The Wheeled Sprinkler Pipeline, Type KDT-25

pipe. The operating pipeline is comprised of 8 thin-walled pipes, each 12 m long. It is divided into two parts - right and left - connected between themselves by a water pipe passing through the driving vehicle. At a distance of 10 m from each other, on the pipeline are mounted flanges for attaching sprinkling nipples. The water output of nipples depends on the pressure in the net and varies from 1.8 to 2.2 lit/sec. One end of the operating pipeline, attached to the auxiliary water conducting pipe, is provided with a coupling sleeve. The short-jet sprinkler KDT-25 can irrigate from one position a stretch of land 110-120 m broad. The driving vehicle consists of a frame, an air-cooled power plant, a reversible gear and three driving chains. On both sides of the vehicle are mounted supporting wheels, 80 cm in diameter. The driving wheels are 120 cm in diameter with rims 12 cm wide. Other advanced features of the sprinkler KDT-25 are: 1) Simplicity of construction; 2) Convenience of operation; 3) Light weight;
Card 2/3 4) Absence of protruding parts, which is particularly

The Wheeled Sprinkler Pipeline, Type KDT-25

important in those regions where strong winds blow (Azerbaydzhan); 5) Possibility of using sprinkling nipples of different shapes, thus being able to regulate the water jet output. The wheeled sprinkler pipeline KDT-25 was tested in 1958 by the State Commission and recommended to be used on a large scale. There are 4 tables, 2 diagrams and 2 photographs.

ASSOCIATION: AzNIIGiM (Azerbaydzhan Scientific Research Institute of Water Engineering and Land Reclamation)

Card 3/3

KRAVCHENKO, V.I.

Examination of the work of the 1-D-18 windmill with an inertia storage battery. Vest. AN Kazakh. SSR 10 no.11:103-111 N '53. (MLRA 6:12)

1. Predstavlena deystvitel'nym chlenom Akademii nauk Kazakhskoy SSR M.I.Goryayevym.

(Windmills) (Electric motors)

KRAVCHENKO, V.I.; MIRZAKEYEV, K.M.; SOROKIN, M.G.

Results of preliminary tests of the 1-D-18 wind power plant. Izv. AN Kazakh.SSR.Ser.energ. no.4/5:128-141 '54. (MLRA 9:5)
(Wind power)

KRAVCHENKO, V. I.

"Investigation of the Effect of Wind Gusts on the Operation of the Inertial Accumulator of Wind-Electric Power Unit 1-D-18." Cand Tech Sci, Power Engineering Inst, Acad Sci Uzbek SSR, 8 Jan 55. (PV, 26 Dec 54)

Survey of Scientific and Technical Dissertations Defended at USSR Higher Educational Institutions (12)
SO: Sum. No. 556, 24 Jun 55

SOV/124-58-11-12847

Translation from: Referativnyy zhurnal, Mekhanika, 1958, Nr 11, p 139 (USSR)

AUTHOR: Kravchenko, V. I.

TITLE: Some Data on Wind Structure (Nekotoryye dannye po strukture vetra)

PERIODICAL: Izv. AN KazSSR. Ser. energ., 1956, Nr 11, pp 122-131

ABSTRACT: Several authors have attempted to characterize the structure ("gustiness") of the wind by means of "one-dimensional" characteristics, i.e., by means of a single number. A critical survey is offered here of the many "one-dimensional" gustiness indices for the wind. For practical purposes, and more particularly for wind-energy calculations, "one-dimensional" characteristics are insufficient, and it is indispensable that two-dimensional" gustiness characteristics, i.e., distribution curves, be employed. In order to obtain distribution curves for gusts and their duration a number of experiments were set up, wherein the wind velocity was determined by means of an ARME-1 (electric anemograph). Analysis of the observational data revealed that the wind-velocity distribution for short time intervals obeys the normal law. The distribution function of the duration Δt of pulsations having a single sign

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SOV/124-58-11-12847

Some Data on Wind Structure

("lulls" - "peaks") assumes the form

$$N = \frac{N_0}{\sigma} e^{-\Delta t/\sigma}$$

where σ and N_0 are parameters. The duration of single-sign pulsations diminishes with increasing mean wind velocity, while the amplitude of said pulsations increases. The relationships between the mean value of Δt and the mean wind velocity $\bar{V}$ is described by the regression equation $\Delta t_{mean} = 42.9 - 1.4\bar{V}$.

L. S. Gandin

Card 2/2

КРАСНЕНКО, Н. И.

CHOKIN, Sh.Ch., otvetstvennyy redaktor; KRASNENKO, N.I., redaktor; MAYZEL', S.Ya., redaktor; MIRZAKEYEV, K.M., redaktor; SEROV, F.I., redaktor; VASLAVSKIY, N.A., redaktor; ALFEROVA, P.F., tekhnicheskiy redaktor.

[Use of wind power in agriculture of Kazakhstan; proceedings of a scientific and technical conference on the use of wind power, held September 1955, at the Power Institute of the Academy of Sciencet and Ministry of Agriculture of Kazakhstan] Ispol'zovanie energii vetra v sel'skom khoziaistve Kazakhstana; trudy nauchno-tekhnicheskoi konferentsii po vetroispol'zovaniiu, sostoiavsheisia v sentiabre 1955 goda v Institute energetiki Akademii nauk i Ministerstve sel'skogo khoziaistva Kazakhskoi SSR. Alma-Ata, Izd-vo Akad.nauk Kazakhskoi SSR, 1957, 204 p. (MLRA 10:5)

1.Nauchno-tekhnicheskaya konferentsiya po vetroispol'zovaniyu. Alma-Ata, 1955.

(Kazakhstan--Wind power)

SOV/112-59-5-8766

8(6)

Translation from: Referativnyy zhurnal. Elektrotekhnika, 1959, Nr 5, p 48 (USSR)

AUTHOR: Kravchenko, V. I.

TITLE: Design of an Inertial Accumulator for the 1D-18 Windmill Electric Station

PERIODICAL: Tr. In-ta energ. AN Kazakhskoy SSR, 1958, Vol 1, pp 161-169

ABSTRACT: A method for designing the power of an inertial accumulator for the type 1D-18 windmill with protective-sail regulation is presented. The inertial accumulator was investigated experimentally for its air-friction losses, with a Reynolds number $Re = 2 \times 10^6 - 13 \times 10^6$; the inertial-accumulator disk was enclosed in a rotating housing and showed 2.7 times lower losses than those without the housing and 2.0 times lower losses than those with stationary housing. An empirical formula is offered for determining the losses. Four schemes of accumulator-windmill connection are briefly considered.
Bibliography: 4 items.

M.O.F.

Card 1/1

KRAVCHENKO, V.I.; MIRZAKEYEV, K.M.

Principal results of the study of wind currents in Kazakhstan.
Trudy Inst. energ. AN Kazakh. SSR 2:95-100 '60. (MIRA 15:1)
(Kazakhstan--Wind power)

L 43041-66 EWT(d)/FBD/EWT(l)/EWP(e)/EWT(m)/EEC(k)-2/T/EWP(k) IJP(c) WG/WH

ACC NR: AP6029519 SOURCE CODE: UR/0432/66/000/004/0040/0042

AUTHOR: Bayborodin, Yu. V. (Candidate of technical sciences); Kravchenko, V. I.; Kabanov, E. N.; Karpenko, A. S.; Kozin, A. V.; Petrenko, R. A.; Shaposhnikov, B. V.

ORG: none

TITLE: A Q factor modulator for a ruby laser

SOURCE: Mekhanizatsiya i avtomatizatsiya upravleniya, no. 4, 1966, 40-42

TOPIC TAGS: solid state laser, laser modulation, laser pulsation

ABSTRACT: A Q factor modulator that increases the output pulse power of a ruby laser by 10^3 is described. The modulator is made up of an optical head and an electronic unit. The optical head consists of a rotating prism with total internal reflection that acts as one of the mirrors of the laser optical resonator; it is driven at angular speeds up to 26×10^3 rpm by a dc motor. The electronic unit consists of a square wave generator, a comparator circuit, two time delay networks, a trigger circuit, a dc motor, and a power supply. The modulator operates in the following manner: at a given angular position of the prism with respect to the laser beam, light from a lamp is focused through a lens and illuminates a photosensitive diode. The output pulse of the photodiode is amplified and fed to the comparator. When the rotational speeds of the motor and the prism are equal, the comparator initiates a pulse that lights the laser pumping lamp and thus triggers the laser. At the same time, the

UDC: 621.378.325

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L 43041-66

ACC NR: AP6029519

motor is stopped and the laser is not triggered again until the motor builds up its speed until it is equal to that of the prism. The motor has an automatic disconnect relay which stops it in 5 to 7 seconds if a faulty condition occurs in the circuit. As a result of work with the modulator, optimum parameters for the optical resonator, rotation speed of the reflector, and pumping power have been determined in order to obtain maximum output pulse power. Orig. art. has: 2 figures. [IV]

SUB CODE: 20/ SUBM DATE: none/ ORIG REF: 001/ OTH REF: 001 ATD PRESS 5067

Card 2/2

L 11055-66 FBD/EWT(1)/EWP(e)/EWT(m)/EEC(k)-2/T/EWP(k)/EWP(b)/EWA(m)-2/EWA(h) SCTB/ IJP(c) WG/WH

ACC NR: AP6002468 SOURCE CODE: UR/0386/65/002/011/0519/0521

AUTHOR: Broude, V. L.[44]; Kravchenko, V. I.[44]; Prokopyuk, N. F.[44]; Soskin, M. S.[44] 72 B

ORG: Physics Institute, Academy of Sciences UkrSSR,[44] Kiev (Institut fiziki Akademii nauk UkrSSR)

TITLE: Spectral composition of radiation from neodymium glass[15,44] in a laser[25,44] cavity

SOURCE: Zhurnal eksperimental'noy i teoreticheskoy fiziki. Pis'ma v redaktsiyu. Prilozheniye, v. 2, no. 11, 1965, 519-521, and insert between p. 520 and 521

TOPIC TAGS: laser, laser optics, solid state laser, laser resonator

ABSTRACT: Laser action is reported on various lines throughout a spectral range five times as broad as the range of stimulated emission usually observed from a Nd^{3+} doped glass laser (2% Nd^{3+}). A special "dispersion" resonator developed by the author (Author certificate 164325, 1 March 1963; IN: Byulletin' izobreteniy i tovarnykh znakov, no. 15, 1963; see also Adademiya nauk SSSR, Doklady, v. 163, no. 6, 1965, p. 1342-1343) in which a prism is placed between the laser rod and the adjustable end mirror was used. In the Fabry-Perot setup, several lines appeared near 9440 cm^{-1} at the threshold for laser action. The number of lines increased with the pump power and at the peak pump power (6 times the threshold) the lines spanned the region between 9390 and 9470 cm^{-1} at intervals betwen 3 and 5 cm^{-1}. In the "dispersion" mode of operation, changes in the inclination of the mirror resulted in changes in the

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L 21055-66

ACC NP: AP6002468

frequency of emission. At different inclinations of the mirror, laser action was attained on different lines in the range between 9090 and 9540 cm^{-1}. The laser used had an inhomogeneously broadened luminescence line at 1.06 μ. A glass prism with an angular dispersion of 1 sec/Å was utilized in the experiments. Laser action throughout such a wide range was attributed to the fact that the "dispersion" mode of operation is responsible for selective losses, making generation possible on lines which are not excited in the Fabry-Perot mode of operation. Orig. art. has: 2 figures. [CS]

SUB CODE: 20 / SUBM DATE: 21Oct65/ ORIG REF: 002/ OTH REF: 002/ ATD PRESS: 4171

Card 2/2

COUNTRY : USSR
CATEGORY :

ABS. JOUR. : RZBiol., No. 19, 1958, No. 87238

AUTHOR : Klyushkin, Ye. A.; Kravchenko, V. I.
INST. :
TITLE : New Data Concerning Pistachios of Badkhyz.

ORIG. PUB. : U. Kh. Turkmenistana, 1957, No 6, 63-65

ABSTRACT : Information concerning two, not previously described, large, native stands of pistachio trees at Bodu and in the Pelengovati valley.

CARD: 1/1

KRAVCHENKO, V. I.

Cand Agr Sci - (diss) "Pistachio groves /fistashniki/ of Badkhyz and their cultivation." Moscow, 1961. 20 pp; (Moscow Order of Lenin Agricultural Academy imeni K. A. Timiryazev); 200 copies; price not given; (KL, 6-61sup, 232)

KRAVCHENKO, V.I.

Effect of storage length on the germination of pistachio seeds sown in open ground. Izv. AN Turk. SSR. Ser. biol. nauk no.5: 83-87 '61. (MIRA 14:12)

1. Badkhyzskiy gosudarstvennyy zapovednik.
(PISTACHIO) (GERMINATION) (SEEDS--STORAGE)

KRAVCHENKO, V.I.

Regeneration of pistachio by sprouts in Badkhyz. Izv.AN Turk.SSR. Ser.biol.nauk no.3:79-81 '62. (MIRA 15:9)

1. Badkhyzskiy gosudarstvennyy zapovednik.
(BADKHYZ--PISTACHIO) (REGENERATION (BOTANY))

KRAVCHENKO, V.I.

