DASHEVSKIY, L.N.

Characteristics of the behavior of dynamic systems near the limits of stability. Sbor.trud. Inst. elektrotekh.AN URSR no.13:35-41 '56. (MLRA 9:10)

(Electric power distribution)

DASHEVSKIY, L. N.

"Design of Symmetrical Flip-Flops for Maximum Reliability."

x The author explains the design procedure and derives and discusses the necessary formulas. Technical data are provided. There are 6 references, of which 4 are English and 2 Soviet.

Voprosy vyschislitel'noy matematiki i tekhniki (problems in Computor Mathematics x and Technique) Kiev, Izd-vo AN Ukr SSR, 1958, 97 pp. (Sbornik trudov, vyp 3)

This collection of articles issued by the computor Center of Ukr SSR Acad Sci is intended for scientists and engineers in the field of computor mathematics and techniques. The collection is devoted to the programming of mathematical problems on electronic computers and to the design of units and components of these machines.

DASHEVSKIY, L. N. and POGREBINSKIY, S. B.

"A Variant of the Standard Parallel-Action Arithmetic Unit."

The authors describe a variant of a standard arithmetic unit, which they recommend for use in electronic automation systems where basic arithmetical and logical operations corresponding to certain established requirements must be performed. According to the authors this variant system provides features of universality, simplicity of the logical system, reliability, high speed, and low purchase cost. There are 8 references, of which 7 are Soviet and 1 German.

Voprosy vyschislitel'noy matematiki i tekhniki (Problems in Computor Mathematics and Technique) Kiev, Izd-vo AN Ukr SSR, 1958, 97 pp. (Sbornik trudov, vyp. 3)

This collection of articles, issured by the Computor Center of UKr SSR Acad Sci is intended for scientists and engineers in the field of computor mathematics and techniques. The collection is devoted to the programming of mathematical problems on electronic computers and to the design of units and components of these machines.

81662

16,6800

S/112/60/000/05/10/023

Translation from: Referativnyy zhurnal. Elektrotekhnika. 1960, No. 5, p. 323, # 4.4320

AUTHORS: Dashevskiy, L. N., Pogrebinskiy, S. B.

TITLE: On one Circuit of a Standard Parallel Arithmetic Unit

PERIODICAL: Sb. tr. Vychisl. tsentra. AN UkrSSR. 1958, No. 3, pp. 32-44

TEXT: A detailed description is given of logical and structural circuits of standard parallel arithmetic units. It is presumed that the developed standard units will be employed extensively in a number of electronic automation systems. The following requirements had to be considered when designing the standard units: universality in performing arithmetic and logical operations, simplicity of the logical circuits, reliability, high-speed action, low costs. The following points were taken as fundamental parameters and characteristics of arithmetic elements: binary computing system, fixed point, word length of 16-20 digits, 300 kc synchronizing pulse frequency for the tube variant, 300 kc for the junction transistor variant. The basic element of arithmetic units is the flip-flop (see figure), distinguishing itself by the absence of a differentiating circuit

Card 1/3

81662

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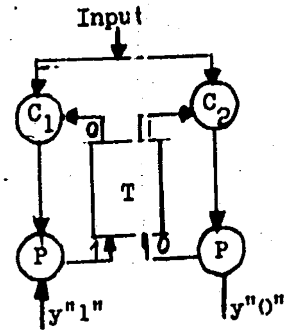
On one Circuit of a Standard Parallel Arithmetic Unit



on the carry forming channel. The transition of the flip-flop to a new state is effected with the aid of gating circuits (C_1, C_2) and the start pulse. The gating circuits are controlled by potential outputs of the flip-flop in such a way that the start pulse can pass one of the inputs only. In order to obtain a steady start, the input pulse should be shorter than the transient process time of the very flip-flop. The circuits P represent logical "or" gates with the aid of which the flip-flop returns to the zero state or a recording of 1 is effected. The authors show and describe the logical circuits of the register and the adder. A peculiarity of the adder is the addition of numbers in two cycles and the absence of memory elements. The authors investigate the general circuit diagrams of arithmetic units and also the structural circuit diagram of one digit of the arithmetic unit. The suggested circuits ensure the execution of basic operations and possess the following special features: a) for multiplication and division operations, shift and addition are effected in different registers, which makes

Card 2/3

81662

S/112/60/000/05/10/023

On one Circuit of a Standard Parallel Arithmetic Unit

it possible to combine these actions and to reduce the overall time; b) there are no shifts in the adder, which ensures an increase in operating frequency; c) the absence of memory elements. An 8-digit model of an arithmetic unit with an operating frequency of 200 kc has been developed, it performs 20,000 multiplication operations per second. Static flip-flops with 6Н1П (6N1P) tubes and pulse - potential "or" gates are used in the model. One digit of the unit contains 8 tubes, 40 diodes and 22 pulse flip-flops. The authors briefly describe the principles of construction of a single-program control machine. There are 8 figures and 8 references.

B. I. Z.

Card 3/3

DASHEVSKIY, L.N.

Designing symmetric triggers with consideration of maximum reliability. Sbor.trud.Vych.tsentra AN URSR no.3:55-70 '58. (MIRA 12:2)

(Electronic calculating machines)

S/103/60/021/06/11/016
B012/B054

AUTHORS: Glushkov, V. M., Dashevskiy, L. N., Nikitin, A. I. (Kiyev)

TITLE: Utilization of Electron Computers for the Automation 14 of the Bessemer Process

PERIODICAL: Avtomatika i telemekhanika, 1960, Vol. 21, No. 6, pp. 877 - 883

TEXT: The authors describe the automation of the control and regulation of the Bessemer process achieved after long experimental investigations which were carried out by the Dneprodzerzhinskiy vecherniy metallurgicheskiy institut (Dneprodzerzhinsk Evening Institute of Metallurgy) and the zavod im. Dzerzhinskogo (Works imeni Dzerzhinskiy). The latter two establishments investigated the available nonautomatic controlling methods of the Bessemer process, and worked out new methods suitable for automation on the basis of high-speed electron computers. A system has to be worked out by which it is possible to interrupt the blowing of rail steel at a carbon content of 0.48 - 0.58%. In consideration of the burning rate of carbon of 0.007 - 0.008% per second, the instant of ✓

Card 1/2

converter tipping must be predicted with an accuracy of ± 5 seconds. The authors describe the methods of determining this instant used on the basis of theoretical and practical investigations. This instant is predicted on the basis of information received with the use of methods of mathematical statistics. The information received by all methods for the determination of the instant is taken into account. Work for the automation of the Bessemer process was performed in two stages: First, the information apparatus was designed, mounted, and taken into operation at the Works imeni Dzerzhinskiy; it was automatically connected with the transmitters, and automatically started and stopped; in the second stage, a digital control machine was developed. This recording digital apparatus was worked out by the Vychislitel'nyy tsentr AN USSR (Computation Center of the AS UkrSSR). It is described, and its mode of operation is explained. The authors describe the operation conditions of this plant, and its construction and principal elements. It was installed at the Works imeni Dzerzhinskiy in March 1960. At present, the data obtained from this plant are being evaluated mathematically together with the data of chemical analyses, and a program for the controlling machine is set up. There are 2 figures.

Card 2/2

DASHEVSKIY, L.N.

35204

S/696/61/002/000/002/009
D299/D302

9,7100

AUTHORS: Dashevs'kyy, L.N., Pohrebins'kyy, S.B. and Shkabara, K.O.

TITLE: Basic diagram and design principles of the digital computer "Kyyiv"

SOURCE: Akademiya nauk Ukrayins'koyi RSR. Obchyslyuval'nyy tsentr. Zbirnyk prats' z obchyslyuval'noyi matematyky i tekhniky, v. 2, 1961, 8-14

TEXT: The digital computer "Kyyiv", designed at the Computation Center of the Academy of Sciences of the UkrRSR, is a general-purpose machine of intermediate speed. In designing the computer, particular attention was given to high reliability, simplicity of logical circuits, compactness and simplicity in handling it; sufficient speed and flexibility in solving various types of problems were also provided for. The operational principle of the computer is asynchronous; its various units are autonomous, each operating at its optimal frequency. The autonomous working of the various units makes it possible to carry out the required

Card 1/3

S/696/61/002/000/002/009
D299/D302

Basic diagram and design ...

operations in parallel, and not in series. Such an independent system
of operation of the various units has the following advantages: The
connection between the units is simplified; each unit is independent and
can be easily checked and repaired; this facilitates the plant manufac-
ture of the units. The units are integrated and can be replaced indi-
vidually without necessitating reconstruction of the entire computer;
thereby it becomes possible to design modified versions of the computer,
having different fastness and storing capacity. The main counting and
control element of the computer is the symmetrical flip-flop of triode
type 6Н1П (6N1P). The counters operate by means of logical elements
which are controlled by the anode voltage of the flip-flops; this ensures
reliability of operation. The control system is based on the voltage-
pulse method, whereby to some of the inputs of the logical elements the
control voltages are applied, and to the others the pulse signals. The
principal logical element is a diode-transformer pulse-voltage device.
The limiting operating frequency of the principal units is 500-600 kc.;
the amplifiers and the blocking generators have a frequency of 500 kc.,

Card 2/3

Basic diagram and design ...

S/696/61/002/000/002/009
D299/D302

at a pulse duration of 0.25-0.35 microseconds. The flip-flops were reliable to within 10%. The average speed of performing three-address operations was 5000-8000 op/sec; addition took 8 microsec., multiplication --200 microsec.; (these are minimum figures). With group operations, the speed of the computer does not decrease. The basic diagram of the computer is shown; its main units are the arithmetical unit, the internal- and external memory units, the control unit and the input- and output units. The operation of the computer is described. The various units are coordinated by the control system. The principal control desk regulates the (a.c.-) current supply, the start and stop of the computer; it controls possible failures and facilitates the formulation of the problems to be solved. The computer has a total of about 2300 tubes. It consumes 25 kw and occupies a total area of 70 m^2. There is 1 figure.

Card 3/3

S/044/62/000/009/065/069
A060/A000

9,7000

AUTHOR: Dashevs'kiy, L.N.

TITLE: On the problem of improving the reliability of electronic computers

PERIODICAL: Referativnyy zhurnal, Matematika, no. 9, 1962, 60, abstract 9V379 ("Zb. prats' z obchysl. matem. i tekhn." T. 2. Kyiv, AN URSR, 1961, 87 - 95; Ukrainian; Russian summary)

1/8

TEXT: Some considerations are cited relating to the improvement of the reliability of electronic computers. Main attention is drawn to raising the reliability of components by a sufficiently rigorous calculation of their parameters. The methods of analyzing certain components (inverters, cathode followers) for maximum reliability are set forth. A general criterion is formulated for the reliability of circuits with voltage coupling, characterizing the limiting admissible deviations of the circuit parameters from the nominal values under the condition of retaining the operating schedules within the boundaries of the linear segments of the characteristics. Examples are given of cal-

S/044/62/000/009/065/069
On the problem of improving the reliability of A060/A000

culations and the graphs for the dependence of generalized reliability coefficients on the circuit parameters.

Author's summary

[Abstracter's note: Complete translation]

√B

Card 2/2

S/044/62/000/010/041/042
B158/B102

AUTHORS: Dashevskiy, L. N., Pogrebins'kiy, S. B., Shkabara, K. O.

TITLE: Structure scheme and basic constructional principles of a "Kiyev" automatic digital device

PERIODICAL: Referativnyy zhurnal. Matematika, no. 10, 1962, 66-67, abstract 10V355 (Zb. prats' z obchisl. matem. i tekhn. v. 2. Kiyev, AN USSR, 1961, 8-15 [Ukr.; summary in Russ.])

TEXT: The "Kiyev" automatic digital device designed at the Vychislitel'nyy tsentr AN USSR (Computer Center of AS UkrSSR) is a universal mean velocity machine for solving a wide range of mathematical problems. The machine is constructed on the asynchronous principle with the individual components autonomized and operating at optimum frequency, which can easily be brought up to date by replacing one or more of these. The work of the individual components is coordinated by a control system provided with starter devices which generate impulses to control information processing on receipt of signals from the components concerned indicating that they have completed the processing of information previously accepted by them. Pulse-potential

Card 1/2

Structure scheme and basic....

