biological (Contd) Sep 51

oxidative-hydrolytic conversions in study of oxidation of carbocyclic and acyclic compds.

191T48

SHCHUKINA, L. A.

USSR, Chemistry - Antibiotics 1 Aug 51

"Synthesis and Properties of Alpha-Dichloroacetylamino-beta-Hydroxy-p-Nitropropiophenone (I)," E.M. Badmas, Ye. I. Vinogradova, D. N. Vitkovskiy, A. S. Khokhlov, Yu. B. Shvetsov, L. A. Shchukina, Inst of Biol and Med Chem, Acad Med Sci USSR

"Dok Ak Nauk SSSR" Vol LXXIX, No 4, pp 601-603

It was shown recently, that I is an intermediate product of the enzymatic splitting of chloromycetin by bacteria (G. S. Smith, C. S. Worrel, Arch Biochem, Vol XXVIII, i, 232, 1950). In the present work, I was synthesized. Gives a description of the synthesis.

PA 211T27

SHCHUKINA, L.A.

(4)

Chemical Abst.
Vol. 48 No. 5
Mar. 10, 1954
Organic Chemistry

Oxidative and oxidative-hydrolytic transformations of organic molecules. XX. The structure of oxides of unsaturated compounds. M. M. Shemyakin, D. A. Bochvar, and L. A. Shchukina (Moscow Textile Inst.). *J. Gen. Chem. U.S.S.R.* 22, 605-7(1952)(Engl. translation).—See *C.A.* 47, 2741*e*. XXI. Hydrolytic cleavage of 6-methyl-3-hydroxy-*p*-benzoquinone. L. A. Shchukina. *Ibid.* 733-8. See *C.A.* 47, 5378*i*. XXII. Hydrolytic and oxidative changes of 1-phenylazo-3,4-dihydroxynaphthalene. O. M. Shemyakina, B. M. Bogoslovskii, and M. M. Shemyakin. *Ibid.* 739-42. XXIII. Mechanism in the oxidative-hydrolytic and hydrolytic transformations of 2-chloro-3-hydroxy-1,4-naphthoquinone. D. P. Vitkovskii and M. M. Shemyakin. *Ibid.* 743-9. See *C.A.* 47, 5379*g*.

H. L. H.

Inst. Biol. & Medical Chem., AMS and Moscow Textile Inst.

USSR/Chemistry - Quinones Apr 52

"Oxidative and Oxidative-Hydrolytic Transformations of Organic Molecules. XXI. Hydrolytic Splitting of 6-Methyl-3-Hydroxy-1,4-Benzoquinone," L. A Shchukina, Lab of Org Chem, Inst of Biol and Med Chem, Acad Med Sci USSR

"Zhurn Obshch Khim" Vol XXII, No 4, pp 668-675

The above process takes place in 2 stages: hydrogenation and subsequent hydrolytic splitting of the ring grouping of the intermediate hydrogenation product. The structures of the intermediate and of the final compd are described. Comparison of these results with data previously published

224T45

leads to the conclusion that the hydrolytic splitting of the ring grouping is characteristic for all oxy-1,4-quinones of the benzene, naphthalene, and phenanthrene series, which contain a hydrogen atom or alkyl radical in the 2-position or a hydroxyl group in the 3-position. The mechanism of the reaction was proven experimentally.

224T45

SHCHUKINA, L.A.

SHCHUKINA, L. A.