Quantitative relationship between the aerial and underground organs in a 70-year-old whortleberry spruce forest. But. zhur. 48 no.4:566-570 Ap '63. (MIRA 16:5)

1. Leningradskiy nauchno-issledovatel'skiy institut lesnogo khozyaystva.
(Leningrad Province--Spruce) (Roots (Botany)) (Forest ecology)

KRAVCHENKO, Veniamin Iosifovich, kand. sel'khoz. nauk

[Pistachio and its cultivation] Fistashka i ee razvedenie. Moskva, Goslesbumizdat, 1963. 114 p. (MIRA 17:4)

KRAVCHENKO, V.I., kand. tekhn. nauk

Rock pressure control in longwalls with a variable thickness of the direct roof. Ugol' Ukr. 10 no. 1:17-18 Ja '66. (MIRA 18:12)

KRAVCHENKO, Viktor Ivanovich; MUKHIN, Vladimir Yevgrafovich

[Methods and procedures for fighting complicated underground fires] Metody i priemy likvidatsii slozhnykh podzemnykh pozharov. Moskva, Nedra, 1965. 102 p.
(MIRA 18:12)

BROVKO, V.L.; KRAVCHENKO, V.I.; TKACHENKO, N.P.; SHEKIN, M.S.

Spectral composition of the generation from neodymium glass in a dispersion resonator. Pis'ma v red. Zhur. eksper. i teoret. fiz. 2 no. 11:519-521 D '65.

1. Institut fiziki AN UkrSSR, Kiyev. Submitted October 21, 1965.

BROUDE, V.L.; KRAVCHENKO, V.I.; SOSKIN, M.S.

Time characteristics of lasers generating giant pulses.
Prib. i tekh.eksp. 10 no.5:207-210 S-O '65.
(MIRA 19:1)

1. Institut fiziki AN UkrSSR, Kiyev. Submitted July 21, 1964.

KRAVCHENKO, V. I.

Technology

Forcing out coal in working highly-inclined seams of the Donets basin, Moskva, Ugletekhizdat., 1951.

Monthly List of Russian Accessions. Library of Congress October 1952, UNCLASSIFIED.

KRAVCHENKO, V.I., kand. tekhn. nauk

Effect of timbering on the bearing pressure in stopes. Ugol' 33 no.3:16-19 Mr '58. (MIRA 11:3)
(Mine timbering) (Earth pressure)

KRAVCHENKO, V.I., kand.tekhn.nauk

Behavior of roof rocks at the Lenin mine. Ugol' 34 no.2:28-33 F '59. (MIRA 12:4)

1. Luganskiy sovnarkhoz.
(Donets Basin--Coal mines and mining)
(Subsidences (Earth movements))

KRAVCHENKO, V.I., kand.tekhn.nauk; SOKOLOV, S.M., gornyy inzh.

Preventing air bumps in the "Lenin" mine. Ugol' Ukr. 4 no.4:27-29 Ap '60. (MIRA 13:8)
(Mining engineering)
(Subsidences(Earth movements))

KRAVCHENKO, V.I., kand.tekhn.nauk; TISHKOV, P.A., gornyy inzh.

Maintenance costs and the distribution of lateral drifts. Ugol' Ukr. 4 no.12:33 D '60. (MIRA 13:12)
(Coal mines and mining--Costs)

POLYAKOV, N.V.; SHAFRANOV, N.K.; KRAVCHENKO, V.I., kand.tekhn.nauk

"Blasting operations in mining" by E.O.Mindeli. Reviewed by N.V. Poliakov, N.K.Shafranov, V.I.Kravchenko. Ugol' 36 no.2:62-63 F '61. (MIRA 14:2)

1. Glavnyy inzhener kombinata Rostovugol' (for Polyakov). 2. Glavnyy inzhener kombinata Rostovshakhtostroy (for Shafranov). 3. Nauchno-issledovatel'skiy i proyektno-konstruktorskiy ugol'nyy institut, g.Shakhty (for Kravchenko).

(Blasting)

(Mindeli, E.O.)

KRAVCHENKO, V.I., kand.tekhn.nauk; GOL'DIN, A.Ye., inzh.; MITYAKIN, V.S., tekhnik

Automation circuits for mine drain systems. Ugol'.prom. no.1: 48-54 Ja-F '62. (MIRA 15:8)

1. Shakhta No.10 im. Volodarskogo tresta "Sverdlovugol'".
(Mine drainage) (Automatic control)

KRAVCHENKO, V.I., kand.tekhn.nauk

Determining the working load on the supports used in roof caving. Ugol' Ukr. 6 no.2:6-9 F '62. (MIRA 15:2)
(Mine timbering)
(Rock pressure)

KRAVCHENKO, V.I., kand.tekhn.nauk; OVSYANNIKOV, V.F., inzh.

Operating the "Donbass-2k" cutter-loader in anthracite mines.
Ugol'.prom. no.3:4-7 My-Je '62. (MIRA 18:3)

KRAVCHENKO, V.I., kand.tekhn.nauk

Preventing caving of longwalls. Bezop.truda v prom. 6 no.6:3-5 Je '62. (MIRA 15:11)
(Coal mines and mining—Safety measures)

KRAVCHENKO, V. I., kand. tekhn. nauk

Effect of geological factors on the manifestation of rock pressure in the stopes. Ugol' Ukr. 6 no.10:9-11 O '62. (MIRA 15:10)

(Donets Basin—Rock pressure)

KRAVCHENKO, V.I., kand.tekhn.nauk

Prevent fires behind concrete supports of electric machinery chambers. Bezop.truda v prom. 7 no.3:7-8 Mr '63. (MIRA 16:3)
(Coal mines and mining--Accidents)

KRAVCHENKO, V.I., kand. tekhn. nauk; MUKHIN, V.Ya., inzh.

Elimination of complex underground fires in Donets Basin mines.
Bezop. truda v prom. 8 no.12:10-13 D '64. (MIRA 18:3)

L 6515-66 EWA(k)/FED/EWT(1)/EEC(k)-2/T/EWP(k)/EWA(m)-2/EWA(h) SCTB/IJP(c)
ACC NR: AP5027036 WG SOURCE CODE: UR/0120/65/000/005/0207/0210

AUTHORS: Broude, V. L.; Kravchenko, V. I.; Soskin, M. S. 66

ORG: Institute of Physics, AN UkrSSR, Kiev (Institut fiziki AN UkrSSR)

TITLE: Investigation of time characteristics in the generation of giant laser pulses

SOURCE: Pribory i tekhnika eksperimenta, no. 5, 1965, 207-210

TOPIC TAGS: laser optics, laser modulation, ruby laser, laser measurement, giant pulse, Q spoiled laser

ABSTRACT: An experiment for studying the kinetics of giant laser pulse generation by using a prism-shutter system is described. Its main purpose was to relate the time change in the quality of the optical cavity to the time sweep of the generated pulse. The equipment consists of a beam-modulated laser (a ruby crystal), transmission system, measuring devices, and a circuit for oscillograph sweep trigger control. The optical cavity of the laser consists of a plane

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L 6515-66

ACC NR: AP5027036

dielectric mirror and two 90° prisms, one of which can rotate at the rate of 20,000 rev/min. This rotary mirror increases the efficiency of the angular rate of the beam by a factor of two. The oscillographs can sweep a region of 10 nanosec to 2 μsec. Typical threshold pumping versus "nonadjustable" angle φ curves are obtained and are related to the losses in the cavity γ, or $\gamma = f(\varphi)$. The maximum error in the operation of the pulse generation-oscillograph sweep tying-in circuit is found to be 10". The moment of the pulse generation is determined optically, and its relation to the angular position of the rotating mirror is measured to be on the order 2 nanosec. Orig. art. has: 4 figures. .. [04]

SUB CODE: EC/ SUBM DATE: 21Jul64/ ORIG REF: 001/ OTH REF: 003/ ATD PRESS: 4140

nw

Card 2/2

KRAVCHENKO, V.I.

Variations in the ash composition of the needles of the spruce Picea abies (L.) Karst. depending on the density of stands. Bot.zhur. 50 no.7:977-979 Jl '65.

(MIRA 18:11)

1. Leningradskiy nauchno-issledovatel'skiy institut lesnogo khozyaystva.

BAYBORODIN, Yu.V.; GARAZHA, S.A. [Harazha, S.A.]; KRAVCHENKO, V.I.; SPIZHOVAYA, N.I. [Spizhova, N.I.]

Operation of a ruby laser with modulated Q-factor. Ukr. fiz. zhur. 10 no.4:455-457 Ap '65. (MIRA 18:5)

L 2979-66 EWP(e)/EWT(m)/EWP(i) WH
ACCESSION NR: AP5025088 UR/0368/65/003/003/0225/0229
621.375.9:535.89

AUTHOR: Broude, V. L.; Zaika, V. V.; Kravchenko, V. I.; Soskin, M. S.

TITLE: The operation of a ruby laser with inclined mirrors

SOURCE: Zhurnal prikladnoy spektroskopii, v. 3, no. 3, 1965, 225-229

TOPIC TAGS: ruby laser, resonator mirror, mirror alignment

ABSTRACT: The present work originated during a study of the kinetics of giant pulse lasers with rotating prisms, where a considerable change in beam directionality was observed in comparison with the case of a fixed prism and parallel mirrors. The field distribution on the near and far mirror regions of a ruby laser and the time-varying nature of the emission were studied as a function of the degree of misalignment of a plane resonator in the direction perpendicular to the crystal optical axis. Water-cooled polished ruby crystals 120 mm long and 12 mm in diameter were used. The pumping flashlamp was placed under the crystal whose optical axis was vertical with respect to the flashlamp and whose ruby ends were parallel within 4". Dielectric-coated plane mirrors were used with reflection coefficients from 99 to 30% at 6943 Å and an adjustment within 10". The resonator length was varied from 40 to 150 cm.

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L 2979-66

ACCESSION NR: AP5025088

The experimental results indicate that: 1) the intensity distribution maximum is shifted in the direction of the remote edges of the mirror; 2) laser pulses from both ends of the resonator are displaced in the direction of mirror misalignment; 3) the intensity distribution in the remote region is uniform; 4) a correspondence exists between patterns for the near and remote regions for any inclination of mirrors; 5) a variation in the orientation of the longitudinal crystal axis within the resonator by an angle up to 30' does not significantly affect either the structure of the remote and near regions or the beam directionality; only a relatively small jump in the rise of pumping energy due to reflection losses at the crystal ends was observed; and 6) the amplitude and regularity of laser spikes in the case of inclined mirrors are greater than in the case of parallel mirrors, provided pumping above threshold is identical in each case. The foregoing would seem to indicate that generation in a misaligned plane resonator is, in a certain sense, more ordered and its mode structure during the entire pulse better preserved than in the case under investigation. Orig. art. has: 3 figures. [YK]

ASSOCIATION: none

SUBMITTED: 05Jan65 ENCL: 00 SUB CODE: EC

NO REF SOV: 005 OTHER: 009 ATD PRESS: 4109

Card 2/2 BVK

BATIGORODIN, Yu.V.; GARACHA, S.A.; KRAVCHENKO, V.I.; [illegible], N.I.

Prismatic seal with periodic engagement. Ukr. fiz. zhur. 10 no.8:915-920 Ag '65. (MIRA 18:8)

1. Institut fiziki AN UkrSSR, Kiyev.

1.1110

32669
S/196/61/000/012/027/029
E194/E155

AUTHORS: Gularyan, K.K., and Kravchenko, V.L.

TITLE: Making parts of complicated outline by electric-spark machining with programme control

PERIODICAL: Referativnyy zhurnal, Elektrotekhnika i energetika, no.12, 1961, 41, abstract 12K 238. (Tr. Tsentr. n.-i. labor. elektr. obrabotki materialov. AN SSSR, no.2, 1960, 179-195)

TEXT: The NII of the Goskomitet Soveta Ministrov po radioelektronike (State Committee of the Council of Ministers on Radioelectronics) has developed a method for electric-spark machining of parts of complicated outline in which the electrode consists of a thin wire 0.02-0.3 mm in diameter. Slots have been made of from 0.025 mm width and up to 70 mm deep and of lengths to suit the shape of the part. Consideration is given to the maintenance of accuracy and surface finish in equipment with programme control. The article gives a description, a schematic circuit diagram, block circuit diagram and external appearance of

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S/196/61/000/012/027/029
E194/E155

Making parts of complicated outline...

equipment type ЭКУП-2 (EKUP-2). Performance data are as follows; maximum power demand 0.4 kVA, smooth current control from 0 to 1 A. Capacitance switched in steps of 0.01 microfarads over the range 0.01 - 0.42 microfarads. The tool electrode is a wire of 0.02-0.1 mm diameter; the output is 2 - 10 mm^3/min; the surface finish is standard grade 6 - grade 10; the maximum longitudinal travel is 50 mm; the maximum size of part machined is 150 x 50 x 50 mm; the volume of the container of working fluid 2 litres; the maximum weight of part machined 0.5 kg; and overall dimensions of the equipment 840 x 720 x 1100 mm. Information is also given about the use of special electrodes with slots in two mutually perpendicular directions for making precision all-metal grids of copper, nickel, vanadium, molybdenum and other metals with width of metal parts from 0.02 mm upwards.

[Abstractor's note; Complete translation.]

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BVP

ACCESSION NR: AT4012873 S/3060/63/000/000/0152/0160

AUTHOR: Kravchenko, V. L.