S/044/62/000/010/041/042
B158/B102

logic schemes, based on the use of diode-transformer elements with a common magnetic conductor, are used. The machine is built into five separate cabinets. A small system of lifting tackle was used for erection. [Abstracter's note: Complete translation.]

Card 2/2

KOPYTOV, V.F., doktor tekhn. nauk, otv. red.; VESELOV, V.V., kand. khim. nauk, red.; YERINOV, A.Ye., kand. tekhn. nauk, red.; TISHCHENKO, A.T., kand. tekhn. nauk, red.; DASHEVSKIY, L.N., kand. tekhn. nauk, red.; CHEGLIKOV, A.T., kand. tekhn. nauk, red. SIGAL, I.Ya., kand. tekhn. nauk, red.; SEMENKOVSKAYA, P.T., kand. tekhn. nauk, red.; YEREMENKO, A.S., kand. tekhn. nauk, red.; DYBAN, Ye.P., kand. tekhn. nauk, red.; FEDOROV, V.I., kand. tekhn. nauk, red.; POL'SKIY, N.I., kand. fiz.-mat. nauk, red.

[Transactions of the Second Heat Engineering Conference of Young Research Workers] Trudy vtoroi teplotekhnicheskoi konferentsii molodykh issledovatelei. Kiev, Izd-vo AN USSR, 1963. 278 p. (MIRA 17:6)

1. Teplotekhnicheskaya konferentsiya molodykh issledovateley, 2, 1963. 2. Chlen-korrespondent AN Ukr.SSR (for Kopytov).

L 41912-65 EWT(d)/EEC-2/EWP(1) Pg-4/Pk-4/Pq-4 IJP(c) GG/BB

ACCESSION NR AM5006619 BOOK EXPLOITATION S/

Dashevskiy, Lev Naumovich (Candidate of Technical Sciences); Pogrebinskiy, Solomon Beniaminovich (Engineer); Shkabara, YEkaterina Alekseyevna (Candidate of Technical Sciences)

The "Kiev" computer; design and application (Vychislitel'naya mashina "Kiyev"; proyektirovaniye i ekspluatasiya), Kiev, Izd-vo "Tekhnika", 1964, 322 p. illus., biblio. 4,600 copies printed.

TOPIC TAGS: computer technology, digital computer KIYEV

PURPOSE AND COVERAGE: This book collected the experience in the design and use of the asynchrous universal digital computer "Kiev". The principles of its construction and structure circuitry, the method of performing control and arithmetic operations, and the schematics of the elements, components, and basic units of the computer are described. The book includes the methods of calculating and investigating the reliability of a digital computer and problems of organizing the use of large electronic digital computers. The book is intended for engineers, researchers, students and graduate students in the field of computer technology and cybernetics and also for specialists interested in the development and use of computer and control equipment.

Card 1/2

SUBMITTED: 31 JUL 64

L 24409-66 EWT(1)/EWA(h)/ETC(m)-6 WW

ACC NR: AP6006369 SOURCE CODE: UR/0413/66/000/002/0100/0100

AUTHORS: Chernoval, V. S.; Shcherba, N. U.; Frelin, N. V.; Dashevskiy, L. N.; Kolyada, I. A.; Gudrit, Ye. R.; Fediv, V. A.; Ivanovskiy, E. N.; Mazur, P. A.; Yaskevich, L. Ye.

55

B

ORG: none

TITLE: Streamline flow meter. 25 Class 42, No. 178125 [announced by Gas Institute, AN UkrSSR (Institut gaza AN UkrSSR)]

SOURCE: Izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, no. 2, 1966, 100

TOPIC TAGS: flow meter, streamline flow

ABSTRACT: This Author Certificate presents a streamline flow meter containing a sensing element in the form of a pivoted vane and jet rectifiers mounted in front of and behind the vane (see Fig. 1). To decrease vibrations, the pivoted vane has a bend in the side opposite the flow direction. A plate whose center of gravity is displaced toward the free end of the vane is hinged to the vane. There is also a bypass tube connecting the front and back of the vane.

2

Card 1/2 UDC: 532.574.27

L 24409-66
ACC NR: AP6006369

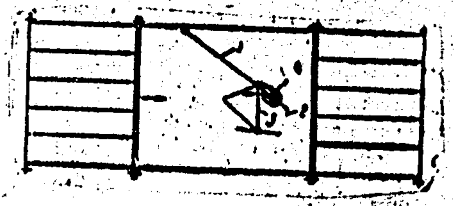


Fig. 1. 1 - pivoted vane;
2 - bend of vane; 3 - plate;
4 - bypass tube.

Orig. art. has: 1 diagram.

SUB CODE: 14/ SUBM DATE: 12Feb65

Card 2/2

ACC NR: AP6036065 (A, N) SOURCE CODE: UR/0432/66/000/005/0041/0043

AUTHOR: Dashevskiy, L. M. (Candidate of technical sciences); Pleskonos, A. K.; Lazarkevich, I. A.; Medvedev, R. B.

ORG: none

TITLE: Multiple point device in a system for the digital registration of parameters

SOURCE: Mekhanizatsiya i avtomatizatsiya upravleniya, no. 5, 1966, 41-43

TOPIC TAGS: computer input unit, computer research, analog digital conversion

ABSTRACT: A breadboard model of a system for the digital recording of parameters, including single and multiple point secondary devices, is briefly described. The multiple point devices do not have a continuous time relationship between the sliding element of the rheochord and the value of the parameter. The correspondence between the voltage picked up from the rheochord and the variable parameter occurs when the carriage is lowered on the chart paper of the device. A block diagram of the system is presented and discussed. Orig. art. has: 3 figures.

SUB CODE: 09/ SUBM DATE: none

UDC: 681.14 : 62-50

Card 1/1

MOYZHES, V.,inzh.; FUKZON, S.,inzh.; DASHEVSKIY, M.,inzh.

Using machinery in erecting a blast furnace. Stroitel' no.12:
13 D '58. (MIRA 12:1)

(Blast furnaces)

DASHEVSKIY, M.

Construction of a cold-rolling mill. Prom. stroi. i inzh. soor. 5 no.2: 3-7 Mr-Ap '63. (MIRA 16:4)

1. Nachal'nik Donetskogo otdela Ukrainskogo gosudarstvennogo proyektnogo instituta po proyektirovaniyu, issledovaniyu i ispytaniyu stal'nykh konstruktsiy i mostov.

(Zhdanov—Rolling mills—Design and construction)

DASHEVSKIY, M.

Accounting has been mechanized. Fin.SSSR 37 no.2:62-63 F '63.
(MIRA 16:2)

1. Glavnyy bukhgalter upravleniya gosudarstvennykh trudovykh sberegatel'nykh kass i gosudarstvennogo kredita Moldavskoy SSR.
(Moldavia—Savings banks—Accounting)
(Machine accounting)

DASHEVSKIY, M.I.

USSR/Physical Chemistry - Kinetics, Combustion, Explosions, Topochemistry, Catalysis. Б-9

Abs Jour : Referat Zhur - Khimiya, No 1, 1958, 498

Author : A.M. Rubinshteyn, M.I. Dashevskiy, N.A. Pribytkova.

Inst : Academy of Sciences of USSR.

Title : Application of Method of Ultrathin Sections to Electronic Microscopy of Catalysts.

Orig Pub : Izv. AN SSSR. Otd khim. n., 1957, No 4, 431-435

Abstract : The authors polymerize specimens in a mixture of methyl- and butylmethacrylates (1 : 3) and make sections less than 0.01μ thick with a specially constructed microtome from blocks prepared in the above manner. These sections are used for electron-microscopic study of highly dispersed catalysts.

Card 1/1

DASHEVSKIY, M.I.

UMD-5 ultramicrotome. Priroda 51 no.5:104-107 My '62.
(MIRA 15:5)

1. Institut organicheskoy khimii im. N.D.Zelinskogo AN SSSR, Moskva.
(Microtome)

PECHKOVSKAYA, K.A.; PAVLOVA, I.P.; SINYAYEVA, O.A.; DASHEVSKIY, M.I.

Use of electron microscopy for evaluating the distribution of carbon black in rubber compounds. Zav.lab. 29 no.8:968-970 '63. (MIRA 16:9)

1. Nauchno-issledovatel'skiy institut shinnoy promyshlennosti.
(Rubber) (Carbon black) (Electron microscopy)

DASHEVSKIY, M.

USSR/Chemistry - Rubber Butadiene Rubber Sep/Oct 48

"Structure and Properties of Filled Rubber Mixtures: III, Mixtures of Sodium Butadiene Rubber With Channel Black," B. Dogadkin, D. Pechkovskaya, M. Dashevskiy, Sci Res Inst of Tire Ind, 12 pp

"Kolloid Zhur" Vol X, No 5

Ukhtinskiy channel black as a filler for sodium butadiene rubber was examined in concentrations of less than 20, 20 - 40% in relation to amount of rubber. Found that in concentration of 20 - 40% of the black, structural arrangements were effected (threads and small chains). This did not occur for lower concentrations; in concentrations of 40 and above, surplus black did not form additional structural groups but was merely dispersed between them. Rubrax and sulfur retarded process, but mercaptobenzothiazole accentuated it. Stearic acid had no noticeable effect. In all degrees of concentration of channel black, rubber remained a continuous-phase system. Submitted 3 Jan 48.

PA 2/50T59

S/026/62/000/005/007/010
D036/D113

AUTHOR: Dashevskiy, M.I.

TITLE: The UMD-5 ultramicrotome

PERIODICAL: Priroda, no. 5, 1962, 104-107

TEXT: The УМД-5 (UMD-5) ultramicrotome, designed and produced at the Institut organicheskoy khimii im. N.D. Zelinskogo Akademii nauk SSSR (Institute of Organic Chemistry im. N.D. Zelinskiy, Academy of Sciences USSR), is intended for obtaining ultrathin (50 - 800 Å) and thin (1μ) sections of various substances, including polymers, catalysts and soft minerals for subsequent examination under an electron microscope. It has a rocking sample-holder and thermal feed of the sample towards the cutter. Microphotographs made with the aid of the ultramicrotome are included. There are 3 figures.

ASSOCIATION: Institut organicheskoy khimii im. N.D. Zelinskogo AN SSSR (Moskva)(Institute of Organic Chemistry im. N.D.Zelinskiy of the AS USSR /Moscow/)

✓

Card 1/1

L 43709-66 EWT(d)/EWT(v)/EWP(k)/EWP(h)/EWP(l) IJP(c) BC

ACC NR: AP6023669 SOURCE CODE: UR/0103/66/000/004/0142/0150 78

77

B

AUTHOR: Dashevskiy, M. L. (Moscow); Liptser, R. Sh. (Moscow)

ORG: none

TITLE: Simulation of stochastic differential equations connected with the problem of "disharmony" on an analog computer

SOURCE: Avtomatika i telemekhanika, no. 4, 1966, 142-150

TOPIC TAGS: random noise signal, analog computer, computer application, stochastic process, signal detection, signal noise separation

ABSTRACT: The article deals with the problem of signal detection against a background of noise and the problem of control on the basis of incomplete data. A proper device for the realization of the linear and nonlinear stochastic differential equations, to which this problem has been largely reduced in recent times, might be a continuous-acting analog computer operating in real time and receiving a signal-noise mixture. The difficulties of a purely mathematical nature which are encountered in the simulation of such equations are pointed out and methods for their elimination suggested. Methods for the simulation of controlled diffusion-type Markovian processes are proposed, and the results of the simulation of a random process

Card 1/3 UDC: 621.391.161:681.142.33

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ACC NR: AP6023669

involving the "disharmony" problem are discussed. A process η_t, which is the sum of the useful signal and "white" Gaussian noise, is observed. The useful signal is a Markovian process with two states 0 and 1, for which a transition is possible at a random moment of time θ only from state 0 to state 1; i.e., the random process satisfies the stochastic differential equation

$$d\eta_t = \chi(t-\theta)\,dt + d\xi_t,$$

where

$$\chi(t-\theta) = \begin{cases} 0, & t < \theta, \\ 1, & t \geqslant \theta, \end{cases}$$

ξ_t is the Wiener process, $M\Delta\xi_t = 0$. $D\Delta\xi_t = \Delta t$. In addition, it is known that the random quantity θ has the following a priori distribution

$$P(\theta > t \mid \theta > 0) = e^{-\lambda t}, \quad P(\theta = 0) = \pi.$$

Here π and λ are known constants. The problem is to establish, for a given probability of false alarm $\omega = P(\nu < \theta)$ (ν is the moment at which the alarm signal is activated) and within a mean-minimal time, the fact of a transition by the useful signal from 0 to 1; i.e., to minimize the mathematical expectancy

L 43709-66

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$$\tau = M(\nu - 0 | \nu \geqslant 0).$$

A basic expression for the simulation is derived and a schematic for its realization is presented, along with a table summarizing the simulation results for 100 trajectories under different conditions. It is shown that, by virtue of their high operational speed, analog computers can expand considerably the possibility of the practical use of statistical methods for signal detection against a background of noise. The accuracy of the results obtained in this manner will be of the same order as in the integration of ordinary differential equations. The authors express their gratitude to A. N. Shiryayev for his formulation of the problem and discussion of the results. Orig. art. has: 30 formulas, 3 figures, and 1 table.