Organic Chem

Paths of synthesis of optically active analogs of D-threo-1- ~~(p-nitrophenyl)-2-(dichloroacetamido)-1,3-propanediol. M. M. Shemyakin, E. M. Bamdas, B. I. Vinogradova, M. G. Karapetyan, M. N. Kolosov, A. S. Khokhlov, Yu. B. Shvetsov, and L. A. Shchukina. Doklady Akad. Nauk~~ S.S.S.R. 86, [illegible].—Two synthetic paths for prepn. of analogs which contain substituents other than NO_2 are outlined. D- or L-*threo-1-(p-Nitrophenyl)-2-amino-1,3-propanediol* (I) treated with BzCl and 0.5*N* NaOH gave 70% of the corresponding *N-Bz derivs.* (II): D-form, m. 171° (from EtOH), $[\alpha]_D$ −120° (MeOH); L-form, m. 171°, $[\alpha]_D$ 121°; DL-form, m. 163° (from EtOH). These, reduced with H over active Ni at 80° and 50 atm., gave the corresponding *p-H_2N analogs* (III) in 95% yield; D-form, m. 171°, $[\alpha]_D$ −100° (MeOH); L-form, m. 171°, $[\alpha]_D$ 99°; DL-form, m. 152°. Diazotization of III at 0-5° in HCl or H_2SO_4 (3 hrs.) and treatment with the customary reagents gave the substituted derivs. as follows: CuCl gave 75% *L-p-Cl deriv.*, m. 172°, $[\alpha]_D$ 103°; the D-*isomer*, m. 172°, $[\alpha]_D$ −103°. KI in dil. soln. after 12 hrs. at 0°, followed by treatment at 20°, gave 50% *p-iodoanalog*: D-*form*, m. 179°, $[\alpha]_D$ −87°; L-*isomer*, m. 179°, $[\alpha]_D$ 86°; DL-*form*, m. 174°. Heating to 70-90° 0.5 hr. at pH 5-6 gave the *p-HO analog*: L-form, decomp. 196-8°, $[\alpha]_D$ 103°. CuCN at pH 7 and −5° gave 80% *P-NC* deriv.: L-form, m. 140°, $[\alpha]_D$ 130°; D-form, m. 140°, $[\alpha]_D$ −130°. Na_3AsO_3 with $CuSO_4$ at 15° gave 22% *p-H_2O_3As* deriv.: L-form, decomp. 142-3°, $[\alpha]_D$ 89°. Treatment with EtOH-Cu gave the *unsubstituted compd.*: L-form, m. 186°, $[\alpha]_D$ 99°. These compds. (V) on refluxing several hrs. with 20% HCl lost the *N*-Bz group and yielded *p-$ZC_6H_4CH(OH)CH(NH_2)CH_2OH$* of the threo type as follows (*Z shown*): *Cl*, 66%: L-form, m. 147°, $[\alpha]_D$ 35°; D-form, m. 147°, $[\alpha]_D$ −34°; *Iodo* 55%: L-form, m. 104°, $[\alpha]_D$ 24°; D-form, m. 104°; *CO_2H*, 65%: L-form, decomp. 348-9°, $[\alpha]_D$ 33°; D-form, decomp. 348-9°, $[\alpha]_D$ −32°. The former 2 substances heated briefly with Cl_2CHCO_2Me at 95°, or the last substance treated at −5° with $Cl_2CHCOCl$, gave the *N-dichloroacetyl derivs.* (*p*-substituent shown): *Cl*, 47%: L-form, m. 93°, $[\alpha]_D$ −9°; D-form, m. 93°, $[\alpha]_D$ 8°; DL-form, m. 120°; *Iodo*, 72%: L-form, m. 104°, $[\alpha]_D$ −11°; D-form, m. 104°, $[\alpha]_D$ 10°; DL-form, m. 123°; *CO_2H*, 70%: L-form, m. 191°, $[\alpha]_D$ −14°; D-form, m. 191°, $[\alpha]_D$ 12°. Racemates obtained by mixing the L- and D-forms of the *p*-Cl or *p*-iodo derivs. were identical with the Cl or iodo analogs of chloramphenicol, thus showing the preservation of threo-structure. The 2nd route was as follows. Hydrogenation of D- or L-I gave 90% of the corresponding *p-H_2N derivs.*: L-form, m. 136°, $[\alpha]_D$ 28°; D-form, m. 136°, $[\alpha]_D$ −29°. These with Cl_2CHCO_2Me in MeOH after 24 hrs. at 18-23° gave the *2-dichloroacetamido derivs.*, isolated as *HCl salts* in 25% yield: L-form, $[\alpha]_D$ −9°; D-form, $[\alpha]_D$ 8°. These diazotized rapidly and were converted conventionally to the following derivs.: *p-Cl*, identical with that described above; *p-CN*; 82%. L-form, m. 136°, $[\alpha]_D$ −17°; D-form, m. 136°, $[\alpha]_D$ 15° (hydrolyzed to the CO_2H analog, identical with that described above. *HO deriv.*, 46%: L-form, m. 156°, $[\alpha]_D$ 8°; D-form, m. 156°, $[\alpha]_D$ −8°. G. M. Kosolapoff

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7-27-54

SHEMYAKIN, M.M.; BAMDAS, E.M.; VINOGRADOVA, Ye.I.; KARAPETYAN, M.G.; KOLOSOV, M.N.;
KHOKHLOV, A.S.; SHVETSOV, Yu.B.; SHCHUKINA, L.A.