TITLE: A thyratron pulse generator for precision electric spark machining

SOURCE: AN SSSR. Tsentr. n.-i. lab. elektr. obrabotki metallov. Elektroiskrovaya obrabotka metallov. Moscow, 1963, 152-160

TOPIC TAGS: electric spark machining, thyratron pulse generator, hydrogen thyratron, electrical metal finishing, thyratron, pulse generator, copper machining, VK-11 alloy machining, tracing

ABSTRACT: The design criteria and test results of a novel, high-power and high-frequency generator to be used as the power source in an electric spark discharge machine are presented. The generator uses a high-power hydrogen thyratron as the pulse switching device and tests on the mock-up model show that it is capable of increasing the rate of metal removal from the machined part about 30 times over the presently used RC-type generator. A simplified schematic diagram of the pulse generator is shown in Figure 1 of the Enclosure. A full-wave rectifier steps the 220-volt AC line voltage up to 2100 volts and rectifies it to charge the capacitor in parallel with the thyratron through an isolating choke arrangement. The thyratron is triggered by inserting a positive voltage pulse on its

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ACCESSION NR: AT4012873

grid from a specially designed trigger pulse generator whose adjustments allow the following variations in the trigger pulse characteristics: amplitude 200-700 volts, repetition frequency 19-330 kc, pulse width 1-5 sec. When the thyratron fires, the charged capacitor is short-circuited and delivers a current pulse through a step-down transformer to the machining electrode and spark gap which serves as the nonlinear load. The step-down output transformer increases the current and decreases the voltage in the output pulse. The thyratron usually operates in either the resonant driving mode, so that the output pulse frequency f is given by

$$f = \frac{1}{\pi \sqrt{L_s C}} \quad (1)$$

where L is the total circuit inductance and C is the capacitance of the charging capacitor, or in the linear driving mode, when

$$f > \frac{1}{\pi \sqrt{L_s C}} \quad (2)$$

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ACCESSION NR: AT4012873

and the charging voltage on the capacitor changes almost linearly with time. The resonant driving mode does not permit variations in pulse repetition frequency without changing the factors L and C. The limiting factors in the operation of the thyratron are the maximum power factor and the average current. When these quantities are kept constant, the repetition frequency can be extended several orders of magnitude above the limits recommended by the manufacturers. A prf of 150 kc was achieved with thyratrons of the type TGI1-700/25 and TGI1-260/12 with the average current of 1 ampere, against a recommended prf of 500 cps, and TGI1-130/10 was safely operated at 330 kc. Using ordinary water as the lubricant, the metal removal rates achieved with the thyratron generator were 26-28 mm^3/min. with a machined surface quality ∇ 6- ∇ 7 for ordinary tracing operation on copper and 12-13 mm^3/min. at ∇ 6- ∇ 8 for VK-11 hard alloy and a machined area of 300-400 mm^2. The corresponding copper electrode erosion was 16-20% and 26-50%, respectively. The rates for a surface-forming operation by a continuously moving tungsten wire electrode (0.2 mm diameter) were 25 m^2/min. at ∇ 6- ∇ 7 for copper and 11mm^2/min. at ∇ 7- ∇ 8 for hard alloy, for a total machined thickness of 20 mm. In both cases the lubricant was water, the prf was 50 kc, and the pulse width was 1 μsec. A comparison of this performance with a standard RC-type generator shows that the metal removal rate for tracing operations increased by 26-30 times and for surface forming operations by continuous wire electrode by 4-6 times. In addition, the

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ACCESSION NR: AT4012873

machined surfaces are free of the usual carbon deposits, which eliminates the previously needed chemical cleaning operation. Orig. art. has: 7 figures, 1 table and 9 formulas.

ASSOCIATION: Tsentr. n.-i. lab. elektr. obrabotki metallov, AN SSSR (Central Scientific Research Laboratory for Electrical Metal Finishing AN SSSR)

SUBMITTED: 00 DATE ACQ: 13Feb64 ENCL: 01

SUB CODE: MM, EE NO REF SOV: 010 OTHER: 000

Card 4/5

ACCESSION NR: AT4012873

ENCLOSURE: 01

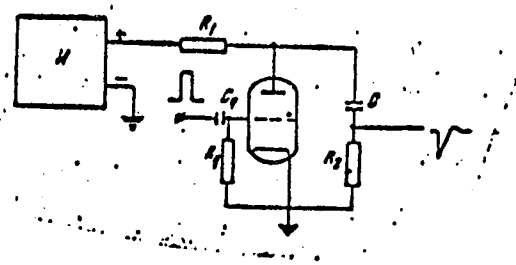


Fig. 1 - Simplified schematic diagram of the pulse generator.

Card 5/5

ACCESSION NR: AP4015143 S/0117/64/000/002/0020/0020

AUTHOR: Kravchenko, V. L.

TITLE: Pulse generator for precision electric spark treatment

SOURCE: Mashinostroitel', no. 2, 1964, 20

TOPIC TAGS: pulse generator, electric spark, capacitor, high voltage source, choke coil, primary winding, thyratron

ABSTRACT: A pulse generator is described that supplies 50-300-volt pulses to a precision electric spark apparatus for size treatment of current conducting materials. The capacitor C_H (see Fig. 1 on the Enclosure) is charged by a constant current high-voltage source through a choke coil CC and primary winding of the pulse transformer to the source potential. The capacitor discharges through the thyratron L and through the secondary winding of the transformer, creating a low-voltage high-current pulse. The frequency supplied per second varies between 16 000 and 80 000/sec, with 1.5 to 8 μ sec pulse duration and an electrode supply potential from 50-300 volts. Orig. art. has: 3 figures.

ASSOCIATION: none

Card 1/3

L 41185-65 EWT(d)/EWT(m)/EWA(d)/EWP(w)/EWP(t)/EWP(k)/EWP(h)/EWP(b)/EWP(l)
ACCESSION NR: AP5003729 Pf-4 JD S/0286/65/000/001/0075/0075 21 B

AUTHOR: Semin, G. G.; Kravchenko, V. L.

TITLE: Method of electroerosion machining deep precision holes. Class 49, No. 167424

SOURCE: Byulleten' izobreteniy i tovarnykh znakov, no. 1, 1965, 75

TOPIC TAGS: electroerosion machining, electric discharge machining, electric discharge hole drilling, precision drilling

ABSTRACT: This Author Certificate introduces a method for electroerosion drilling deep precision holes in current-conducting materials with a tool-electrode which oscillates perpendicularly to the direction of the basic motion. In order to prevent the breakdown of the machined article or tool-electrode, the oscillation is controlled by an automatic system which maintains a predetermined electrode gap. Orig. art. has: 1 figure. [AZ]

ASSOCIATION: none

Card 1/2 Submitted: 3Apr63

KRAVCHENKO, V.L.; KUZ'MIN, V.A.

Technical and economic indices of the construction of mooring structures at the Leningrad Commercial Seaport. Transp. stroi. 14 no.7:35-36 Jl '64. (MIRA 18:1)

1. Glavnyy inzh. Sevzapmorgidrostroya (for Kravchenko). 2. Nachal'nik Nauchno-issledovatel'skoy stantsii No.3 Orgtransstroya (for Kuz'min).

KRAVCHENKO, V. M

BELEVTSEV, Yakov Nikolayevich; BURA, Galina Georgiyevna; DUBINKINA, Raisa Pavlovna; YEPATKO, Yuriy Mikhaylovich; ISHCHENKO, Dmitriy Ivanovich; MEL'NIK, Yuriy Petrovich; STRYGIN, Aleksey Il'ich. Prinimali uchastiye: KOZHARA, V.L.; KRAVCHENKO, V.M.; TAKHTUYEV, G.V.; SHCHERBAKOVA, K.F.. RODIONOV, S.P., otv.red.; ZAVIRYUKHINA, V.N., red. izd-va; YEFIMOVA, M.I., tekhn.red.

[Genesis of iron ores in the Krivoy Rog Basin] Genezis zheleznykh rud Krivorozhskogo basseina. Kiev, Izd-vo Akad.nauk USSR, 1959. 306 p. (MIRA 13:2)

1. Chlen-korrespondent AN USSR (for Rodionov).
(Krivoy Rog Basin--Iron ores)

KRAVCHENKO, V.M.

Varieties of high-grade martite ores in the northern part of the Saksagan band in the Krivoy Rog. Sov.geol. 3 no.5:14-31 My '60. (MIRA 13:7)

1. Yuzhno-Yakutskaya kompleksnaya ekspeditsiya.
(Krivoy Rog Basin--Martite)

KRAVCHENKO, V. M., agronom

Without the use of manual labor. Mekh. sil'. hosp. 14 no.2: 9-10 F '63. (MIRA 16:4)

1. Kolkhoz im. Lenina, Maloviskovskogo rayona Kirovogradskoy oblasti.

(Ukraine—Corn(Maize))
(Ukraine—Farm mechanization)

KRAVCHENKO, V.M.

Two genetic types of the dense quartz-martite ores of the Saksagan' syncline of the Krivoy Rog Basin. Dop. AN URSR no.2:245-248 '64. (MIRA 17:5)

1. Dnepropetrovskaya ekspeditsiya Ukrainskogo nauchno-issledovatel'skogo gornorudnogo instituta. Predstavleno akademikom AN UkrSSR N.P. Semenenko [Semenenko, M.P.].

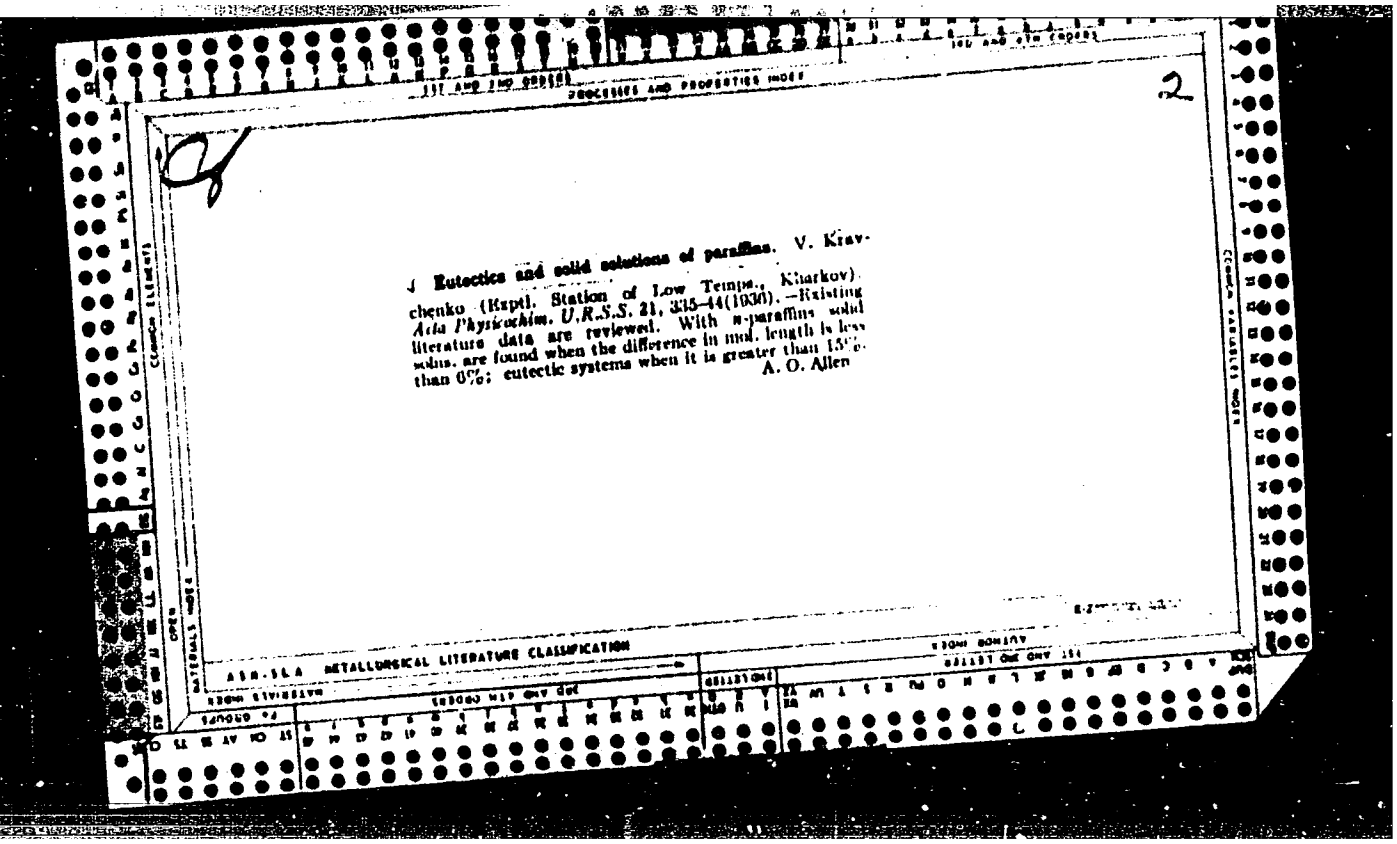
MAGAK'YAN, I.G.; AKIMENKO, N.M.; BELEVTSEV, Ya.N.; GERSHOYG, Yu.G.; GRECHISHNIKOV, N.P.; KALYAYEV, G.I.; KARSHENBAUM, A.P.; KRAVCHENKO, V.M.; KULISHOV, M.P.; MAKSIMOVICH, V.L.; MEL'NIK, Yu.P.; PITADE, A.A.; SKURIDIN, S.A.; STRIGIN, A.I.; FEDORCHENKO, V.S.; FOMENKO, V.Yu.