SUB CODE: 09/ SUBM DATE: 18Sep65/ ORIG REF: 004/ OTH REF: 001

Card 3/3

1ST AND 2ND ORDERS

3RD AND 4TH ORDERS

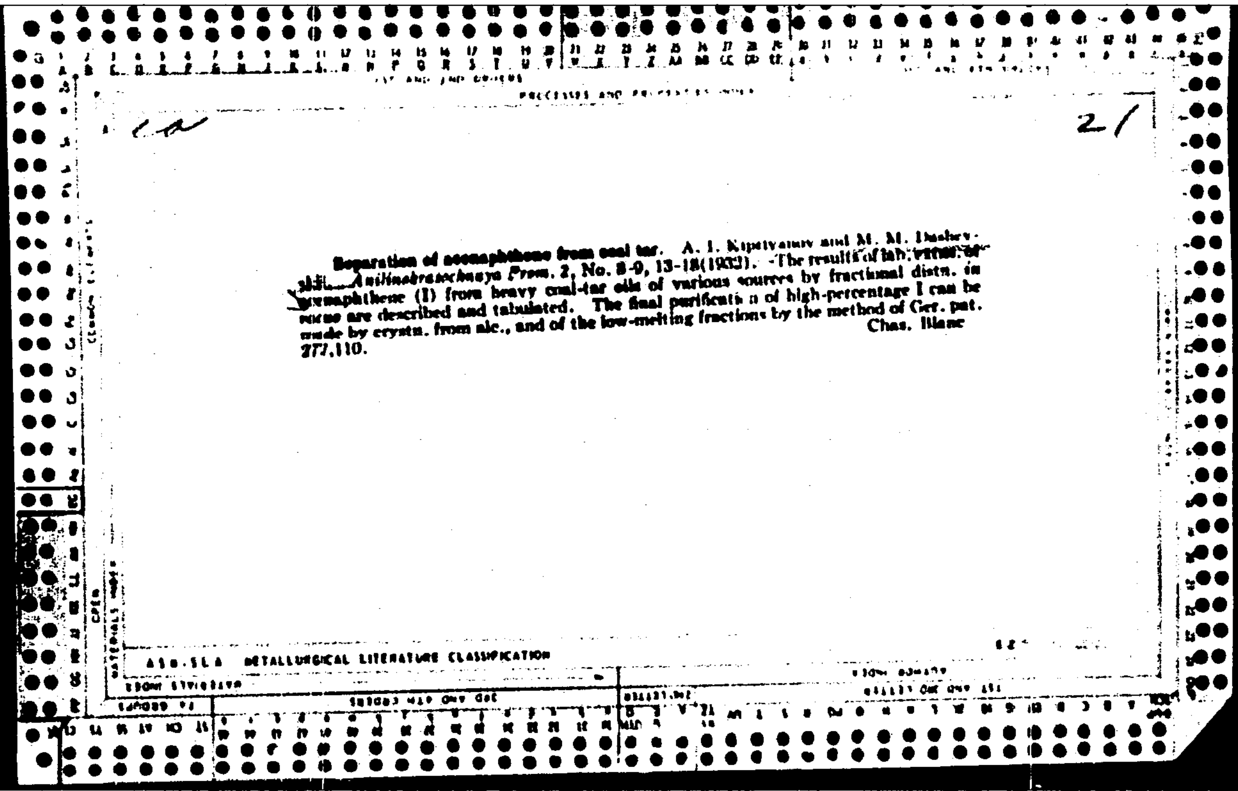
PROCESSES AND PROPERTIES INDEX

BC

A-3

[illegible] in the synthesis of [illegible] of chloro[illegible] [illegible] A. I. Kr- [illegible] (Ukrain. Chem. J. [illegible] a dichloro[illegible] [illegible] al chloride gives the [illegible] The effects of con- [illegible] of [illegible] are discussed. The [illegible] is not recommended owing [illegible] of Cu on the reaction. [illegible] E. H. UVAROV.

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION



PROCESSES AND PROPERTIES INDEX

1 a

21

Separation of acenaphthene from coal tar. A. I. Kipetvanov and M. M. Dashevskii. *Anilinokrasochnaya Prom.* 2, No. 8-9, 13-18(1932).—The results of lab. [illegible] of acenaphthene (I) from heavy coal-tar oils of various sources by fractional distn. in vacuo are described and tabulated. The final purification of high-percentage I can be made by crystn. from alc., and of the low-melting fractions by the method of Ger. pat. 277,110. Chas. Blanc

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

CA

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Use of polychlorobenzenes in the synthesis of dyes. III. Preparation of *p*-chlorophenol from *p*-dichlorobenzene. A. I. Kipriyanov and M. M. Dashevskii. *Ukrain. Khem. Zhur.* 7, Wiss.-tech. Abt. 78-86(1932); cf. *C. A.* 25, 5034.—The hydrolysis of *p*-$C_6H_4Cl_2$ with aq. NaOH gives a max. yield of 30% of *p*-C_6H_4ClOH (I); 2.5 mols. of alkali suffice for the complete removal of Cl. With NaOH-MeOH and a little Cu powder at 225° yields up to 85% are obtained, probably because of the insoly. of the C_6H_4ClONa formed in the medium. **IV. Preparation of *p*-aminophenol from *p*-dichlorobenzene.** A. I. Kipriyanov, G. I. Kipriyanov and M. M. Dashevskii. *Ibid* 87-93.—The influence of various factors on the formation of *p*-$H_2NC_6H_4OH$ from (I) and aq. NH_3 in presence of $CuSO_4$ has been examd. The optimum yield (82.5%) was obtained by heating with 4 vols. of 33% NH_3 and 16% of $CuSO_4$ for 3 hrs. at 185°. **V. Preparation of pyrocatechol from polychlorobenzenes.** A. I. Kipriyanov and E. D. Suich. *Ibid.* 94-100.—*o*-$C_6H_4Cl_2$ is hydrolyzed to *o*-C_6H_4ClOH with 2.5 mols. of NaOH-MeOH at 225° in a rocking autoclave. The further hydrolysis to pyrocatechol by NaOH in presence of $CuSO_4$ gives yields up to 71%, provided a Cu- or Ag-lined autoclave is employed. $Ba(OH)_2$ and Na_2CO_3 are unsatisfactory hydrolytic agents. The concn. of alkali must not exceed 10%, but the temp. and duration of heating are of secondary importance. B. C. A.

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

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Oxidation of acenaphthene to acenaphthenequinone. A. I. Kiprianov and M. M. Dashevskii. J. Applied Chem. (U. S. S. R.) 7, 944-9(1934).—In the oxidation of the acenaphthene to acenaphthenequinone a considerable residue is obtained, insol. in Na_2CO_3 and $NaHSO_3$, which lowers the yield of the acenaphthenequinone. This residue is composed of an isomorphic mixt. of acenaphthenequinone and naphthalic acid anhydride. The low soly. of the latter in Na_2CO_3 and $NaHSO_3$ is probably due to the difference in the chem. properties of the consecutive mol. layers of the cryst. structure. The isomorphic mixt. may be sepd. by extg. with Na_2CO_3 and $NaHSO_3$ at elevated temps. and pressures or by treating the mixt. in hot $PhNO_2$ with the same substances; this raises the small yields of acenaphthenequinone.

A. A. Boehtlingk

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

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10

Oxidation of acenaphthene to acenaphthenequinone. M. Dashevskii and A. Karishin. Org. Chem. Ind. (U. S. S. R.) 1, 729-31(1936).—By the modified Graebe method (by digesting on a water bath for 1 hr. 5 g. acenaphthene with 200 cc. of 96% AcOH and 19 g. $(NH_4)_2Cr_2O_7$ the yield of acenaphthenequinone was increased from 40% to 71.1% and that of naphthalic acid was decreased to 7.6%.

Chas. Blanc

METALLURGICAL LITERATURE CLASSIFICATION

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3RD AND 4TH ORDERS

Haloacenaphthenes. M. Dashevskii and A. Karishin (*Org. Chem. Ind.* (U. S. S. R.) 4, 109-13(1937). Acenaphthene (I) was chlorinated in org. solvents in the cold and at elevated temps. without and with the catalysts I, S, III, Cu, Pb, Fe and Al. Contrary to Paillard and Favarger (cf. *C. A.* 27, 4534) I with 2 mols. of Cl in AcOH and alc. at 80° in the presence of I and other catalysts gives not 88% 4-chloroacenaphthene (II), but a mixt. of chlorides, contg. chiefly (55%) 4,5-dichloroacenaphthene (III). A yield of 90% II (81% from com. I), m. 69.5° (alc.), was obtained without a catalyst from I in 5 parts of boiling 75% alc. with 10-15% excess Cl_2. With 2.5 mols. of Cl there were formed 55% III, m. 169-70°, and some II, trichloroacenaphthene, m. 178-80°, and pentachloroacenaphthene, m. 108-9°. Oxidation of III with CrO_3 in AcOH yielded 4,5-dichloronaphthalic acid, changing at 194° to the anhydride, m. 285°, and 4,5-dichloroacenaphthenequinone, m. 406°. The work is being continued.

Chas. Blanc

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

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BC

A3

Halogen derivatives of acenaphthene. II. M. M. Dashevski and A. P. Karishin (Prom. Org. Chim., 1937, 4, 406—409).—The products of oxidation of halogen-substituted acenaphthenes by chromates in AcOH are [illegible], acenaphthenequinones, or naphthalic acids, in yields depending on the conditions of oxidation, and on the nature or no. of halogen atoms in the mol. Thus 3 : 4-dichloroacenaphthene gives 3 : 4 : 3′ : 4′-*tetrachlorodiacenaphthylideneone*, not melting at 400°, 3 : 4-*dichloroacenaphthenequinone*, m.p. [illegible], and 4 : 5-dichloronaphthalic acid, also obtained by oxidation of 3 : 4 : 7 : 7 : 8-*pentachloroacenaphthene*, m.p. 198—199° (by chlorination of acenaphthene). A boiling solution of acenaphthene in boiling EtOH is brominated with Br vapour, to yield 3-bromo- and 3 : 4-*dibromo-acenaphthene*, m.p. 160°, b.p. 200°/3 mm., from which 3 : 3′-dibromo- and 3 : 4 : 3′ : 4′-*tetrabromo-diacenaphthylideneone*, m.p. >400°, 3-bromo- and 3 : 4-*dibromoacenaphthenequinone*, m.p. 258·5°, and 4-bromo- and 4 : 5-*dibromonaphthalic acid*, m.p. 260°, are obtained by oxidation as above. R. T.