Research on the chemistry of chloromycetin (levomycetin). Part 2. Study of the course of synthesis and the synthesis of optically-active analogs of chloromycetin (levomycetin). Zhur.ob.khim. 23 no.11:1854-1867 N '53.
(MLRA 6:11)

1. Institut biologicheskoy i meditsinskoy khimii Akademii meditsinskikh nauk SSSR.
(Chloromycetin)

SHCHUKINA, L. A.

USSR/Chemistry - Antibiotics 21 Mar 53

"The Structure of Aureomycin and Terramycin," M. M. Shemyakin and L. A. Shchukina, Inst of Biol and Chemistry, Acad Med Sci USSR

DAN SSSR, Vol 89, No 3, pp 499-500

Carried out the final step in detn of the structure of aureomycin. The $N(CH_3)_2$ group was found to be located in the 10 position and not the 6 position of the tetracyclic nucleus. This was concluded from behavior of the compd towards HI. Using an analogous method, terramycin was found to have the $N(CH_3)_2$ group in the 10 position.

272T3

SHEMYAKIN, M.M.; BAMDAS, E.M.; VINOGRADOVA, Ye.I.; GUBERNIYEV, M.A.;
ORKKHOVICH, V.N.; KHOKHLOV, A.S.; SHVETSOV, Yu.B.; SHCHUKINA, L.A.

Research in the chemistry of chloromycetin (levomycetin). Racemization of ℓ-threo-1-(n-nitrophenyl)-2-dichloroacetylamino-1,3-propanediol. Dokl.AN SSSR 94 no.2:257-259 Ja '54. (MLRA 7:1)

1. Chlen korrespondent Akademii nauk SSSR (for Shemyakin).
2. Deystvitel'nyy chlen AMN SSSR (for Orekhovich). 3. Institut biologicheskoy i meditsinskoy khimii Akademii meditsinskikh nauk SSSR. (Racemization) (Propanediol)

SHCHUKINA, L.A.

5

√ **Theoretical basis of oxidation-hydrolytic transformations** CH

of organic compounds. M. M. Shemyakin and L. A. Shchukina. *Voprosy Khim. Kinetiki, Kataliza i Reaktsionnoi Sposobnosti, Akad. Nauk S.S.S.R., Otdel. Khim. Nauk* 1955, 757-64.—A brief discussion of the possible mechanisms of oxidative hydrolysis reactions in the field of *a* naphtho- and anthraquinones. 33 references.

G. M. Kosolapoff

SHEMYAKIN,M.M.; KOLOSOV,M.N.; KARAPETYAN,M.G.; BAMDAS,E.M.; SHEVTSOV, Yu.B.; VINOGRADOVA,Ye.I.; SHCHUKINA,L.A.

Investigation of the chemistry of chloramphenicol (levomycetin). Synthesis of new optically active analogs of chloramphenicol (levomycetin). Zhur.ob.khim.25 no.6:1199-1206 Je'55. (MLRA 8:12)

1. Institut biologicheskoy i meditsinskoy khimii Akademii meditsinskikh nauk SSSR.

(Chloramphenicol)

Shchukina, L.A.

2

Oxidative-hydrolytic splitting of carbon-carbon bonds of organic molecules. M. M. Shemyakin and L. A. Shchukina (U.S.S.R. Acad. Sci., Moscow). *Quart. Revs.* (London) 10, 261-82(1956); cf. *C.A.* 50, 4101*a*.—Review, over 65 references. E. H.

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SHCHUKINA, L.A.