Reviews and bibliography. Geol. rud. mestorozh. 7 no.3:113-117 My-Je '65. (MIRA 18:7)

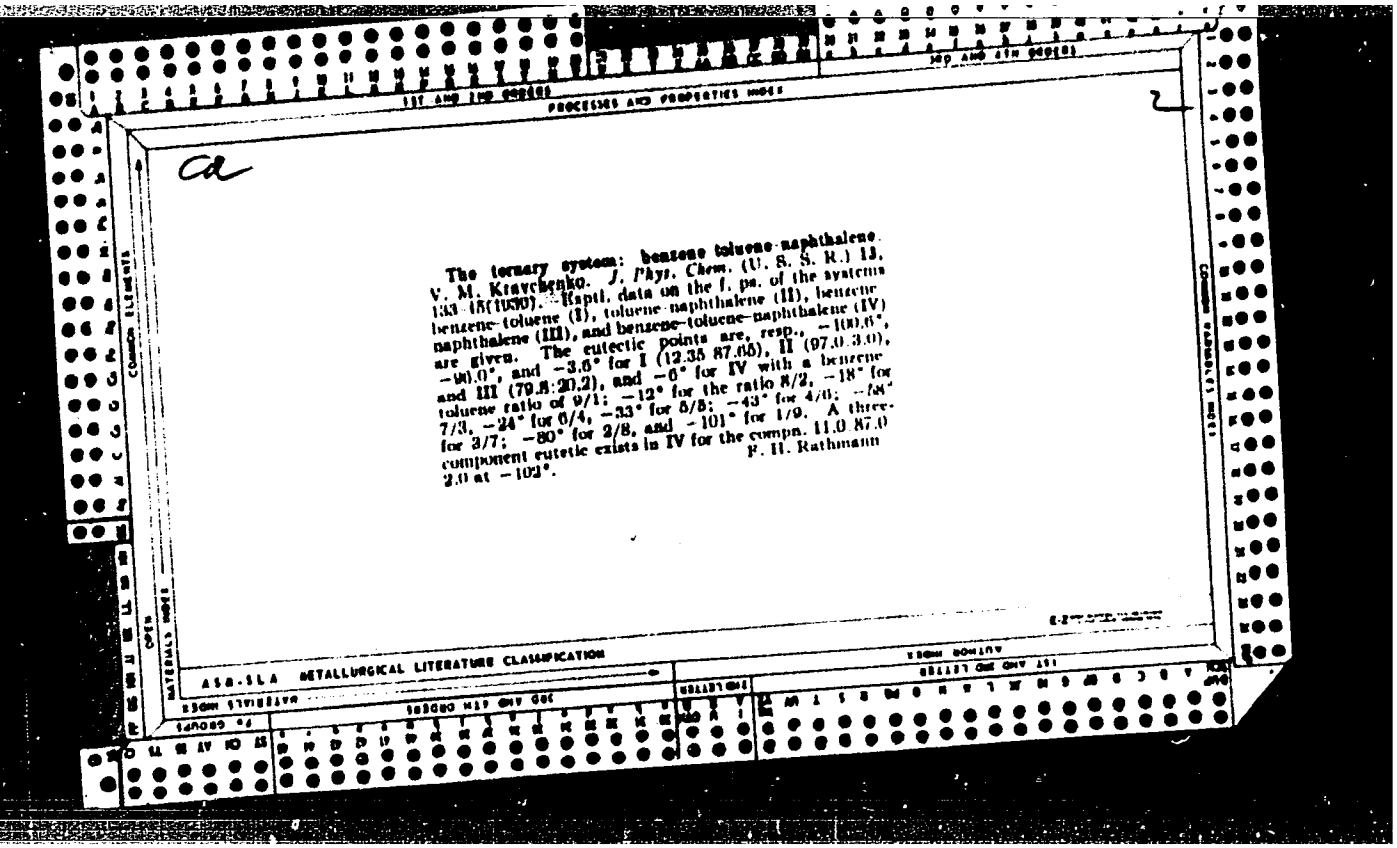
KRAVCHENKO, V.M., inzh.

Manufacturing welded housings for grinding machines. Svar.proizv. no.11: 39 N '64. (MIRA 18:1)

1. Khar'kovskiy stankostroitel'nyy zavod.

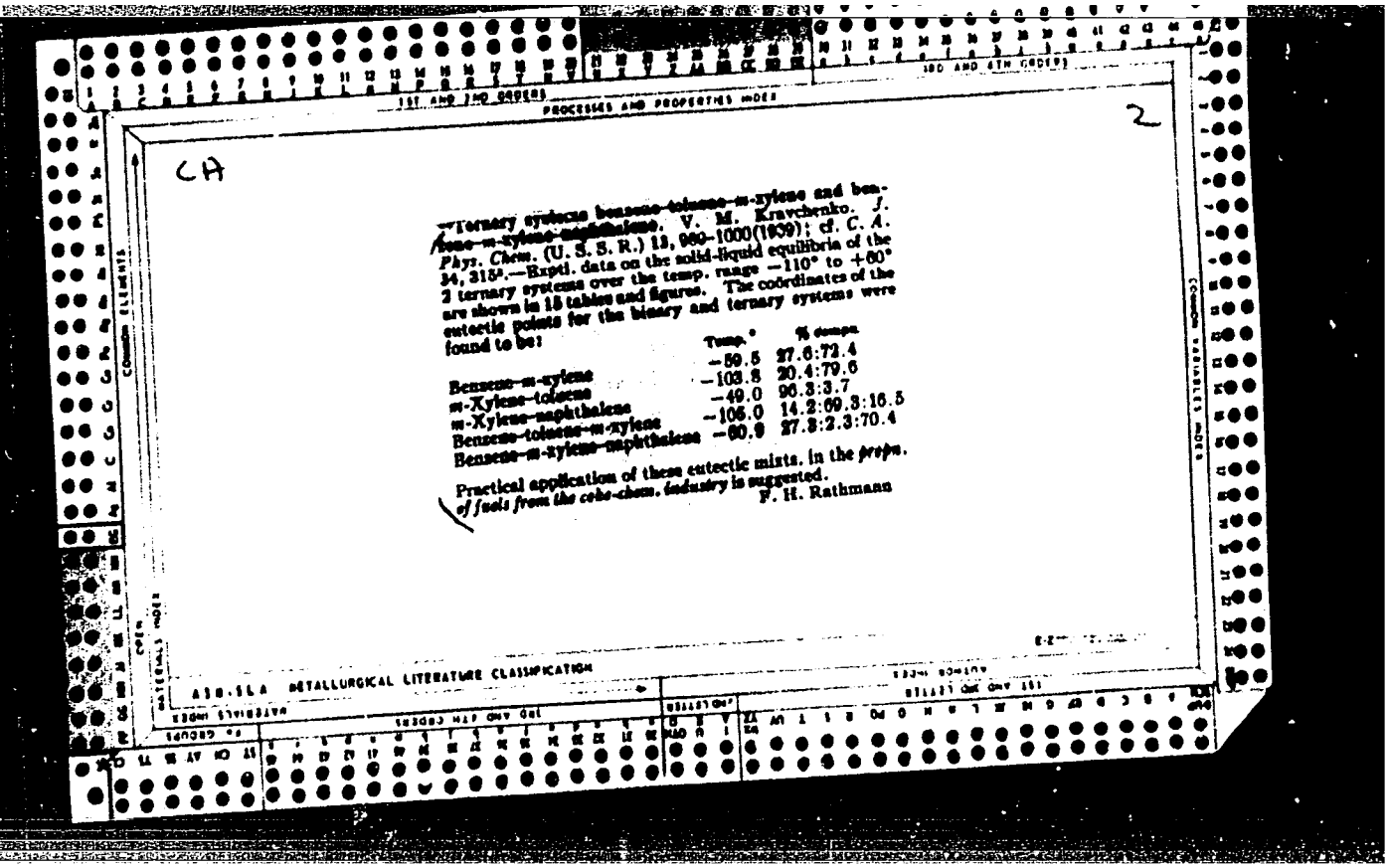


Eutectics and solid solutions of paraffins. V. Kravchenko (Kzpt. Station of Low Temps., Kharkov). *Acta Physicochim. U.R.S.S.* 21, 335–44(1936).—Existing literature data are reviewed. With *n*-paraffins solid solns. are found when the difference in mol. length is less than 0%; eutectic systems when it is greater than 15%.
A. O. Allen



The ternary system: benzene-toluene-naphthalene. V. M. Kravchenko. *J. Phys. Chem.* (U. S. S. R.) 13, 133–45(1939). — Expti. data on the f. pts. of the systems benzene–toluene (I), toluene–naphthalene (II), benzene–naphthalene (III), and benzene–toluene–naphthalene (IV) are given. The eutectic points are, resp., −100.6°, −80.0°, and −3.6° for I (12.35 87.65), II (97.0 3.0), and III (79.8:20.2), and −6° for IV with a benzene–toluene ratio of 9/1; −12° for the ratio 8/2, −18° for 7/3, −24° for 6/4, −33° for 5/5; −43° for 4/6; −58° for 3/7; −80° for 2/8, and −101° for 1/9. A three-component eutetic exists in IV for the compn. 11.0 87.0 2.0 at −102°.

P. H. Rathmann



CA

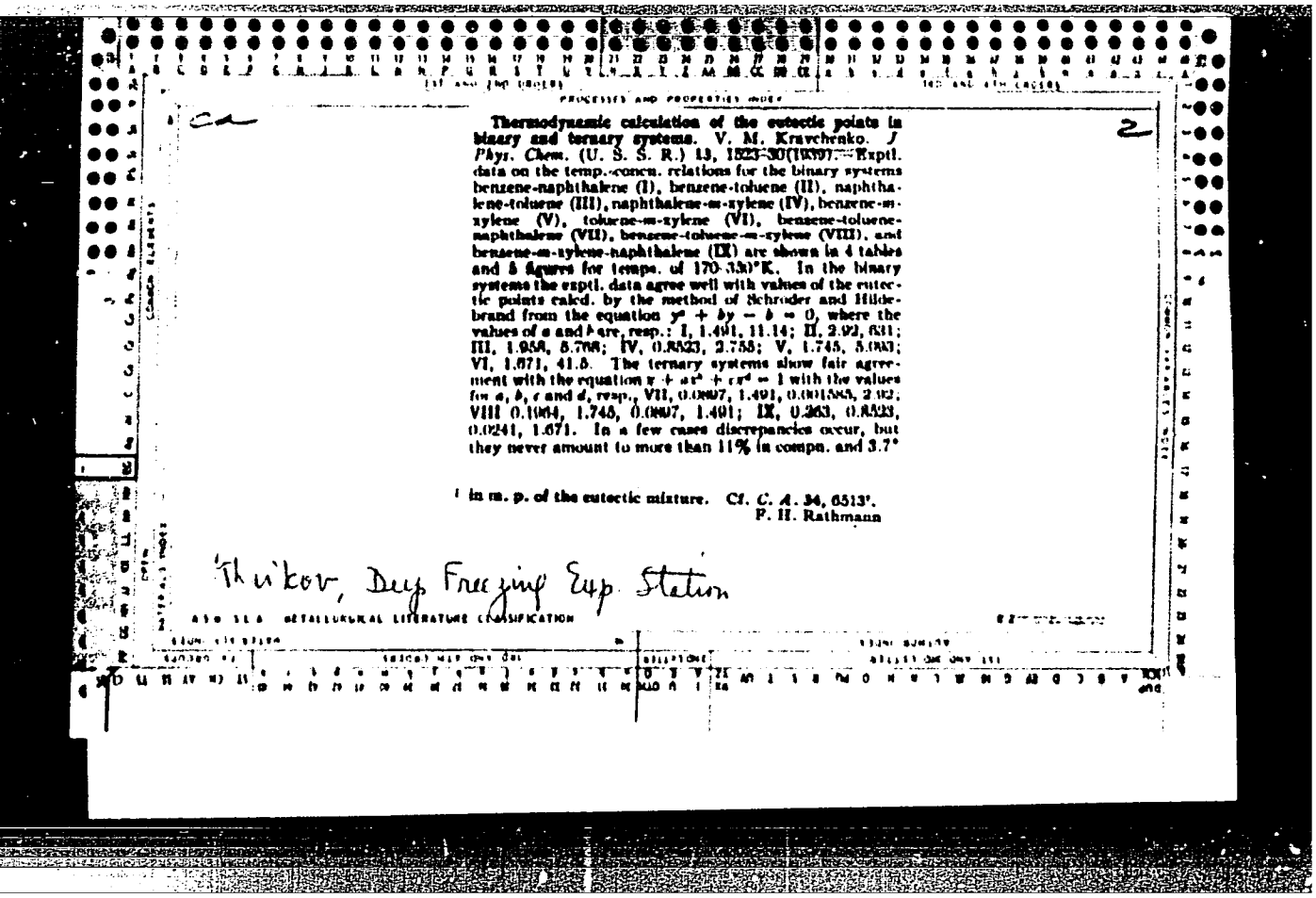
2

—Ternary systems benzene-toluene-m-xylene and benzene-m-xylene-naphthalene. V. M. Kravchenko. *J. Phys. Chem.* (U. S. S. R.) 13, 989–1000(1939); cf. *C. A.* 34, 3150.—Expti. data on the solid-liquid equilibria of the 2 ternary systems over the temp. range −110° to +60° are shown in 15 tables and figures. The coördinates of the eutectic points for the binary and ternary systems were found to be:

	Temp.°	% compn.
Benzene-m-xylene	−59.5	27.6:72.4
m-Xylene-toluene	−103.8	20.4:79.6
m-Xylene-naphthalene	−49.0	96.3:3.7
Benzene-toluene-m-xylene	−106.0	14.2:69.3:16.5
Benzene-m-xylene-naphthalene	−60.9	27.3:2.3:70.4

Practical application of these eutectic mixts. in the *propn. of fuels from the coke-chem. industry* is suggested.
F. H. Rathmann

A38-51A METALLURGICAL LITERATURE CLASSIFICATION

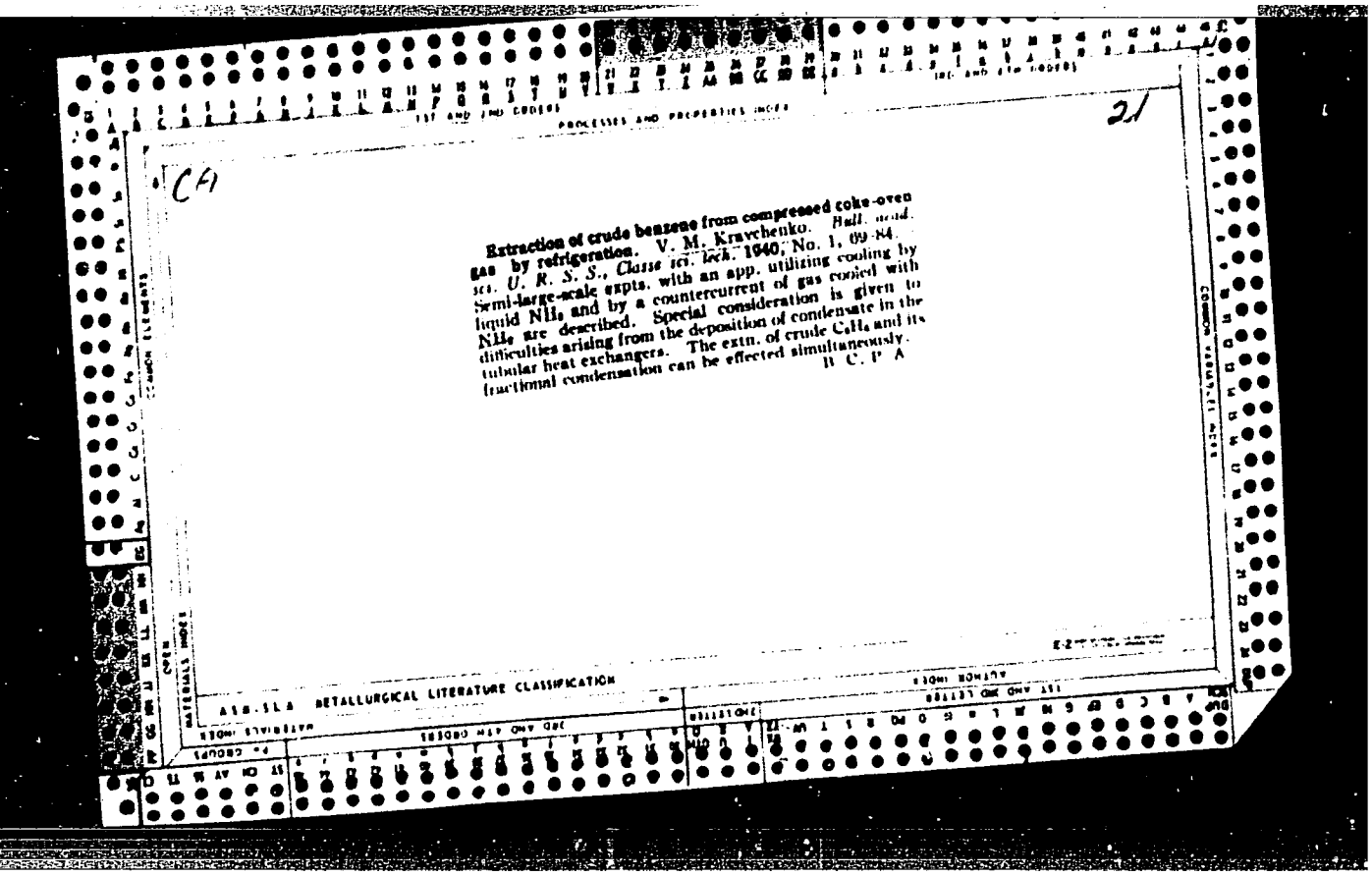


Ca

2

Thermodynamic calculation of the eutectic points in binary and ternary systems. V. M. Kravchenko. *J Phys. Chem.* (U. S. S. R.) 13, 1523-30(1939).—Exptl. data on the temp.-concn. relations for the binary systems benzene-naphthalene (I), benzene-toluene (II), naphthalene-toluene (III), naphthalene-*m*-xylene (IV), benzene-*m*-xylene (V), toluene-*m*-xylene (VI), benzene-toluene-naphthalene (VII), benzene-toluene-*m*-xylene (VIII), and benzene-*m*-xylene-naphthalene (IX) are shown in 4 tables and 5 figures for temps. of 170-330°K. In the binary systems the exptl. data agree well with values of the eutectic points calcd. by the method of Schroder and Hildebrand from the equation $y^a + by - b = 0$, where the values of *a* and *b* are, resp.: I, 1.491, 11.14; II, 2.92, 631; III, 1.958, 5.708; IV, 0.8523, 2.755; V, 1.745, 5.083; VI, 1.671, 41.5. The ternary systems show fair agreement with the equation $x + ay^b + cz^d = 1$ with the values for *a*, *b*, *c* and *d*, resp., VII, 0.0807, 1.491, 0.001585, 2.92; VIII 0.1064, 1.745, 0.0807, 1.491; IX, 0.263, 0.8523, 0.0241, 1.671. In a few cases discrepancies occur, but they never amount to more than 11% in compn. and 3.7° in m. p. of the eutectic mixture. Cf. *C. A.* 34, 6513⁷.
F. H. Rathmann

Thikov, Dep Freezing Exp Station

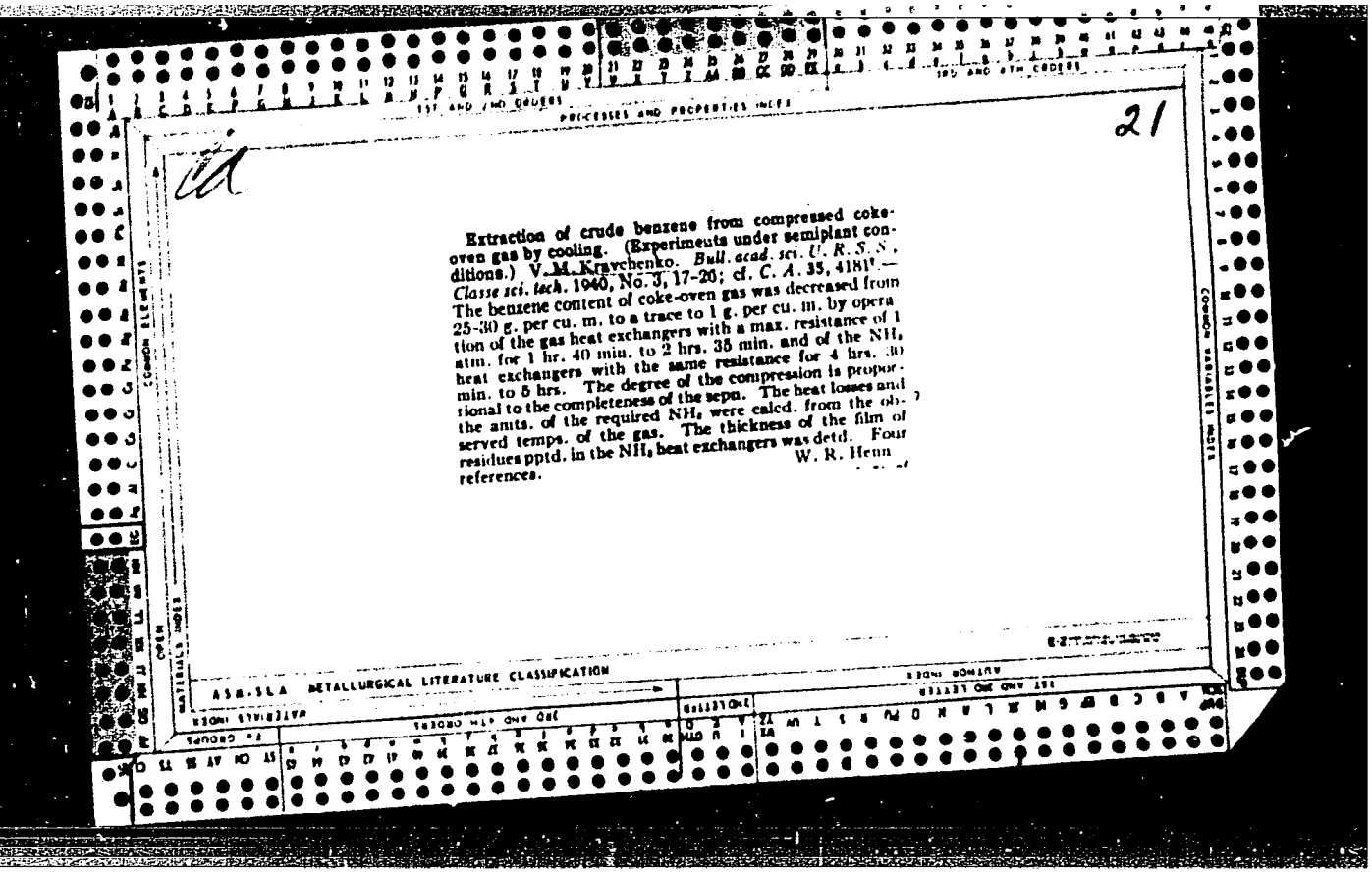


CA

21

Extraction of crude benzene from compressed coke-oven gas by refrigeration. V. M. Kravchenko. *Bull. acad. sci. U. R. S. S., Classe sci. tech.* **1940**, No. 1, 89-84. Semi-large-scale expts. with an app. utilizing cooling by liquid NH_3 and by a countercurrent of gas cooled with NH_3 are described. Special consideration is given to difficulties arising from the deposition of condensate in the tubular heat exchangers. The extn. of crude C_6H_6 and its fractional condensation can be effected simultaneously. H. C. P. A

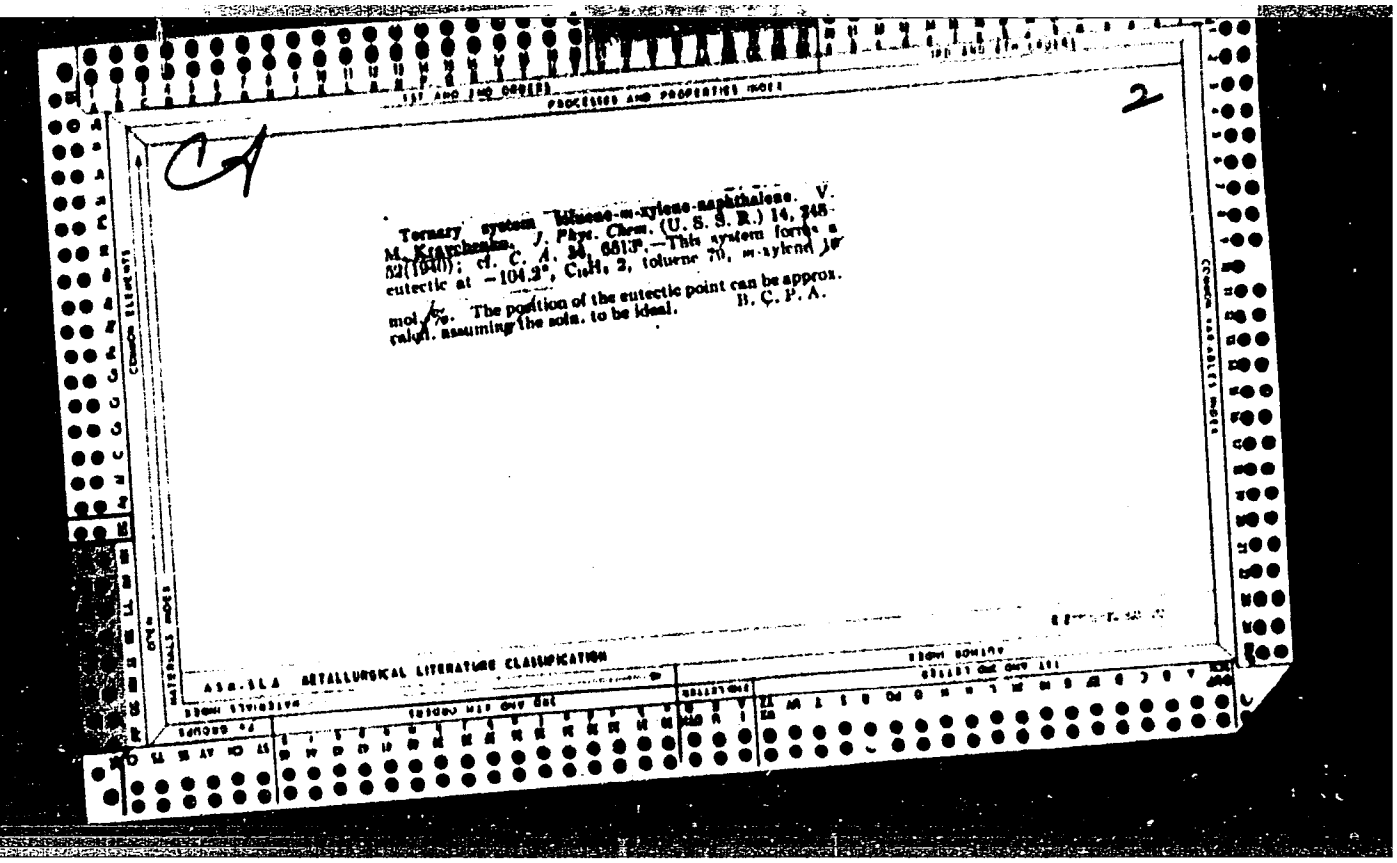
A.S.M.-S.L.A. METALLURGICAL LITERATURE CLASSIFICATION