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

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BC

A-3

Halogen derivatives of acenaphthene. M. M. DASHEVSKI and A. P. KARISHIN (Prom. Org. Chim., 19[illegible], 6, 507—511).—Acenaphthene and SO_2Cl_2 in presence of I at room temp. give 3:4-dichloroacenaphthene (I), in 50—60% yield. (I) and H_2SO_4 (1 hr. [illegible]) give 3:4-*dichloroacenaphthene-1-sulphonic acid*, m.p. [illegible] (decomp.) [*chloride*, m.p. 170°; *amide*, m.p. [illegible] (decomp.)], oxidised ($K_2Cr_2O_7$) to 4:[illegible] acid, m.p. 229—230° (*anhydride*, m.p. 165°; *chloride*, m.p. 219—220°; *amide*, decomp. 260—262°). 3:4-*Dichloroacenaphthene*[illegible] acid, m.p. 265—266° (decomp.) (*chloride*, m.p. 198—200°; *diamide*, m.p. >400°), prepared analogously to (I), is oxidised ($K_2Cr_2O_7$) to 4:5-*dichloro*-3:7-*disulphonaphthalic acid*, m.p. 176—177° (decomp.). 3:4-*Dibromoacenaphthene*-1-[illegible] *acid*, m.p. 240° (decomp.) (*chloride*, m.p. 190—191°; *amide*, m.p. 260—262°), and 1:[illegible] *acid*, m.p. 265° (decomp.) (*chloride*, m.p. 197—198° (decomp.); *amide*, m.p. 276—278°), and 4:5-*dibromo-2-sulpho*-, m.p. 235—236°, and 3:7-*disulphonaphthalic acid*, m.p. 159—160°, were prepared analogously. R. T.

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

1ST AND 2ND ORDERS

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CA

10

Some nitro derivatives of acenaphthenequinone. M. M. Dashevskii, A. P. Karishin, and O. S. Mikhailova. *J. Applied Chem.* (U.S.S.R.) 20, 1019-24(1947)(in Russian).—4,5-Dichloroacenaphthenequinone (5 g.) in 50 cc. warm concd. H_2SO_4 was treated over 5 min. with 3 cc. HNO_3 (d. 1.43-1.5) and 15 cc. concd. H_2SO_4, then heated on a steam bath 1 hr.; after cooling and pouring into ice water, the dried solid was extd. with hot MePh and the ext. evapd. to give 1.3 g. *3-nitro-4,5-dichloroacenaphthenequinone*, m. 195-7° (from AcOH); after repeated crystn. it m. 200-1°, is sol. in $PhNO_2$, MePh, AcOH, poorly sol. in Et_2O and EtOH; it forms a *diphenylhydrazone* m. 280-2° (from AcOH). When the above nitration was done in 25 cc. concd. H_2SO_4, using 7.5 cc. HNO_3 (d. 1.43) and 10 cc. concd. H_2SO_4, there was obtained, after heating 1 hr., cooling, pouring on ice, and washing with H_2O and hot EtOH, 4.8 g. crude di-NO_2 deriv., which on crystn. from AcOH gave pure *3,6-dinitro-4,5-dichloroacenaphthenequinone* (I), m. 276-7° (some decompn.). Smaller amts. of HNO_3 or H_2SO_4 lead to lower yields. The product gives a *bis(phenylhydrazone)*, m. above 400°. I (5 g.), 15 g. $Na_2Cr_2O_7$, and 60 cc. AcOH boiled 1 hr. gave 2.1 g. of the *tetra-Na salt of 3,6-dinitro-4,5-dihydroxynaphthalic acid*; *free acid* (by HCl treatment of the Ba salt) m. 195° (from AcOH)(some decompn.), is sol. in H_2O and EtOH, less sol. in AcOH and Et_2O; addn. of $BaCl_2$ to the acid in water gave a *Ba salt*, yellow; $AgNO_3$ gave a *Ag salt* (no data). 4,5-Dibromoacenaphthenequinone nitrated as above gave 4.5 g. *3,6-dinitro-4,5-dibromoacenaphthenequinone*, m. 287-8° (from AcOH or $PhNO_2$), yellow plates, sol. in PhMe, poorly sol. in EtOH and $CHCl_3$, insol. in Et_2O.

G. M. Kosolapoff

A S M - S L A METALLURGICAL LITERATURE

DASHEVSKIY, M.M.

1 **Structure of some polybromo derivatives of acenaphthene. I.** M. M. Dashevskiĭ and G. P. Petrenko (Polytech. Inst., Odessa). *Sbornik Statei Obshchei Khim., Akad. Nauk S.S.S.R.* 1, 630-7(1953).—The hexabromide of acenaphthene [Blumenthal, *Ber.* 7, 1092(1874)] is shown to be 1,2,3,-4-*tetrahydro-1,2,3,4,5,10-hexabromoacenaphthene* (*C.A.* 6,7,-8,8a-tetrahydro-1,5,6,7,8,8a-hexabromoacenaphthene) (I). None of the tetrabromides reported by De-Fazi (*C.A.* 18, 253) and Mayer and Kaufmann (*C.A.* 14, 2798) could be duplicated. To 100 g. acenaphthene suspended in 160 ml. CCl_4 or $CHCl_3$ was added with cooling 120 ml. Br in 70 ml. CCl_4 or $CHCl_3$; soln. occurs and later an abundant pptn. begins. After several hrs. there was obtained 180-200 g. colorless product, mixed penta- and hexabromo derivs. in nearly equal proportions. The mixt. was sepd. by dissolving in 1600-1700 ml. $(CH_2Cl)_2$ and keeping overnight; 80-90 g. I crystallized out, while concn. of the filtrate gave 70-80 g. *3,4-dihydro-3,4,5,9,10-pentabromoacenaphthene* (II). Pure I, decomp. 192-3° (from C_6H_6), heated with KI cleaves 1 mole Br and 2 moles HBr; alc. $AgNO_3$ cleaves 4 Br atoms, while alc. KOH cleaves 3 Br atoms. Oxidation of 20 g. I with 60 g. $Na_2Cr_2O_7$ in 200 ml. AcOH 3 hrs. at reflux gave 4.9 g. *4-bromonaphthalic acid*, m. 219-20°, identical with the oxidation product of 4-bromoacenaphthene. To 20 g. powd. I in 400 ml. hot C_6H_6 was added a hot soln. of 10 g. KOH in 400 ml. EtOH and the mixt. was boiled 0.5 hr. to give 8 g. *2,4,5-tribromoacenaphthylene*, m. 142.5-3.0° (from C_6H_6), which adds a theoretical amount of Br required for 1 double bond. Oxidation of this with $Na_2Cr_2O_7$ in AcOH 1 hr. at reflux gave *2,4,5-tribromonaphthalic acid*, m. 222-3°, whose analysis corresponds to the anhydride rather than the free acid. The acid (2.0 g.) and 5.2 g. fresh HgO in 30 ml. H_2O heated in autoclave 3 hrs. at 205-15°, then 3 hrs. at 225-30° and boiled 3 hrs. in concd. HCl, gave 0.6 g. *2,4,5-tribromonaphthalene*, m. 140-1°. To 3.1 g. 4,5-dibromoacenaphthene in $CHCl_3$ was added in the cold 1.15 ml. Br in $CHCl_3$; the mixt., on standing overnight, gave 2.30 g. heptabromide, solid. To 4 g. 2,4,5-tribromoacenaphthylene in 20 ml. CCl_4 was added 57 ml. soln. of Br in CCl_4 (1.65 g. Br/ml.); rapid uptake of Br occurred without evolution of HBr; after 24 hrs. there was recovered 4.9 g. *2,4,5,9,10-pentabromoacenaphthene*, m. 212-13° (from C_6H_6), which oxidized with $Na_2Cr_2O_7$ to 2,4,5-tribromonaphthalic acid, m. 322-3°. The pentabromide (3 g.) in C_6H_6 was treated with hot soln. of 0.4 g. KOH in 90 ml. EtOH and heated briefly yielding 1.8 g. orange *2,4,5,10-tetrabromoacenaphthylene*, m. 199-200°, which oxidized with $Na_2Cr_2O_7$ to the same 2,4,-5-tribromonaphthalic acid. Pure II, m. 162-3° (from C_6H_6; with decompn.), loses 2 Br atoms with hot alc. KOH and 3 Br atoms with alc. $AgNO_3$; oxidized with $Na_2Cr_2O_7$ it yields *4-bromonaphthalic acid*, m. 219-20°. II (10 g.) in 350 ml. C_6H_6 treated with 18 g. KOH in 350 ml. EtOH and refluxed 45 min. gave 14 g. orange product, identified as *3,5,10-tribromoacenaphthylene*, m. 183-3° (from C_6H_6), which oxidized with $Na_2Cr_2O_7$ to *3,5-dibromonaphthalic acid*, m. 206° (from Ac_2O), which decarboxylated as described above to *3,5-dibromonaphthalene*, m. 78° (from EtOH). Refluxing I in AcOH 45 min. gave about 50% II. To 10 g. acenaphthene in 20 ml. hot CCl_4 was added 13.1 ml. Br in 30 min. and the mixt. on cooling gave 5.5 g. yellow product; this (1 g.) in 23 ml. C_6H_6 was heated 15 min. with 0.8 g. KOH in 23 ml. EtOH yielding 0.47 g. product, m. 181.5-2.5°, identified as *3,5,10-tribromoacenaphthylene*. Thus the main product of bromination of acenaphthene under conditions given by M. and K. is not the material claimed by them (hexabromide), but II, which on sapon. yields not a

OVER

M. M. DASHEVSKII

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tetrabromoacenaphthene but tribromoacenaphthylene.
Some polychloro derivatives of acenaphthene. II. *Ibid.*
839-45; cf. *Trudy Odessk. Ind. Inst.* 3 (9), (1941).—
Treatment of 30 g. acenaphthene in 45 ml. AcOH with 3-5
moles Cl premixed with an equal vol. of SO_2, with cooling,
allowing the mixt. to stand overnight and filtering the de-
posited solids, gave after washing with AcOH and Et_2O,
about 30 g. chlorination products consisting of penta- and
hexachloro derivs. *If the chlorination is run in the presence*
of 2% iodine, the hexa-Cl deriv. predominates, while in the
presence of 2% $FeCl_3$, the penta-Cl deriv. is predominant.
Sepn. of the 2 isomers is difficult. Crystallization *from*
$(CH_2Cl)_2$ or C_6H_6 yields dense crystals *of* the hexa-Cl deriv.
simultaneously with fine and light crystals of the penta-Cl
deriv., thus affording a method for mech. sepn. Heating
is avoided, owing to possible decompn. Thus was ob-
tained *1,2,3,4-tetrahydro-1,2,3,5,6,10-hexachloroacenaph-*
thene, decomp. 160°, which, when heated with alc. KOH,
loses 3 Cl atoms, while 4 Cl atoms are removed in alc.
$AgNO_3$. Oxidation with $Na_2Cr_2O_7$ in AcOH 3-5 hrs. at re-
flux gave a polymer and a low yield of *4,5-dichloronaphthalic*
acid, m. 327-8°, which heated with HgO in H_2O in an auto-
clave 6 hrs. to 210° gave a moderate yield of *4,5-dichloro-*
naphthalene, m. 88.5-9° (from EtOH). Since this m.p. does
not agree with previous reports (83°), this material was also
prepd. similarly from 4,5-dichloroacenaphthene, which
yielded the product, m. 89°. The hexa-Cl deriv. (5 g.), in
50 ml. C_6H_6 refluxed 0.5 hr. with 3.8 g. KOH in 50 ml.
EtOH yielded 2.0 g. *2,4,5-trichloroacenaphthylene* (I), m.
192-4° (crude), m. 197-8° (pure), which readily adds Br to

its double bond. This (2.5 g.) oxidized with 13 g. $Na_2Cr_2O_7$
in AcOH 4 hrs. at reflux gave 1.15 g. *2,4,5-trichloronaph-*
thalic acid, which on crystn. from Ac_2O gave the *anhydride*,
m. 210-21°. This heated in an autoclave with HgO and
H_2O 6 hrs. at 205-10°, then refluxed with concd. HCl 3 hrs.
gave after steam distn. 0.8 g. *2,4,5-trichloronaphthalene*, m.
89-9.5° (from EtOH). Treatment of 2 g. I in CCl_4 with
the theoretical amt. of Cl over 3 hrs. gave 1 g. *2,4,5,9,10-*
pentachloroacenaphthene, decomp. 157° (from C_6H_6), which
(1 g.) refluxed 5 min. with 0.35 g. KOH in 40 ml. EtOH and
40 ml. C_6H_6 gave 0.75 g. orange *2,4,5,10-tetrachloroacenaph-*
thylene, m. 215-17°, while oxidation of the penta-Cl deriv.
with $Na_2Cr_2O_7$ in AcOH gave *2,4,5-trichloronaphthalic acid*,
m. 210-21°. The 2nd product of chlorination of ace-
naphthene is *3,4-dihydro-3,4,5,9,10-pentachloroacenaphthene*
(II), decomp. 204-5° which loses 3 Cl atoms with alc.
$AgNO_3$, while in alc. KOH, 2 atoms of Cl are cleaved.
Oxidation yields *4,5-dichloronaphthalic acid*, m. 327-8°
(from Ac_2O). Refluxing 1.05 g. II in 30 ml. C_6H_6 with 0.9 g.
KOH in 25 ml. EtOH 15 min. gave 0.8 g. orange *3,5,10-*
trichloroacenaphthylene, m. 165° (from C_6H_6), which readily
adds Br to its double bond. Oxidation of this with Na_2-
Cr_2O_7-AcOH gave *3,5-dichloronaphthalic acid*, m. 173-4°
(from Ac_2O); decarboxylation yields *3,5-dichloronaphtha-*
lene, m. 92° (from AcOH). Oxidation with $KMnO_4$ of
4,5- and 3,5-dichloronaphthalic acids yields 4- and 5-
chlorohemimellitic acids, resp. G. M. Kosolapoff

<u>DASHEĬVSKIY</u>, M. M., and PETRENKO, G. P.