Treating hymenolepiasis with acrichine. Med.paraz. i paraz.bol. 25 no.4:301-302 O-D '56. (MIRA 10:1)

1. Iz protivomalyariynoy stantsii Kirovskogo rayona g. Kuybysheva (zav. stantsiyey M.O.Mesrobyan)
(QUINACRINE, therapeuticuse,
hymenolepiasis (Rus))
(TAPEWORM INFECTIONS, therapy,
hymenolepiasis, quinacrine ther. (Rus))

SHCHUKINA, L.A.; SEMKIN, Ye.P.

Oxidative and oxidative-hydrolytic transformations of organic molecules. Part 25: The hydrolytic and oxidative-hydrolytic cleavage of 2-phenyl- and 2-benzyl-3-hydroxy-1, 4-naphthoquinones. Zhur.ob. khim. 26 no.6:1695-1701 Je '56. (MIRA 11:1)

1. Institut biologicheskoy i meditsinskoy khimii Akademii meditsinskikh nauk SSSR.
(Naphthoquinone) (Chemical reaction--Mechanism)

SHCHUKINA, L.A.

Oxidative and oxidative-hydrolytic transformations of organic molecules. Part 26: Preparation of triketocarboxylic acids under the conditions of the Hooker reaction. Zhur.ob.khim. 26 no.6: 1701-1707 Je '56. (MIRA 11:1)

1.Institut biologicheskoy i meditsinskoy khimii Akademii meditsinskikh nauk SSSR.
(Acids, Organic) (Chemical reaction--Mechanism)

A

SHCHUKINA, L.A.; SHEMYAKIN, M.M.

Oxidative and oxidative-hydrolytic transformations of organic molecules. Part 27: Tautomeric transformations and properties of hydroxy- and chloroketocarboxylic acids. Zhur.ob.khim. 26 no.6: 1708-1713 Je '56. (MIRA 11:1)

(Acids, Organic) (Tautomerizm)

SHCHUKINA, L.A.

Oxidative and oxidative-hydrolytic transformations of organic molecules. XXV. Hydrolytic and oxidative-hydrolytic cleavage of 2-phenyl- and 2-benzyl-3-hydroxy-1,4-naphthoquinones. L. A. Shchukina and E. P. Semkin. *J. Gen. Chem. U.S.S.R.* 26, 1901-6(1956)(English translation).—See *C.A.* 51, 1920*h*. XXVI. Preparation of trioxo carboxylic acids under conditions of Hooker reaction. L. A. Shchukina. *Ibid.* 1907-13.—See *C.A.* 51, 1921*c*. XXVII. Tautomeric transformations and properties of hydroxy and chloro oxo carboxylic acids. L. A. Shchukina and M. M. Shemyakin. *Ibid.* 1915-20.—See *C.A.* 51, 1921*h*.

B. M. R.

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Shchukina, L. A.

USSR/ Physical Chemistry - Molecule. Chemical Bond. B-4

Abs Jour : Referat Zhur - Khimiya, No 3, 1957, 7233

Author : Shigorin, D.N., Shemyakin, M.M., ~~Shchukina, L.A.,~~
Kolosov, M.N., and Mendelyevich, F.A.

Inst : Academy of Sciences USSR

Title : On the Nature of the Intramolecular Hydrogen Bond

Orig Pub : Dokl. AN SSSR, 1956, Vol 108, No 4, 672-675

Abstract : The IR spectra of molecules with intramolecular hydrogen bonds (HB) involving different degrees of participation of the [illegible]-electrons of the C O group and of the multiple bonds conjugated with it have been investigated. The frequency of the valency vibrations of the O-H groups (the first number in parentheses, in cm^{-1}) and their shift towards longer wavelengths in comparison to the unassociated OH groups (second number in parentheses) as well as the BH energy (Badger and Bauer, J. Chem. Phys., 1937, 5, 839) (third number in parentheses in kcal), the