21

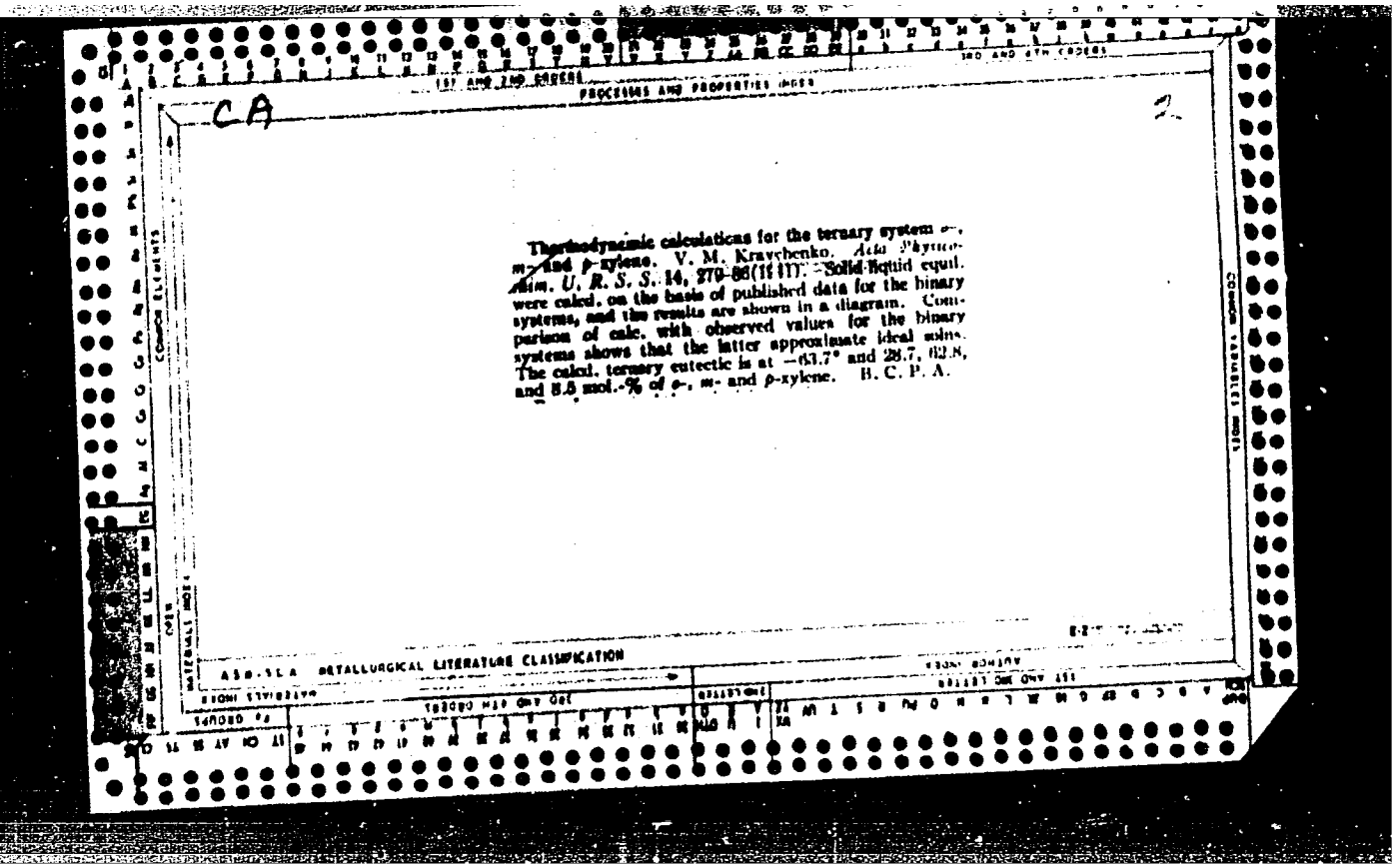
Extraction of crude benzene from compressed coke-oven gas by cooling. (Experiments under semiplant conditions.) V. M. Kravchenko. *Bull. acad. sci. U. R. S. S., Classe sci. tech.* 1940, No. 3, 17-20; cf. *C. A.* 35, 4181⁹.— The benzene content of coke-oven gas was decreased from 25-30 g. per cu. m. to a trace to 1 g. per cu. m. by operation of the gas heat exchangers with a max. resistance of 1 atm. for 1 hr. 40 min. to 2 hrs. 35 min. and of the NH_3 heat exchangers with the same resistance for 4 hrs. 30 min. to 5 hrs. The degree of the compression is proportional to the completeness of the sepn. The heat losses and the amts. of the required NH_3 were calcd. from the observed temps. of the gas. The thickness of the film of residues pptd. in the NH_3 heat exchangers was detd. Four references.

W. R. Henn



Ternary system thiosse-m-xylene-naphthalene. V. M. Kravchenko. *J. Phys. Chem. (U. S. S. R.)* 14, 248-52(1940); cf. *C. A.* 34, 6815.—This system forms a eutectic at −104.2°, $C_{10}H_8$, 2, toluene 70, m-xylene 28 mol. %. The position of the eutectic point can be approx. calcd. assuming the solns. to be ideal. B. C. P. A.

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

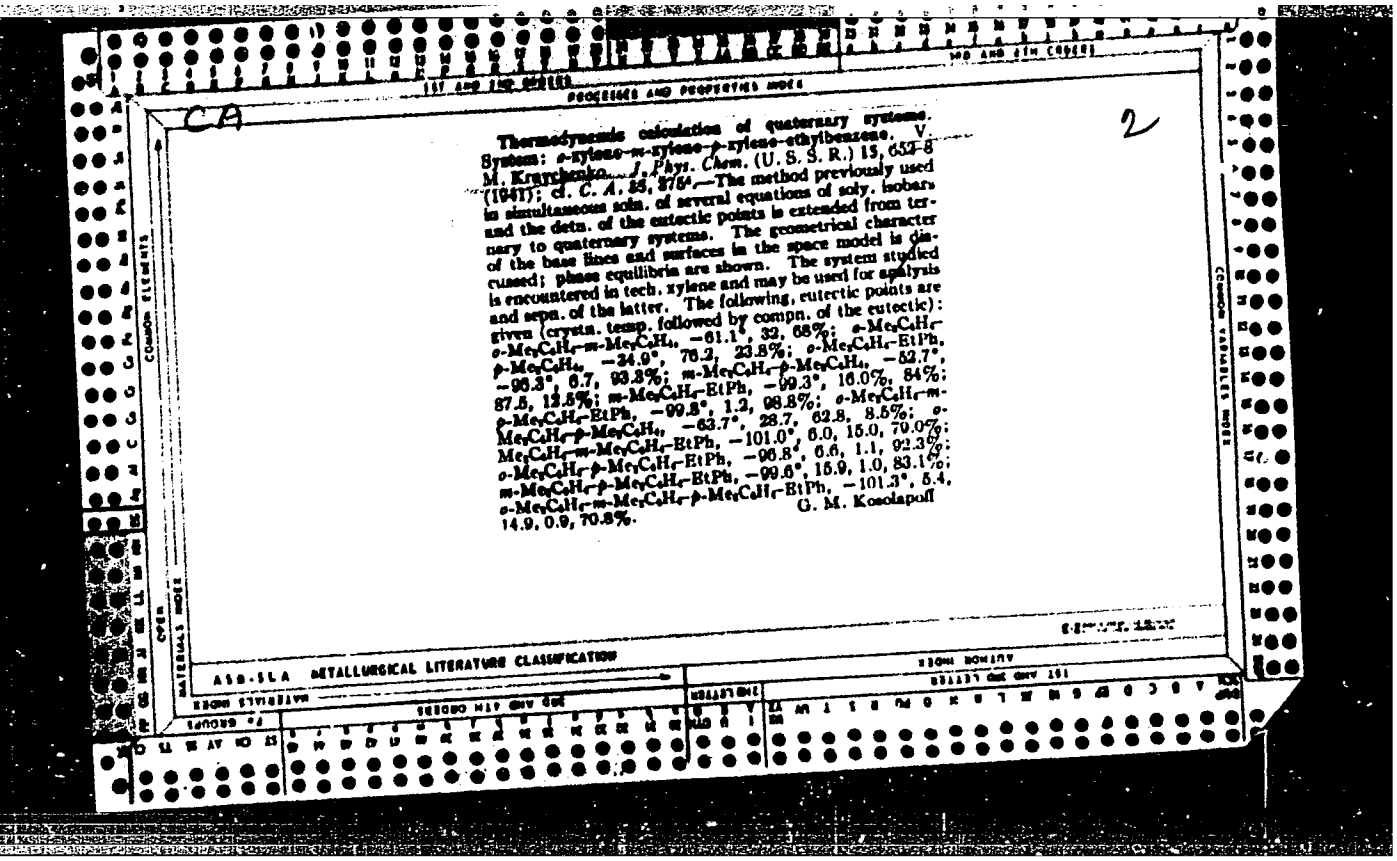


CA

2.

Thermodynamic calculations for the ternary system o-, m- and p-xylene. V. M. Kravchenko. *Acta Physicochim. U. R. S. S.* 14, 279-86(1941). - Solid-liquid equil. were calcd. on the basis of published data for the binary systems, and the results are shown in a diagram. Comparison of calc. with observed values for the binary systems shows that the latter approximate ideal solns. The calcd. ternary eutectic is at −63.7° and 28.7, 62.8, and 8.5 mol.-% of o-, m- and p-xylene. B. C. P. A.