On Some Polychloro Derivatives of Acenaphthene. II. page 638. Sbornik statey po obshchey khimii (Collection of Papers on General Chemistry), Vol 1, Moscow-Leningrad, 1953, pages 762-766.

Odessa Polytechnic Inst.

DASHEVSKIY, M. M.

USSR/Chemistry - Organic chemistry

Card 1/1 Pub. 116 - 17/30

Authors : Dashevskiy, M. M., and Petrenko, G. P.

Title : About 4,5-dichloroacenaphthene and its oxidation products

Periodical : Ukr. khim. zhur. 21/3, 370-372, June 1955

Abstract : A new method for the oxidation of 4,5-dichloroacenaphthene into 4,5-dichloronaphthalic acid with a yield of 80 - 83% is briefly described. It was proven experimentally that the chlorination of acenaphthene with sulfuryl chloride in the presence of an aluminum chloride catalyst yields up to 75% of 4,5-dichloroacenaphthene plus small amounts of monochloroacenaphthene and tars. It was established that the yield of 4,5-dichloroacenaphthenequinone does not exceed 52% of the theoretical. Four USSR references (1934-1952).

Institution : Polytechnical Inst., Odessa

Submitted : January 19, 1955

DASHEVSKIY, M.M.

Halogen substituted [illegible] hemimellitic acids. M. M. [illegible]

[illegible] gave the [illegible] m. 255 [illegible] 5-chlorohemimellitic

[illegible] the filtrate subjected to isolation of the unch hemimellitic acid. 4-Cl and 4-Br derivs. were [illegible] by evapn. and extn. with Et_2O; the 5-isomers [illegible] were sepd. by sparing soly. of their [illegible] salts. The [illegible] derivs. were sepd. by fractional [illegible] of [illegible] salts. The following are reported: *4-chloro-* [illegible] (from aq. HCl) (heated to [illegible] the *anhydride*, which heated with urea to

[illegible] per 100 g.) (the free *acid* forms a *monohydrate* and an *imide*, m. 242°), *4,5-dibromohemimellitic acid* (by oxidation of 2,4,5-tribromonaphthalic anhydride), m. 195-7° (*imide*, m. 275-7°). In oxidation the ring which is free of halogen is attacked; if halogen is present in both rings of naphthalic acid, that ring is attacked more rapidly which contains the greatest no. of halogen atoms. Transfer of halogen from *β*- to *m*-position in respect to CO_2H does not appear to affect the ease of oxidation of that ring. 4-Halohemimellitic acids are much more sol. in H_2O than the 5-isomers. Also in *J. Gen. Chem. U.S.S.R.* 25, 1139-42(1955)(Eng. translation). G. M. Kosolapoff

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DASHEVSKIY, M.M.

CH

Mixed polyhalo substituted acenaphthenes. III. M. M. Dashevskii and G. P. Petrenko (Polytech. Inst., Odessa). *Zhur. Obshchei Khim.* 25, 1378-82(1955); cf. *C.A.* 49, 999.—To 100 g. 5-chloroacenaphthene in 125 ml. CHCl$_3$ was added in 0.5 hr. 70 ml. Br in 50 ml. CHCl$_3$; on the following day the pptd. mixt. of hexa- and pentahalo derivs. was sepd. and washed with petr. ether. Heating 107.9 g. of this mixt. in 770 ml. MePh and allowing the soln. to stand 2 days gave 71.5 g. pptd. *1,6,7,8,8a-pentabromo-5-chloro-6,7,8,8a-tetrahydroacenaphthene*, decomp. 154-6° (from MePh), in which the position of Br in 1- or 2-position was uncertain; the product readily decomps. on warming in air. Oxidation with Na$_2$Cr$_2$O$_7$ gave *4-chloronaphthalic acid*, isolated as the *anhydride*, m. 210-11°. Stirring the hexahalo deriv. with KOH in EtOH-C$_6$H$_6$ 1 hr. at room temp. gave 11.5 g. crude, or 7 g. pure, *3,5-dibromo-6-chloroacenaphthalene*, m. 145° (from C$_6$H$_6$), which with Na$_2$Cr$_2$O$_7$ in AcOH gave *2,4-dibromo-5-chloronaphthalic anhydride*, m. 208-8.5°; this autoclaved at 220° with HgO-H$_2$O gave *2,4-dibromo-5-chloronaphthalene*, m. 139.5-40°, thus confirming the location of the last Br atom in position 1. The MePh mother liquor after sepn. of the hexahalide was evapd. yielding *4,5-dihydro-1,2,4,5-tetrabromo-6-chloroacenaphthene* (I), decomp. 155°, also obtained from the penta-Br deriv. by refluxing with AcOH. Oxidation of I with Na$_2$Cr$_2$O$_7$ also gave 4-chloronaphthalic anhydride, while stirring with KOH in EtOH-C$_6$H$_6$ at reflux 15 min. gave *1,7(or 4)-dibromo-5(or 6)-chloroacenaphthene*, m. 107-8° (from C$_6$H$_6$), which with Na$_2$Cr$_2$O$_7$ in AcOH gave *3-bromo-5-chloronaphthalic anhydride* (I), m. 205°, which decarboxylated as above to *1-chloro-7-bromonaphthalene*, m. 68-8.5°. Oxidation of I with KMnO$_4$ gave 5-bromohemimellitic acid (isolated as mono-K salt) and more sol. 4-chlorohemimellitic acid (isolated also as K salt), in a ratio such as to indicate more rapid oxidation of the ring contg. the Br atom. Also in *J. Gen. Chem. U.S.S.R.* 25, 1325-8(1955)(Engl. translation).

G. M. K.

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DASHEVSKIY, M.M.

Synthesis of naphthalimide. M. M. Dashevskii. 1 20

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DASHEVSKIY, M.M.

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Synthesis of naphthalimides. M. M. Dashevskii (*Zh. obshch. Khim.*, 1955, 25, 2485—2488).—The characteristics of naphthalimides as intermediate products in the synthesis of certain dyestuff groups have already been investigated and their behaviour noted. In this paper, special study was made of the mechanism of [illegible] naphthalic acid into anhydride. Naphth[illegible] and anhydride was attained at 15[illegible] converted [illegible] converted into anhydride more rapidly [illegible] following order: 4 : 5-dichloronaphthalic [illegible] 4-chloronaphthalic, 4-nitronaphthalic and naphthalic acids [illegible] version to imides was by direct heating [illegible] with aq. NH_3. 11 references.

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E. L. H.

5 (3)

AUTHORS: Dashevskiy, M. M., Petrenko, G. P. SOV/75-14-3-26/29

TITLE: Quantitative Determination of Acenaphthylene (Kolichestvennoye opredeleniye atsenaftilena)

PERIODICAL: Zhurnal analiticheskoy khimii, 1959, Vol 14, Nr 3, pp 375-377 (USSR)

ABSTRACT: The authors investigated several methods which are based either on the unsaturated constitution of the acenaphthylene or on its intense yellow coloration without having obtained satisfactory results. Finally a gravimetric method was found which is characterized by the fact that acenaphthylene forms a sparingly soluble polymer under the influence of strong acids (sulfuric acid with glacial acetic acid). Table 1 presents the determination results for mixtures of acenaphthylene and acenaphthene. The results which are not quite precise can be corrected by means of a calibration curve when strictly proceeding according to the analysis directions. Simpler is the colorimetric method in which the acenaphthylene is distilled rapidly in low absolute pressure (in order to avoid resinification) and investigated photometrically in the monochromator UM-2. A figure shows the

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Quantitative Determination of Acenaphthylene SOV/75-14-3-26/29

dependence of the optical density on the concentration of the acenaphthylene. Table 2 presents the determination results which show a maximum error of 1 %. There are 1 figure, 2 tables, and 5 references, 2 of which are Soviet.

ASSOCIATION: Odesskiy politekhnicheskiy institut (Odessa Polytechnical Institute)

SUBMITTED: March 7, 1958

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5(3)

SOV/80-32-5-34/52

AUTHORS: Petrenko, G.P., Dashevskiy, M.M.

TITLE: The Oxidation of Acenaphthene to Naphthalic Anhydride

PERIODICAL: Zhurnal prikladnoy khimii, 1959, Vol 32, Nr 5, pp 1126-1132 (USSR)

ABSTRACT: The vapor-phase oxidation of acenaphthene to naphthalic anhydride is studied here. The oxidation was carried out by air at 320 - 435°C over vanadium catalysts and manganese dioxide. Vanadium pentoxide as catalyst produces a mixture of acenaphthilene with unreacted acenaphthene. At an increased air supply naphthalic anhydride may be present to the maximum amount of 29%. The addition of potassium sulfate to the catalyst raises its activity and with the increase of the temperature the yield of naphthalic anhydride rises sharply. Naphthalic anhydride is the principal product of the reaction, if the air supply is sufficient. The oxidation of acenaphthene over manganese peroxide leads to a yield of 28 - 30% acenaphthilene at 325°C. The highest yield of naphthalic anhydride is obtained with a catalyst of iron vanadate with potassium sulfate at 350 - 370°C and a volume ratio acenaphthene : air = 1 : 100. The time of contact is 2.9 sec. The yield of anhydride is 75 - 80% of the theoretical.

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The Oxidation of Acenaphthene to Naphthalic Anhydride SOV/80-32-5-34/52

There are 3 graphs, 2 tables, 1 diagram and 16 references, 1 of which is Soviet, 5 American, 4 English, 3 German, 1 French, 1 Swiss and 1 Italian.

SUBMITTED: January 8, 1958

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S/079/60/030/04/49/080
B001/B002

AUTHOR: Dashevskiy, M. M.

TITLE: Oxidation of 4-Nitroacenaphthene Into Nitronaphthalic Acid

PERIODICAL: Zhurnal obshchey khimii, 1960, Vol. 30, No. 4, pp. 1271-1274

TEXT: In the present paper the author describe the possibility of an oxidation by means of sodium bichromate (at least of certain organic compounds) in a solution of hydrochloric acid, without the separation of chlorine. In this case, the concentration of hydrochloric acid in a certain organic compound to be oxidized, must not exceed a certain degree, and must be in a certain ratio to the amount of the bichromate used. This is shown here for the oxidation of 4-nitroacenaphthene. The oxidation of 4-nitroacenaphthene in a medium of sulfuric acid takes place very slowly, and gives rise to a low yield. In a medium containing hydrochloride, oxidation takes place quickly and under easy conditions, without resinification and combustion. The yield of 4-nitronaphthalic acid was 80-85%. The amount of hydrochloric acid must not exceed 5 moles of hydrogen chloride per 1 mole of sodium bichromate, while the concentration of hydrochloric acid must

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Oxidation of 4-Nitroacenaphthene Into Nitro-naphthalic Acid

S/079/60/030/04/49/080
B001/B002

not be more than 20%. Otherwise, chlorine is separated in the oxidation of hydrogen chloride. The best results were obtained in a double excess of bichromate and by vigorous mixing. There are 4 tables and 4 references, 2 of which are Soviet.