ber in parentheses in A.U.) have been determined for the following compounds: the vapor of the nonomethyl ether of ethylene glycol (I) at 120-122°(3665, 0, 0, 0, -); I in CCl$_4$ (II), in the ratio 1:400 (3605, 60, 0.96, 0, 1.00); [illegible] in [illegible] ratio [illegible] guaiacol in II, 1:400 (3530, 55, 0.90, 0, 2.20); oxyoctenol in II, 1:400 (3475, 147, 2.38, 59.7, 1.95); benzoin in II, 1:400 (3468, 147, 2.39, 60.0, 1.95); 2-hydroxy-1, 4-naphthoquinone in II, 1:400, 3398 (187, 3.07, 68.7, 2.25); 2-benzyl-3-hydroxy-1, 4-naphthoquinone in II, 1:600 (3395, 190, 3.11, 69.1, 2.25); 2-([illegible]-naphthyl)-3-hydroxy-1, 4-naphthoquinone in II, 1:600 (3370, 215, 3.52, 72.7, 2.25); [illegible]-methyltropinone in II, 1:400 (3116, 504, 8.19, 88.2, USSR/ Physical Chemistry - Molecule. Chemical Bond. B-4

Abs Jour : Referat Zhur - Khimiya, No 3, 1957, 7233

2.25); vapor of the monomethyl ether of trimethylene glycol (III) at 160° (3650, 0, 0, 0, -); III in II, 1:400 (3580, 70, 1.12, 0, 1.65); o-methoxybenzyl alcohol (IV) vapor at 163-164° (3652, 0, 0, 0, -); IV in II 1:400 (3585, 67, 1.08, 0, 1.65); diacetone alcohol in II, 1:400 (3524, 94, 1.52, 26.2, 1.65); methyoxybenzoic acid in II, 1:400 (3357, 228, 3.74, 70.0, 1.65); salicylic acid vapor at 144° (3265, 320, 5.25, 78.7, 1.65); salol in II, 1:400 (3230, 355, 5.82, 80.7, 1.65); methyl salicylate in II, 1:400 (3205, 380, 6.23, 82.0, 1.65); acetylacetone in II, 1:400 (3050, 570, 9.26, 87.9, 1.65); monomethyl ether of 1, 8-dihydroxynaphthalene in II, 1:400 (3431, 189, 3.07, 63.5, 1.63); 9-hydroxy-1-methoxy-7-oxy-9-methyl-5,6,7,8-tetrahydroanthracene in II, 1:600 (3620, 0, 0, 0, -); 10-hydroxy-1-methoxy-7-oxy-9-methyl-5,6,7,8-tetrahydroanthracine in II, 1:400 (3423, 197, 3.20, 65.0, 1.63); 10-hydroxy-1-methoxy-9-methyl-

USSR/ Physical Chemistry - Molecule. Chemical Bond. B-4

Abs Jour : Referat Zhur - Khimiya, No 3, 1957, 7233

5,6,7,8-tetrahydroanthracene in II, 1:400 (3425, 195, 3.16, 64.5, 1.63); alizarin vapor at 290° (3150 (x), 470, 7.64, 85.3, 1.65); 1, 8-dihydroxyanthraquinone vapor at 300° (3150, 470, 7.64, 85.3, 1.65); On the basis of the data obtained, the authors conclude that the magnitude of the π -electron interaction energy depends on: (1) The presence of a system of conjugated bonds comprising both the HB group and the rest of the molecule; (2) An even number of terms in that system; (3) The planarity of the HB groups and the other parts of the molecule; and (4) The number and nature of the distribution of π -electrons in the system.

SHEMYAKIN, M.M.; SHCHUKINA, L.A.

Theory of oxidative and hydrolytic conversions of organic molecules [with summary in English]. Biokhimiia 22 no.1/2:214-225 Ja-F '57.
(MLRA 10:7)

1. Institut biologicheskoy i meditsinskoy khimii Akademii meditsinskikh nauk SSSR, Moskva.
(CHEMISTRY, ORGANIC,
theory of oxidative-hydrolytic conversion of organic
molecules, review (Rus))

SHCHUKINA, L. A.

3

Oxidative-hydrolytic transformations of organic compounds. M. M. Shemyakin and L. A. Shchukina. *Uspekhi Khim.* 26, 528-63(1957).—A review with 112 references through 1956, dealing mainly with quinones and related substances. G. M. Kosolapoff

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