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

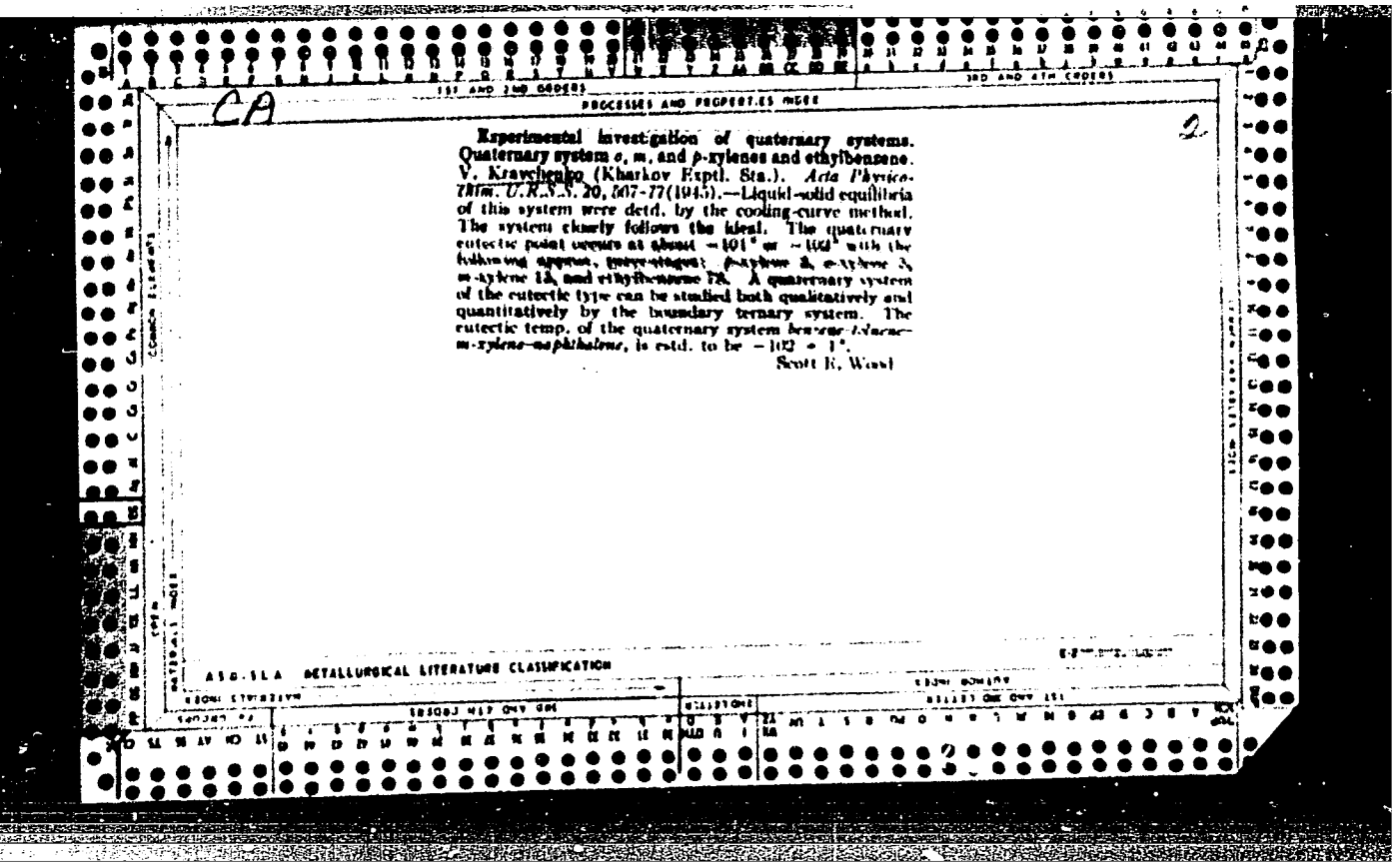


CA

2

Thermodynamic calculation of quaternary systems. V. System: *o*-xylene–*m*-xylene–*p*-xylene–ethylbenzene. M. Kravchenko. *J. Phys. Chem.* (U. S. S. R.) 15, 652–8 (1941); cf. *C. A.* 35, 3754.—The method previously used in simultaneous soln. of several equations of solv. isobars and the detn. of the eutectic points is extended from ternary to quaternary systems. The geometrical character of the base lines and surfaces in the space model is discussed; phase equilibria are shown. The system studied is encountered in tech. xylene and may be used for analysis and sepn. of the latter. The following, eutectic points are given (crystn. temp. followed by compn. of the eutectic): *o*-$Me_2C_6H_4$–*m*-$Me_2C_6H_4$, −61.1°, 32, 68%; *o*-$Me_2C_6H_4$–EtPh, *p*-$Me_2C_6H_4$, −34.9°, 76.2, 23.8%; *o*-$Me_2C_6H_4$–EtPh, −96.3°, 6.7, 93.3%; *m*-$Me_2C_6H_4$–*p*-$Me_2C_6H_4$, −52.7°, 87.5, 12.5%; *m*-$Me_2C_6H_4$–EtPh, −99.3°, 16.0%, 84%; *p*-$Me_2C_6H_4$–EtPh, −99.8°, 1.2, 98.8%; *o*-$Me_2C_6H_4$–*m*-$Me_2C_6H_4$–*p*-$Me_2C_6H_4$, −63.7°, 28.7, 62.8, 8.5%; *o*-$Me_2C_6H_4$–*m*-$Me_2C_6H_4$–EtPh, −101.0°, 6.0, 15.0, 79.0%; *o*-$Me_2C_6H_4$–*p*-$Me_2C_6H_4$–EtPh, −96.8°, 6.6, 1.1, 92.3%; *m*-$Me_2C_6H_4$–*p*-$Me_2C_6H_4$–EtPh, −99.6°, 15.9, 1.0, 83.1%; *o*-$Me_2C_6H_4$–*m*-$Me_2C_6H_4$–*p*-$Me_2C_6H_4$–EtPh, −101.3°, 5.4, 14.9, 0.9, 70.8%.

G. M. Kosolapoff



CA

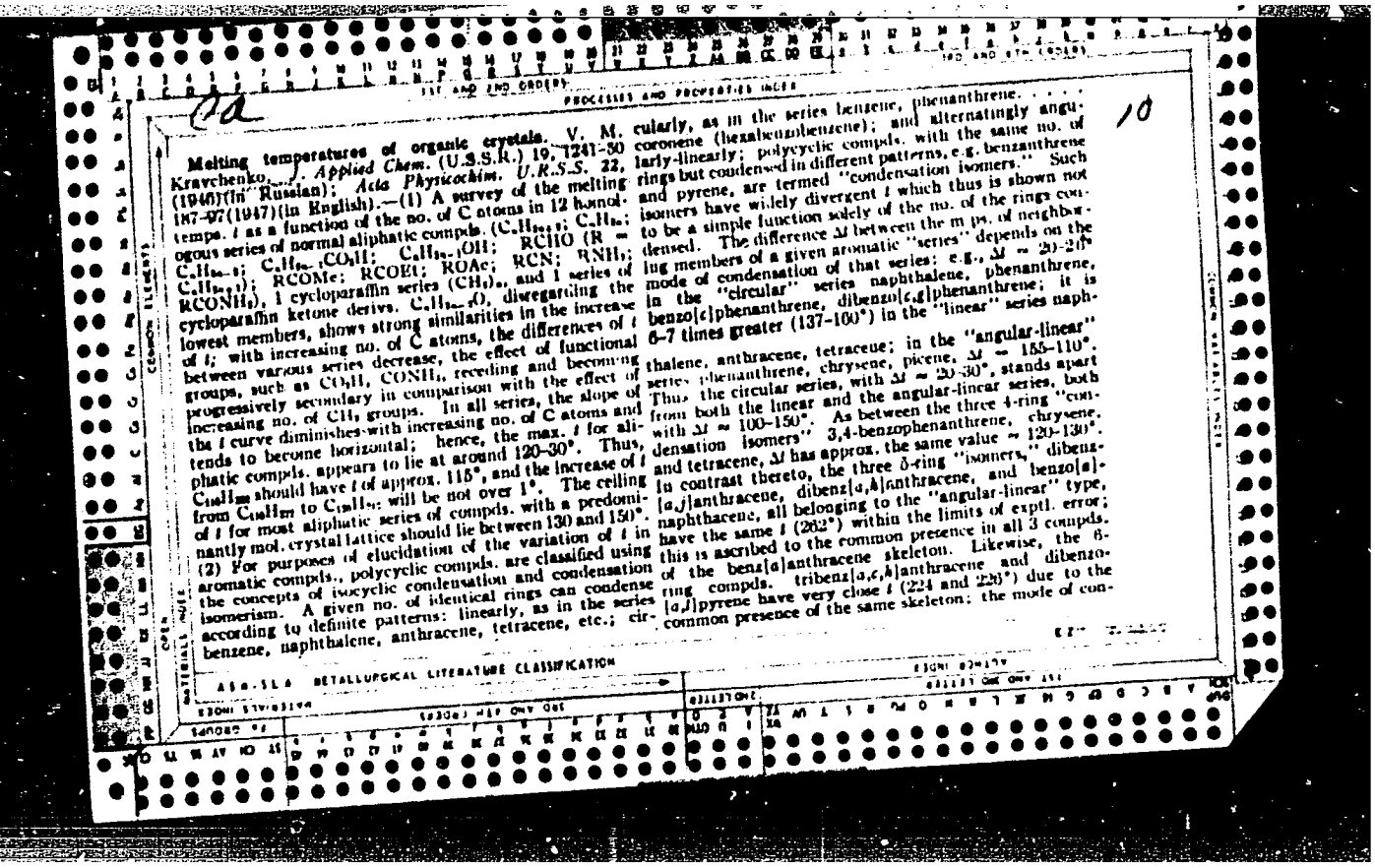
PROCESSES AND PROPERTIES INDEX

2

Experimental investigation of quaternary systems. Quaternary system *o*, *m*, and *p*-xylenes and ethylbenzene. V. Kravchenko (Kharkov Exptl. Sta.). *Acta Physicochim. U.R.S.S.* 20, 507-77(1945).—Liquid-solid equilibria of this system were detd. by the cooling-curve method. The system closely follows the ideal. The quaternary eutectic point occurs at about −101° at −102° with the following approx. compns.: *p*-xylene 3, *o*-xylene 3, *m*-xylene 15, and ethylbenzene 78. A quaternary system of the eutectic type can be studied both qualitatively and quantitatively by the boundary ternary system. The eutectic temp. of the quaternary system *benzene–toluene–m-xylene–naphthalene*, is estd. to be −102 ± 1°.