ASSOCIATION: Odesskiy politekhnicheskiy institut (Odessa Polytechnic Institute)

SUBMITTED: March 16, 1959

Card 2/2

DASHEVSKIY, M.M.

Synthesis of naphthostyril. Izv. vys. ucheb. zav.; khim. i khim. tekh. 4 no. 2:232-237 '61. (MIRA 14:5)

1. Odesskiy politekhnicheskiy institut. Kafedra organicheskoy khimii.

(Naphthostyril)

25394
S/080/61/034/002/015/025
A057/A129

5 3300

AUTHORS: Dashevskiy, M.M., Petrenko, G.P.

TITLE: Dehydrogenation of acenaphthene

PERIODICAL: Zhurnal Prikladnoy Khimii, v 34, no 2, 1961, 391-395

TEXT: Vapor phase dehydrogenation of acenaphthene with and without
catalyst was investigated. Various diluents (nitrogen or carbon dioxide
gas, steam, or air) were used and a technically suitable catalytic method
with a Zn/Al catalyst was developed giving a yield of 90% of a product
containing 95-98% acenaphthylene. The latter is of interest for syntheses
of copolymers with special properties and thus for the production of
plastics. Some of the first syntheses of acenaphthylene were made by
K. Dziewonski, G. Rapalski (Ref 10: Ber., 45, 249 (1912)), and K. Dzie-
wonski, T. Stolyhwo (Ref 12: Ber., 57, 1540 (1924)), while later investi-
gations were carried out by J. Jones (Ref 13: J.Soc.Chem.Ind., 68, 225

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Dehydrogenation of acenaphthene

S/080/61/034/002/015/025
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(1949)), W. Kynaston, J. Jons (Ref 14: J.Soc.Chem.Ind., 68, 229 (1949)), and M. Kaufmann, A.F. Williams (Ref 1: J.Appl. Chem., 1, 489 (1951)). The two last mentioned are the most important. The present dehydrogenation experiments were carried out in two series: 1. without catalyst and with various diluents at 160°C-880°C in an apparatus described in a previous paper (Ref 15: Nauchn. zap. Odesskogo politekhn. inst., (Scientific reports of the Odessa Polytechnical Institute), 16 73 (1959)) and 2. with a zinc-aluminum catalyst in a U-shaped reactor tube. In the first series it was observed that with increasing temperature the acenaphthylene content increases, but also the amount of side products (acenaphthene polymers). Optimum results were obtained with carbon dioxide as diluent, i.e., 68.3% yield of acenaphthylene. Optimum ratio of diluent/acenaphthene is 2.5 for carbon dioxide, 3.9 for nitrogen (yield 58.6%), 2.3 for steam (50.4% yield), and 5-6 for air. Without diluent reaction occurs at lower temperature with a 39.5% yield, but a considerable carbonization of the product is observed. The Zn/Al catalyst was prepared as follows: 540 g ZnO, 60 g Al_2O_3, 18 g K_2SO_4 and 540 ml H_2O were mixed, the paste applied on a glass

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Dehydrogenation of acenaphthene

surface (5-6 mm layer) and left to stand for 24 hrs at room temperature. Then 4-7 mm pieces were dried for 2-3 hrs at 125°C, and for 2-3 hrs at 600°C. After this the catalyst was treated for several hours with steam at the temperature of the experiment. The diagram of the device used for dehydrogenation experiments with this catalyst is presented in Fig 1. Hot water was passed through the cooler (5) to avoid obstruction of the outlet. The present authors consider it unnecessary to pass acenaphthene vapors with a corresponding diluent as it is suggested in the German patent 921989, CBI 5424 (1959). The second cooler was water-cooled. In each experiment 30 - 100 g acenaphthene were used and the duration varied from 15 - 120 min. Some of the obtained results are presented in Tab. 2. Considerable effect of temperature was observed (Fig 2). The drop in acenaphthylene content above 600°C is explained by an increase of side reactions, i.e., formation of naphthalene methylnaphthalene etc. An essential effect on dehydrogenation is exercised by the contact time. There are 2 figures, 2 tables and 17 references: 4 Soviet-bloc, 13 non-Soviet-bloc.

X

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25394

S/080/61/034/002/015/025
A057/A129

Dehydrogenation of acenaphthene

X

ASSOCIATION: Odesskiy polytekhnicheskiy institut (Odessa Polytechnic Institute)

SUBMITTED: February 5, 1960

Card 4/8

DASHEVSKIY, M.M., kand. khim. nauk, dotsent; SHAMIS, Ye.M.

Friedel-Crafts acetylation of aromatic hydrocarbons. Nauch. zap. Od. politekh. inst. 40:83-87 '62. (MIRA 17:6)

1. Predstavlena kafedroy "Organicheskaya khimiya" Odesskogo politekhnicheskogo instituta.

DASHEVSKIY, M.M., kand. khim. nauk, dotsent; BALYKINA, Ye.P.; PUPINA, L.N.

Synthesis of -(4-acenaphthyl)-ethylamine (IV). Nauch. zap. Od. politekh. inst. 40:88-90 '62. (MIRA 17:6)

1. Predstavlena kafedroy "Organicheskaya khimiya" Odesskogo politekhnicheskogo instituta.

DASHEVSKIY, M.M., kand. khim. nauk, dotsent; TERENT'YEVA, G.N.

Nitration of some aromatic hydrocarbons. Report No.1.
Nauch. zap. Od. politekh. inst. 40:91-94 '62.
(MIRA 17:6)

1. Predstavlena kafedroy "Organicheskaya khimiya" Odesskogo politekhnicheskogo instituta.

DASHEVSKIY, M.M.; PETRENKO, G.P.

Vapor phase oxidation of fluorene. Zhur.prikl.khim. 35 no.3: 693-696 Mr '62. (MIRA 15:4)
(Fluorene) (Oxidation)

DASHEVSKIY, M.M.; SHAMIS, Ye.M.

Diacetylation of acenaphthene. Zhur. ob. khim. 33 no.5:1573-1576 My '63. (MIRA 16:6)

1. Odesskiy politekhnicheskiy institut.
(Acenaphthene) (Acetyl group)

DASHEVSKIY, M.M.; MALEVANNAYA, Z.P.

Structure of dipropionylacenaphthene. Zhur. ob. khim. 33
no.5:1576-1578 My '63. (MIRA 16:6)

1. Odesskiy politekhnicheskiy institut.
(Acenaphthene)

DASHEVSKIY, M.M.; MALEVANNAYA, Z.P.

Synthesis of some acenaphthylcarbinols. Zhur.ob.khim. 34 no.1:213-216 Ja '64. (MIRA 17:3)

1. Odesskiy politekhnicheskiy institut.

DASHEVSKIY, M.M.; SHAMIS, Ye.M.

Synthesis of some arylcarboxylic acids and diamines based on polycyclic hydrocarbons. Ukr. khim. zhur. 30 no.9:938-941 '64. (MIRA 17:10)

1. Odesskiy politekhnicheskiy institut.

DASHEVSKIY, M.M.; MALEVANNAYA, Z.P.

Structure of dinitroacenaphthene derivatives. Zhur. org. khim.
1 no.7:1272-1276 Jl '65. (MIRA 18:11)

1. Odesskiy politekhnicheskiy institut.

MAGAZINER, Z.G.; DASHEVSKIY, M.V.

Analysis of present day conditions of pipe founding in the U.S.S.R. and in foreign countries. Izv. vys. ucheb. zav.; chern. met. 7 no.3:218-224 '64. (MIRA 17:4)

1. Moskovskiy institut stali i splavov.

DASHEVSKIY, M.V.; MAGAZINER, Z.G.

Technical and economic indices of the various methods of cast iron pressure tube casting. Izv. vys. ucheb. zav.; chern. met. 7 no.9:202-208 '64. (MIRA 17:6)

1. Moskovskiy institut stali i splavov.

DASHEVSKIY, M. Ya.

137-58-6-12122

Translation from: Referativnyy zhurnal, Metallurgiya, 1958, Nr 6, p 134 (USSR)

AUTHORS: Petrov, D.A., Kekua, M.G., Dashevskiy, M.Ya., Zemskov, V.S., Petrusevich, R.L.

TITLE: Progress of Work on the Refining of Germanium by Means of Crystallization and Achievement of Germanium Single Crystals With Longitudinally Homogeneous Properties (Razvitiye rabot po ochistke germaniya metodami kristallizatsii i polucheniye monokristallov germaniya s ravnomernymi svoystvami po dline)

PERIODICAL: V sb.: Vopr. metallurgii i fiz. poluprovodnikov. Moscow, AN SSSR, 1957, pp 50-58

ABSTRACT: Experiments were performed in order to investigate the possibilities of producing single crystals with uniform longitudinal and cross-sectional distribution of impurities by means of pulling at a controlled rate as well as by pulling accompanied by constant feeding of pure Ge into the melt. The raw polycrystalline material with a ρ of 5-20 ohm/cm was purified by means of zonal recrystallization under a vacuum of 10^{-4} mm Hg, or in a stream of H_2, until it exhibited a ρ of 50-60 ohm/cm. A high-frequency heating apparatus with three

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137-58-6-12122

Progress of Work on the Refining of Germanium (cont.)

induction units moving back and forth was employed. It was found that single Ge crystals, grown by the Chokhralskiy method from purified material with a ρ of 50-60 ohm/cm in conjunction with mixing of the melt by rotating the crucible and the growing crystal, can achieve ρ and τ values of 60 ohm/cm and 1000 μ sec, respectively; if the rotation is omitted from the growth process, the ρ and the τ amount to 25-50 ohm/cm and 200-250 μ sec, respectively. The UVM-2 apparatus, employed in the process of pulling the crystal under vacuum (10^{-4} mm Hg) in accordance with scheduled variations of the rate of pulling, utilizes a hydraulic raising mechanism which provides a smooth variation of the elevation rate from 0.05 to 8 mm/min in conjunction with the rotation of the crucible and the growing crystal. The ρ value of grown crystals 50 mm in diameter and 180 mm long deviated from the mean value of $\sim$40-60 ohm/cm, at a length of 100-150 mm, by 8.9-9.3% and was within the limits of error of measurement. It is pointed out that because of variations in conditions of crystallization only macrouniformity in the distribution of impurities can be achieved by this method. The variations were eliminated in another device which was designed for a process in which the pulling is accompanied by feeding of pure Ge into the melt. Prior to immersion into the melt, the feed ingot passes through a heating unit (composed of a quartz tube wound with W wire), while the ingot being pulled passes

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137-58-6-12122

Progress of Work on the Refining of Germanium (cont.)

through a water-cooled unit made of stainless steel. The process of pulling was carried out in an Ar atmosphere. The fact that the feed ingot and the growing crystal, which may rotate, were placed excentrically with respect to the axis of rotation of the crucible, contributed to a better mixing of the melt contained in the crucible. It was found that the longitudinal ρ fluctuations in single crystals obtained by this method did not exceed ±5%, whereas in the case of a crystal produced in this apparatus without the employment of pure Ge the scatter amounted to ± 24%. Studies of crystals with a diameter of 50 mm have revealed that the ρ was sufficiently uniform throughout the cross section of the crystal and that the diffusion-path length of minority current carriers did not deviate by more than 10-15%. The authors express the opinion that intensive cooling of the growing crystal, which results in the achievement of a plane crystallization front, contributes to uniform distribution of electrical properties throughout the cross section of the crystal. Grown single crystals which exhibited nonuniform cross-sectional distribution of ρ were subjected to heat treatment in order to bring about a redistribution of ρ values; in the process the mean value of resistivity remained unaltered, while the diffusion-path length of the minority current carriers increased somewhat. 1. Germanium--Processing 2. Germanium--Crystallization 3. Single crystals--Growth 4. Single crystals--Properties I.S.

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DASHEVSKIY M. YA.

А.П.Пронов О.П.Мандалевский Л.М.Ефимов Ю.С.Гаврилов	Влияние отдельных элементов на свойства стали в процессе кристаллизации.
М.Я.Дашевский [illegible] Э.Н.Татова	Влияние условий роста на структуру монокристаллов кремния.
С.Я.Скобло Е.А.Казачков В.А.Мазитов	Затвердевание и неоднородность крупных стальных слитков различной конфигурации.
Е.А.Казачков С.Я.Скобло	Температурные условия затвердевания крупных стальных слитков.
Ю.П.Соснин В.А.Лаврентьев В.В.Гуляев	Борьба с поверхностными дефектами на стальных слитках.
А.И.Прокофьев В.П.Лопатин В.К.Лебедев В.В.Гуляев	Непрерывная разливка стали в квадратные заготовки сечением 330х330 мм.
Н.М.Гуляев А.А.Маслов А.А.Николаева В.В.Гуляев	Исследование процесса затвердевания непрерывного слитка сечением 330х330 мм.

report submitted for the 5th Physical Chemical Conference on Steel Production, Moscow-- 30 Jun 1959.

S/576/61/000/000/006/020
E132/E135

AUTHORS: Voronov, B.K., Dashevskiy, M.Ya., Titova, E.M., and Khvostikova, V.D.

TITLE: Obtaining uniform single crystals of semiconductors by Czochralski's method

SOURCE: Soveshchaniye po poluprovodnikovym materialam, 4th. Voprosy metallurgii i fiziki poluprovodnikov; poluprovodnikovyye soyedineniya i tverdyye splavy. Trudy soveshchaniya. Moscow, Izd.-vo AN SSSR, 1961. Akademiya nauk SSSR. Institut metallurgii imeni A.A. Baykova. Fiziko-tekhnicheskiy institut. 51-54

TEXT: The problem in growing crystals for electrical purposes is not now just one of purity but of distributing a controlled impurity in a uniform way. Experimentally this is done by making the crucible in the form of two communicating vessels (Fig.1). Generally the inner vessel contains the impurity in the desired concentration and the outer contains the material, either pure, or with a selected reduced concentration of impurity. The connecting aperture is made so small that diffusion of the

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✓

Obtaining uniform single crystals... S/576/61/000/000/006/020
E132/E135

impurity from the inner vessel to the outer can be neglected; the flow in of new material thus takes place only when the crystal is withdrawn from the melt. The concentration of the impurity in the inner vessel can thus be kept up by feeding it into the outer. Formulae are then derived relating the geometrical dimensions of the inner and outer vessels and a specimen calculation is given for designing a crucible for growing an alloyed single crystal. If the distribution of impurity in the crystalline rod drawn out of the crucible is to be non-uniform then this can be arranged by making the cross-sectional area of the outer vessel vary appropriately with depth.
There are 2 figures and 12 references: 3 Soviet-bloc and 9 non-Soviet-bloc. The four most recent English language references are:
Ref.4: W. Leverton, J. Appl. Phys., 1958, V.29, 1241-1242.
Ref.5: W. Leverton, J. Electrochem. Soc., 1958, 12.
Ref.7: Nelson. Transistors, 1956, Vol.1, publ. RCA Laboratories.
Ref.9: W. Pfann, J. Hobsteller, G. Indig. J. Appl. Phys., 1958, Vol.29, 1238-1240.

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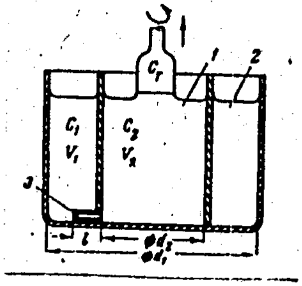
Obtaining uniform single crystals ...

S/576/61/000/000/006/020
E132/E135

Fig.1



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2

S/728/61/007/000/001/002

AUTHORS: Annayev, R. G., Allanazarov, A., Mamayev, S., Mikhaylov, A. R., Dashevskiy, M. Ya., Kafiyev, E. I., Myndyyev, V.

TITLE: Investigation of magnetoelectric properties of n- and p-type germanium single crystals along the principal crystallographic axes.

SOURCE: Akademiya nauk Turkmenskoy SSR. Fiziko-tekhnicheskiy institut. Trudy, v. 7. Ashkhabad, 1961. 3 - 34.

TEXT: Experiments were performed to detect the presence of simple anisotropy in single-crystal germanium with respect to the Hall and Nernst effects, the presence of bianisotropy with respect to the Thomson-Bakhmet'yev thermomagnetic effect, the Thomson-Goldhammer galvanomagnetic effect, and magnetostriction. Along with the foregoing, a check was made on the presence of anisotropy with respect to the thermo-emf and electric conductivity in a semiconducting germanium crystal as a cubic system, along the principal crystallographic axes, although such anisotropy has not been hitherto observed in metallic cubic-crystal systems. No previous research on this subject is known. At weak fields the galvanomagnetic effect is proportional to the square of the magnetic field intensity, and its magnitude depends on the orientations of the current and of

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the magnetic field vectors relative to the crystallographic axes of the specimen. Longitudinal (current parallel to field) and transverse (current perpendicular to field) galvanomagnetic effects were investigated for a spherical specimen, relative to the [001], [110], and [111] axes in one diagonal plane (110) of the crystal. It is theoretically predicted that the longitudinal effect should be respectively 2.5 and 3 times larger along [110] and [111] than along [001]. The transverse effects are equal for [001] and [110] but not of the same value as for [111], according to theory. The experimental test procedure and the method of crystal production are described. The test results confirm the theory in first approximation only, the presence of bi-anisotropy in n-type germanium, and the fact that the absolute values of the galvanomagnetic effect are different along the principal crystallographic axes of n- and p-type germanium crystals. A brief historical summary is presented of studies of the Nernst and Hall effects in semiconductors. Although theory predicts that these effects should be the same along all axes not only for metals but also for semiconductors, no experiments were made heretofore on the latter. This was now confirmed with the same spherical n-type single crystal of germanium as used for the Thomson-Goldhammer effect. A special DC potentiometer developed for this purpose is described. Single crystals of germanium with different types of conductivity were also grown to check on the

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course of the "odd" effects in different types of semiconductors. It was found that different impurities give rise to different types of anisotropy. Magnetostriction of single crystals of germanium in fields up to 17,340 Oersted was found to be independent of the directions of the crystal axes and of the measurements, to have a negative sign and to be of the volume type, and to be independent of the type of conductivity. The thermomagnetic Thomson-Bakhmet'yev effect (sometimes called the longitudinal Nernst-Ettinghausen effect) was likewise investigated, using the same specimen and a 17,000 Oersted field, at room temperature, and the germanium crystal was found to be bianisotropic with respect to the longitudinal and transverse thermomagnetic effects, with anisotropic thermal emf and electric resistivity along the principal crystal axes. English papers cited are by Pearson and Suhl (Phys. Rev. vol. 83, 768, 1951), Seitz (Phys. Rev. vol 79, 372, 1950), Morin and Maita (Phys. Rev. vol. 94, 1525, 1954), and Hung and Glissman (Phys. Rev. vol. 96, 1226, 1954). There are 19 figures and 4 tables.

DASHEVSKIY, M.Ya.; TITOVA, E.M.; KHVOSTIKOVA, V.D.

Chokhal'skii's method of growing single crystals with a uniform distribution of impurities. Trudy Inst. met. no.8:143-148 '61.
(MIRA 14:10)

(Crystals--Growth)

S/020/62/146/004/010/015
B101/B186

AUTHORS: Lazarev, V. B., Dashevskiy, M. Ya.

TITLE: Surface tension of indium - antimony melts

PERIODICAL: Akademiya nauk SSSR. Doklady, v. 146, no. 4, 1962, 822 - 825

TEXT: The surface tension of 28 In - Sb melts of various concentrations was measured range of 550 - 700°C for the following purposes: (1) to find out whether a singular point in the diagram of surface tension versus composition corresponds to the singular point in the phase diagram of a given system in which congruently melting InSb is formed, and (2) to obtain data on the surface tension of melts with a non-stoichiometric composition, -such data being of practical importance in pulling InSb single crystals. The authors prepared the specimens according to Czochralski's method. The surface tension σ was determined from the maximum pressure of a gas bubble. The wall of the quartz capillary was ground to a thickness of 0.01 mm to facilitate calculation of σ. The measurement was conducted in an atmosphere of argon at approximately 100 mm Hg with a maximum total error of 1.2 %, corresponding to ~7.0 dyne/cm. Results: σ_{In} is in good agreement

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with the data obtained up to 500°C by D. A. Melford and T. P. Hoar (J. Inst. Met., 85, no. 5, 197 (1956 - 1957)), O. A. Timofeyevicheva and P. P. Pugachevich (DAN, 124, 1093 (1959)). The authors were the first to measure σ_{In} between 500 and 800°C. Between 650 and 800°C, σ_{Sb} was consistent with the data by L. L. Bircumshaw (Phil. Mag. 17, 181 (1934)). In the experiments covering the whole temperature range of melts, antimony was surface-active toward indium. The surface tension of InSb was 425 ± 20 dyne/cm. The curve σ versus melt composition shows a singular point at In : Sb = 1 : 1. $\Gamma_{Sb} = -(C/RT)(1 - C)(\partial\sigma/\partial C)\left[1/(1 + \partial \ln f/\partial \ln C)\right]$, where f = activity coefficient and $\Gamma_{Sb} + \Gamma_{In} = 0$ holds for the isotherms of antimony adsorption on the surface of the melt. In InSb melts alloyed with Sb, σ is smaller than in melts alloyed with In. There are 4 figures.

ASSOCIATION: Institut metallurgii im. A. A. Baykova (Institute of Metallurgy imeni A. A. Baykov). Institut obshchey i neorganicheskoy khimii im. N. S. Kurnakova Akademii nauk SSSR (Institute of General and Inorganic Chemistry imeni N. S. Kurnakov of the Academy of Sciences USSR)

S/020/62/146/004/010/015
B101/B186

Surface tension of indium - ...

PRESENTED: May 20, 1962, by I. I. Chernyayev, Academician

SUBMITTED: May 20, 1962

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ACCESSION NR: AT4030798 S/0000/63/000/000/0125/0132

AUTHOR: Lazarev, V. B.; Dashevskiy, M. Ya.

TITLE: A study of surface phenomena in melts of the In-Sb system

SOURCE: AN UkrSSR. Institut metallokeramiki i spetsial'ny*kh splavov. Poverkhnosty*ye yavleniya v rasplavakh i protsessakh poroshkovoy metallurgii (surface phenomena in liquid metals and processes in powder metallurgy). Kiev, Izd-vo AN UkrSSR, 1963, 125-132

TOPIC TAGS: surface phenomenon, indium, antimony, indium based alloy, antimony containing alloy, surface tension, indium antimonide

ABSTRACT: In this paper the authors presented the results of an investigation of the concentration and temperature relationships of the surface tension of indium-antimony system melts with the congruently melted chemical compound indium antimonide. It was explained that a correspondence exists between the spatial points on the structural diagram of the indium-antimony system and on the diagram surface tension-composition. In addition, experimental data was obtained on the surface tension of melts for which the composition does not strongly differ from the stoichiometric melt of the indium-antimonide compound. A diagram of the instrument

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ACCESSION NR: AT4030798

for determining the surface tension was presented. Results were presented in graphs. The temperature relationship of the surface tension was studied as the following: indium (at a temperature range of 200-800°C), antimony (at a temperature range of 650-800°C) and 26 alloys of the indium-antimony system at a temperature range of 550-700°C. It was established that throughout the entire investigated temperature range, antimony is surface active in relation to indium. It was shown that the existence of an intermetallic compound in the indium-antimony system finds representation in the isotherms of the surface tension in the melts of this system. Orig. art. has: 6 figures and 2 formulas.

ASSOCIATION: Institut obshchey i neorganicheskoy khimii AN SSSR, Moscow (Institute of General and Inorganic Chemistry, AN SSSR)

SUBMITTED: 23Nov63 DATE ACQ: 16Apr64 ENCL: 00

SUB CODE: ML NO REF SOV: 012 OTHER: 008

Card 2/2

L 12877-63 EWP(q)/EWT(m)/BDS AFFTC/ASD JD

ACCESSION NR: AP3000516 S/0020/63/150/002/0297/0300 56

AUTHOR: Dashevskiy, M. Ye.; Mirgalovskaya, M. S.

TITLE: Some structural peculiarities of indium antimonide dendrites

SOURCE: AN SSSR. Doklady, v. 150, no. 2, 1963, 297-300

TOPIC TAGS: indium antimonide dendrites, crystal structure, twin crystals

27 27

ABSTRACT: The indium antimonide dendrites studies were grown by vertical pulling at 4-6 cm per min. from a melt cooled 7-10 degrees below crystallization temperature, seeding with crystals oriented in one of the [211] directions. A detailed description of the three types of structures of these twin-crystals is given. "In conclusion the authors express thanks to N. Ye. Il'in for assistance in conducting the experimental part of the work. Orig. art. has: 4 figures.

ASSOCIATION: Institut metallurgii im. A. A. Baykova (Institute of Metallurgy)

SUBMITTED: 03Oct62 DATE ACQ: 12Jun63 ENCL: 00

SUB CODE: ML NO REF SOV: 001 OTHER: 012

Card 1/1

L 47338-66 EWT(l)/EWI(m)/T/EWP(t)/ETI IJP(c) GG/WW/[illegible]

ACC NR: AR6025747 SOURCE CODE: UR/0058/66/000/004/A071/A071

48

B

AUTHOR: Dashevskiy, M. Ya.

TITLE: Some problems in obtaining crystals with specified distribution of impurities by growing from the melt

SOURCE: Ref. zh. Fizika, Abs. 4A600

REF SOURCE: Sb. Simpozium. Protsessy sinteza i rosta kristallov i plenok poluprovodnik. materialov, 1965. Tezisy dokl. Novosibirsk, 1965, 9

TOPIC TAGS: single crystal growing, crystal impurity, dendrite, crystal lattice structure

ABSTRACT: The author considers possible causes of microhomogeneous and macroinhomogeneous distribution of impurities in single crystals grown from the melt by the Czochralski method, and then discusses methods of obtaining single crystals with homogeneous or specified impurity distribution. The author considers the distribution of impurities in ribbon-type dendrites of substances that crystallize in a diamond lattice or a zinc-blende lattice, when these crystals are grown by the method of vertical drawing from the melt, and discusses the distribution of impurities and the structure of the dendrite. [Translation of abstract]

SUB CODE: 20

Card 1/1 pb

L 40976-65 EWT(m)/EWA(d)/T/EWP(t)/EWP(z)/EWP(b) Pad IJP(c) JD/HW

ACCESSION NR: AP5006419 S/0062/65/000/001/0170/0172

AUTHOR: Lazarev, V. B.; Dashevskiy, M. Ya. 25 B

TITLE: Surface tension of fusions of germanium-antimony and germanium-nickel

SOURCE: AN SSSR. Izvestiya. Seriya khimicheskaya, no. 1, 1965, 170-172

TOPIC TAGS: germanium, antimony, nickel, germanium alloy, surface tension 21 21 21 27

ABSTRACT: The surface tension of germanium-antimony and germanium-nickel melts was measured and the adsorption of antimony on the germanium surface was calculated. Relationships were found between the solubility and distribution ratios of the dopants and between the dopant solubility and the surface tensions of solvent and additive. Orig. art. has: 2 tables, 2 figures.

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

SUBMITTED: 26May64 ENCL: 00 SUB CODE: MM, IC

NO REF SOV: 006 OTHER: 001

Card 1/1

L 11001-66 EWT(m)/EWP(t)/EWP(b) IJP(c) JD

ACC NR: AP5028720 SOURCE CODE: UR/0363/65/001/011/1901/1910

AUTHOR: Lazarev, V. B.; 55 Dashevskiy, M. Ya. 65

ORG: Institute of General and Inorganic Chemistry im. N. S. Kurnakov, 55 Academy of Sciences SSSR (Institut obshchey i neorganicheskoy khimii Akademii nauk SSSR); Institute of Metallurgy im. A. A. Baykov (Institut metallurgii) 55

TITLE: Surface phenomena and crystallization processes in doped indium 21 antimonide 27 alloys

SOURCE: AN SSSR. Izvestiya. Neorganicheskiye materialy, v. 1, no. 11, 1965, 1901-1910

TOPIC TAGS: indium compound, antimonide, selenium, tellurium, germanium, surface tension, chemical absorption, metal crystallization, alloy, crystal growth

ABSTRACT: The effect of selenium, 21 tellurium, 21 and germanium 21,55 on the surface tension of indium antimonide melts was studied, and it was shown that Se and Te are absorbed at the interface, whereas practically no absorption of germanium occurs. Differences in the growth of indium antimonide dendrites from melts doped respectively with Se and Te are due to the different absorbability of these substances on indium antimonide. A new method is proposed for estimating the effective generalized moments of elements and compounds, and it is shown that the structure of melts can be evaluated

UDC: 546.682'861:532.6

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L 11001-66

ACC NR: AP5028720

6

by using data on their surface tension and the concept of the generalized moment. It is suggested that the difference in the surface tension of two substances be used to characterize the difference in their molecular force fields. The relationships between the solubility of impurities, coefficients of their distribution, and diffusion constants and the difference in the surface tension of the solvent and additive are presented. In conclusion, the authors thank M. S. Mirgalovskiy for his continued interest and participation in the discussion of the results, and N. Ye. Il'in and A. V. Pershikov for assistance in the experiments. Orig. art. has: 10 figures, 2 tables, 4 formulas.

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SUB CODE: 20,11,07/ SUBM DATE: 05Jul65/ ORIG REF: 016/ OTH REF: 008

Card 2/2

LAZAREV, V.B.; DASHEVSKIY, M.Ya.

Surface phenomena and crystallization processes in alloyed indium antimonide melts. Izv. AN SSSR. Neorg. mat. 1 no.11:1901-1910 N '65. (MIRA 18:12)

1. Institut obshchey i neorganicheskoy khimii imeni N.S. Kurnakova AN SSSR i Institut metallurgii imeni A.A. Baykova. Submitted July 5, 1965.

ACC NR: AR6035419 SOURCE CODE: UR/0137/66/000/009/G052/G052

AUTHOR: Dashevskiy, M. Ya.; Mirgalovskaya, M. S.; Lazarev, V. B.

TITLE: Growing of indium antimonide crystals from melts doped with surface-active and surface-inactive additives

SOURCE: Ref. zh. Metallurgiya, Abs. 9G364

REF SOURCE: Sb. Poverkhnostn. yavleniya v rasplavakh i voznikayushchikh iz nikh tverd. fazakh. Nal'chik, 1965, 579-584

TOPIC TAGS: indium compound, antimonide, surface active agent, single crystal growing, surface tension, dendrite

ABSTRACT: A description is presented of a combined setup for growing of single crystals drawn from the melt and measuring the surface tension of the melt. Measurement of the surface tension of a melt of InSb doped with Ge or Se has shown that the Se is surface-active (it is adsorbed) while the Ge is surface-inactive (is not adsorbed) as an additive. Single crystals and dendrites of InSb were drawn from melts doped with germanium in the range 0.05 - 2.5 at.% and Se 0.024 - 0.25 at.%. With increasing Ge concentration in the melt, the width of the dendrite ribbons decreased. No noticeable influence of Ge on the growth of the single crystal was noted. Dendrites with large Si content could not be grown, for their growth stopped at 0.25 at.% Se. No morphological differences were noted between single crystals grown from melts alloyed with Se or Ge. The dependence of the supercooling of the InSb melt on the Ge or Se con-

Card 1/2 UDC: 621.315.592

ACC NR: AR6035419

centration shows that at these concentrations the Ge and Se have little influence on the value of the supercooling. (From RZh Fiz.) [Translation of abstract]

SUB CODE: 20

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ACC NR: AR7000855

there is a regular relationship between one of the most widely used criteria of surface activity—the generalized moment (m) and σ. The established relationship $m = f(\sigma)$ is used to determine the effective value of m for individual metals and for InSb, as well as to determine the degree of ionization of atoms of the substances in their own melt. N. Pokrovskiy. [Translation of abstract] [GC]

SUB CODE: 20/11

Card 2/2

ACC NR: AR7000837 SOURCE CODE: UR/0058/66/000/009/A049/A049

AUTHOR: Dashevskiy, M. Ya.; Mirgalovskaya, M. S.; Lazarev, V. B.

TITLE: Growing single indium antimonide crystals from melts doped with surface-active and surface-inactive impurities

SOURCE: Ref. zh. Fizika, Abs. 9A415

REF SOURCE: Sb. Poverkhnostn. yavleniya v rasplavakh i voznikayushchikh iz nikh tverd. fazakh. Nal'chik, 1965, 579-584

TOPIC TAGS: crystal, crystal growth, crystal impurity, indium antimonide, crystallography, surface active alloy, surface inactive alloy, surface active impurity, surface inactive impurity, impurity, semiconductor crystal, germanium alloy, selenium alloy, doping

ABSTRACT: A description is given of a device for growing monocrystals (C) by pulling them from a melt (M), and for measuring surface tension of M. Measurements of surface tension of M in InSb doped with Ge and Se showed that Se is a surface-active impurity, and that Ge is a surface-inactive impurity. Monocrystals

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ACC NR: AR7000837

and dendrites from M [sec] were grown, alloyed with Ge in the amount of 0.05—2.5 at % and with Se in the amount of 0.0024—0.25 at %. An increase in the concentration of Ge in the M was accompanied by a decrease in the width of dendrite strips. No particular effect of Ge on the growth of C was noted. No success was achieved in growing dendrites containing large amounts of Se, since at 0.25 at % of Se their growth ceases. No morphological differences were noted between C grown from M and alloyed with Se and K grown from P and alloyed with Ge. It was shown that within the given range of concentrations, Ge and Se affect the process of supercooling only slightly. G. Volkov. [Translation of abstract] [SP]

SUB CODE: 20/

Card 2/2

ACC NR: AP7005591 SOURCE CODE: UR/0020/67/172/002/0403/0406

AUTHOR: Dashovskiy, M. Ya; Kukuladze, G. V.; Lazarev, V. B.; Mirgalovskaya, M. S.

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

TITLE: Surface phenomena and crystallization processes in gallium antimonide melts

SOURCE: AN SSSR. Doklady, v. 172, no. 2, 1967, 403-406

TOPIC TAGS: surface tension, gallium compound, antimonide, crystallization

ABSTRACT: In order to determine the general applicability of the regularities characterizing the relationship between surface phenomena and crystallization processes in indium antimonide melts, the following phenomena were investigated: surface tension of melts of the gallium-antimony system, influence of zinc and tellurium on the surface tension of gallium antimonide, and influence of these admixtures on the supercooling of Ga-Sb melts and on the growth of crystals from the melts. It is suggested that the behavior of the impurities in the solvent melt can be predicted from the difference of surface tensions in the case of type $A^{III}Sb$ antimonides. In $A^{III}B^{V}$ compounds which crystallize in a zinc-blende-type lattice, a correlation exists between the mean atomic number of the compound and the surface tension at the

Card 1/2 UDC: 546.682'861:532.6

ACC NR: AP7005591

melting point: the higher the mean atomic number, the lower the surface tension of the compound. Data on the effect of Te on the supercooling of indium antimonide indicate that surface-active admixtures increase the probability of formation of a solid phase nucleus. At a certain concentration of Te, the growth of lamellar dendrites of gallium antimonide was hindered, causing distorted dendrites to grow, then was stopped altogether as the Te content increased further. The introduction of zinc in appreciable amounts did not interfere with the growth of lamellar dendrites of gallium antimonide. The regularities found by studying the role of surface phenomena in the crystallization of indium antimonide melts were found to apply to gallium antimonide as well, and are therefore thought to cover at least all compounds of type $A^{III}B^{V}$ which crystallize in a zinc-blende-type lattice. The paper was presented by Academician Sazhin, N. P., 4 Apr 66. Orig. art. has: 3 figures and 1 table.

SUB CODE: 11, 20/ SUBM DATE: 04Apr66/ ORIG REF: 009/ OTH REF: 001

2/2