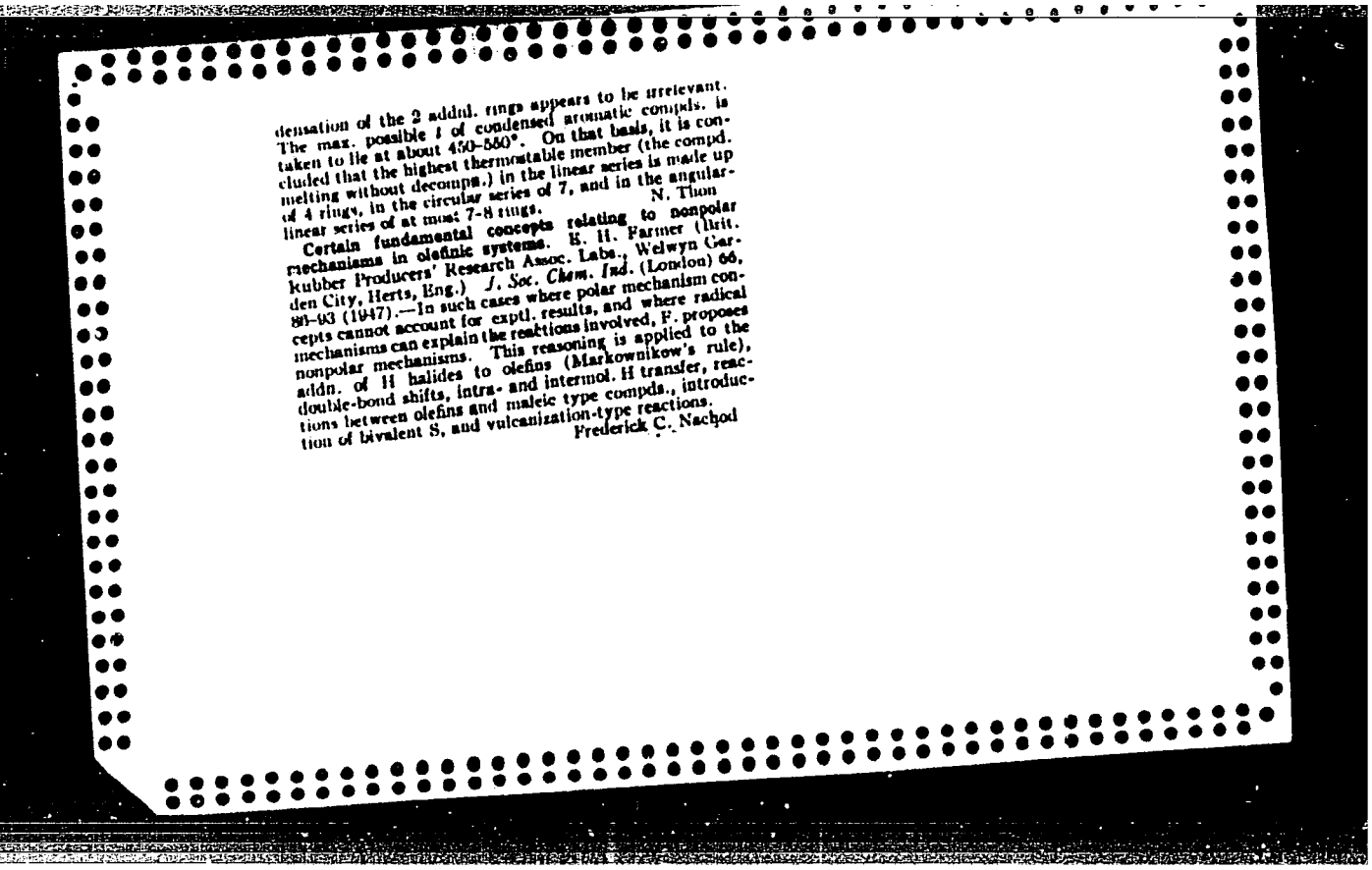
Scott E. Wood

A56-51A METALLURGICAL LITERATURE CLASSIFICATION



Melting temperatures of organic crystals. V. M. Kravchenko. *J. Applied Chem.* (U.S.S.R.) 19, 1241–50 (1946)(in Russian); *Acta Physicochim. U.R.S.S.* 22, 187–97(1947)(in English).—(1) A survey of the melting temps. t as a function of the no. of C atoms in 12 homologous series of normal aliphatic compds. (C_nH_{2n+2}; C_nH_{2n}; C_nH_{2n-2}; $C_nH_{2n}O_2$; $C_nH_{2n+1}CO_2H$; $C_nH_{2n+1}OH$; $RCHO$ (R = C_nH_{2n+1}); RCOMe; RCOEt; ROAc; RCN; RNH_2; $RCONH_2$), 1 cycloparaffin series (CH_2)$_n$, and 1 series of cycloparaffin ketone derivs. $C_nH_{2n-2}O$, disregarding the lowest members, shows strong similarities in the increase of t with increasing no. of C atoms, the differences of t between various series decrease, the effect of functional groups, such as CO_2H, $CONH_2$, receding and becoming progressively secondary in comparison with the effect of increasing no. of CH_2 groups. In all series, the slope of the t curve diminishes with increasing no. of C atoms and tends to become horizontal; hence, the max. t for aliphatic compds. appears to lie at around 120–30°. Thus, C_nH_{2n} should have t of approx. 115°, and the increase of t from C_nH_{2n} to C_nH_{2n} will be not over 1°. The ceiling of t for most aliphatic series of compds. with a predominantly mol. crystal lattice should lie between 130 and 150°. (2) For purposes of elucidation of the variation of t in aromatic compds., polycyclic compds. are classified using the concepts of isocyclic condensation and condensation isomerism. A given no. of identical rings can condense according to definite patterns: linearly, as in the series benzene, naphthalene, anthracene, tetracene, etc.; cirularly, as in the series benzene, phenanthrene, coronene (hexabenzobenzene); and alternatingly angularly-linearly; polycyclic compds. with the same no. of rings but condensed in different patterns, e.g. benzanthrene and pyrene, are termed "condensation isomers." Such isomers have widely divergent t which thus is shown not to be a simple function solely of the no. of the rings condensed. The difference Δt between the m.ps. of neighboring members of a given aromatic "series" depends on the mode of condensation of that series; e.g., Δt = 20–20° in the "circular" series naphthalene, phenanthrene, benzo[*c*]phenanthrene, dibenzo[*c,g*]phenanthrene; it is 6–7 times greater (137–100°) in the "linear" series naphthalene, anthracene, tetracene; in the "angular-linear" series phenanthrene, chrysene, picene, Δt = 155–110°. Thus the circular series, with Δt = 20–30°, stands apart from both the linear and the angular-linear series, both with Δt = 100–150°. As between the three 4-ring "condensation isomers" 3,4-benzophenanthrene, chrysene, and tetracene, Δt has approx. the same value = 120–130°. In contrast thereto, the three 5-ring "isomers," dibenz[*a,j*]anthracene, dibenz[*a,h*]anthracene, and benzo[*a*]naphthacene, all belonging to the "angular-linear" type, have the same t (262°) within the limits of exptl. error; this is ascribed to the common presence in all 3 compds. of the benz[*a*]anthracene skeleton. Likewise, the 6-ring compds. tribenz[*a,c,h*]anthracene and dibenzo[*a,j*]pyrene have very close t (224 and 223°) due to the common presence of the same skeleton; the mode of con-

A56-SL4 METALLURGICAL LITERATURE CLASSIFICATION



densation of the 2 addnl. rings appears to be irrelevant. The max. possible t of condensed aromatic compds. is taken to lie at about 450–550°. On that basis, it is concluded that the highest thermostable member (the compd. melting without decompn.) in the linear series is made up of 4 rings, in the circular series of 7, and in the angular-linear series of at most 7–8 rings.

N. Thon

Certain fundamental concepts relating to nonpolar mechanisms in olefinic systems. E. H. Farmer (Brit. Rubber Producers' Research Assoc. Labs., Welwyn Garden City, Herts, Eng.) *J. Soc. Chem. Ind.* (London) 66, 86–93 (1947).—In such cases where polar mechanism concepts cannot account for exptl. results, and where radical mechanisms can explain the reactions involved, F. proposes nonpolar mechanisms. This reasoning is applied to the addn. of H halides to olefins (Markownikow's rule), double-bond shifts, intra- and intermol. H transfer, reactions between olefins and maleic type compds., introduction of bivalent S, and vulcanization-type reactions.

Frederick C. Nachod

KRAVCHENKO, V.

USSR/Physics Jan 1947
Crystals - Measurements
Melting Points - Determination

"The Melting Point of Organic Crystals," V. Kravchenko, Experimental Low Temperature Station, Kharkov, 10 pp

"Acta Physicochimica URSS" Vol XXII, No 1

The melting point is shown to be a definite function of the number of carbon atoms per molecule, in the case of 12 homologous series of normal aromatic compounds and two series of polymethylene compounds. Tables and graphs reveal the functional relationship.

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Thermodynamic calculation of multicomponent eutectic systems. I. The five-component system of paraffin hydrocarbons: hexane-heptane-octane-nonane-decane. V. M. Kravchenko. *Zhur. Prikład. Khim.* (J. Applied Chem.) 22, 319-33(1949).—The systems discussed include *n*-paraffins from C_6H_{14} to $C_{10}H_{22}$. Eutectic systems that conform to the laws of ideal solns. can be calcd. in the presence of *n* components ($n = 2, 3, 4, 5 \ldots$) according to the generalized equation, $x_1 + ax_1^a + bx_1^b + \ldots + gx_1^g - 1 = 0$, where $a = Q_2/Q_1$, $b = Q_3/Q_1$, $g = Q_n/Q_1$, $\alpha = 10^{-Q_1(T_2 - T_1)/4.57T_1T_2}$, $\beta = 10^{-Q_1(T_3 - T_1)/4.57T_1T_3}$, $\gamma = 10^{-Q_1(T_n - T_1)/4.57T_1T_n}$, Q = heat of fusion, and T = m.p. The terms of this equation correspond to the concns. of the components at the eutectic point: x_1 the first, ax_1^a the second, etc. Many systems of hydrocarbons approx. obey the laws of ideal solns. and may be calcd. with accuracy sufficient for engineering purposes. Specific equations are given for the ten binary systems, ten three-component systems, five four-component systems. The equation for the five-component system C_6H_{14}–C_7H_{16}–C_8H_{18}–C_9H_{20}–$C_{10}H_{22}$ is: $x + 0.81719x^{1.1186} + 0.09815x^{1.99} + 0.06359x^{1.199} + 0.00588x^{1.1888} - 1 = 0$. The eutectic temp. is 166.289°K. The eutectic compn. in mole % is: hexane 53.61, heptane 40.61, octane 3.62, nonane 2.12, decane 0.140.

E. W. Bunker

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Phase equilibria of paraffins. Binary and ternary systems containing heptane, octane, and decane. V. M. Kravchenko. *Zhur. Prikład. Khim.* (J. Applied Chem.) 22, 691-8(1949).—Phase diagrams of binary and ternary systems were detd. for the 3 hydrocarbons, with the following results, which are in good agreement with theoretical calcns. of eutectic points by means of K.'s equations (*ibid.* 21, No. 2(1948)). The decane-octane system has a single double eutectic with zones of very limited dimensions near the pure components in which crystn. of solid solns. takes place; the eutectic lies at 19.81 wt. % decane and −61.5°. The decane-heptane system is a eutectic type, although the eutectic lies extremely close to pure heptane: 95.7 wt. %, and −91.3°. The octane-heptane system also is a eutectic type with the limits of solid solns. of either component being very close to the eutectic point, which lies at 13.5 wt. % octane and −93.0°. The ternary system has a triple eutectic at 2.81 wt. % decane, 13.26 wt. % octane, and 84.99 wt. % heptane, and −93.3°. G. M. Kosolapoff

USSR/Chemistry - Systems, Binary Jul 49
Eutectics

"Binary Systems Which Contain Benzene, Toluene Ethylbenzene, Naphthalene and Ortho-and Para-Xylene," V. M. Kravchenko, 9¼ pp

"Zhur Prik Khim" Vol XXII, No 7

Results of experiments with nine such binary systems show them all to be eutectic, and reveals only a small margin of error in the experimental results as compared with formular calculations of ideal systems. Toluene-ethylbenzene, with the lowest fusibility, under normal freezing conditions

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USSR/Chemistry - Systems, Binary Jul 49
(Contd)

is vitrified, particularly close to its eutectic point. Submitted 17 Aug 48.

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KRAVCHENKO, V. M.

KRAVCHENKO, V. M.

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USSR/Chemistry - Fuels Jun 50

"Prognosis and Thermodynamic Calculation of the Seven-Component System: Benzene-Toluene-Ethylbenzene-Orthoxylene-Metaxylene-Paraxylene-Naphthalene," V. M. Kravchenko, Khar'kov Inst of Agr Mechanization

"Ukrainskiy Khimicheskiy Zhurnal" Vol XVI, No 1, pp 10-42

The phys properties of hydrocarbons, i.e., mp and latent heat of melting, int pressure and dipole moment, are inadequate for the explanation of the types of phase diagrams obtained experimentally.

The prediction of uninvestigated systems by these properties is even more difficult. Therefore, the authors undertook, to study the shape and dimensions of almost flat mols -- the ratio of the areas of their cross sections is $\Delta S = S''/S'$. S and ΔS are calcd for mol models of benzene, toluene, ethylbenzene, o-,m-, and p-xylenes and naphthalene; the eutectic types of a number of systems of these components are explained; the eutectic types of the still uninvestigated 3,4,5, 6 and 7 component systems of these hydrocarbons are also predicted. The prognosis of the type of many systems contg benzene, toluene, and naphthalene with aromatic hydrocarbons other than the above are given. The eutectic junction points of

(2) 212T3

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21 double, 35 triple, 35 quadruple, 21 five-component, 7 six-component, and one 7-component system (total of 120 systems) were calcd. Thirty of these systems were experimentally investigated and their calcd coordinates of crystn (by ideal soln eqs) coincided remarkably well with exptl data (±1 - 20%, ±1 - 2%). A similar correspondence probably also exists in the remaining 90 systems. A type eq for calcg the eutectic point of a 7-component system is furnished. The method proposed by the authors for predicting and calcg polycomponent hydrocarbon systems can be applied also to systems of other org substances. The

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significance of the investigated systems of aromatic hydrocarbons (engine fuels and crude chemicals) lends to the summarized eqs and compiled table of coordinates of eutectic junction points of 120 systems a great practical importance.

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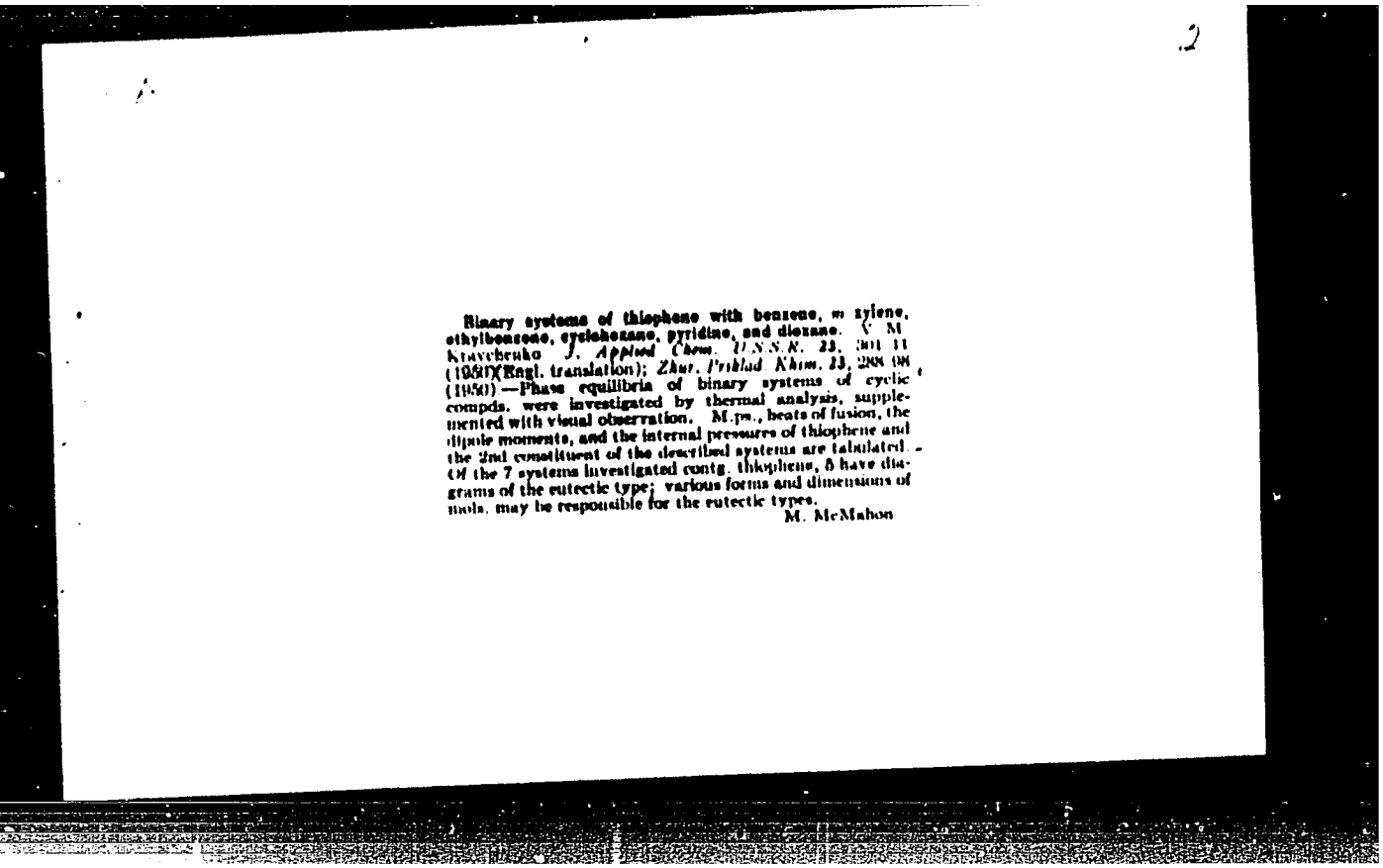
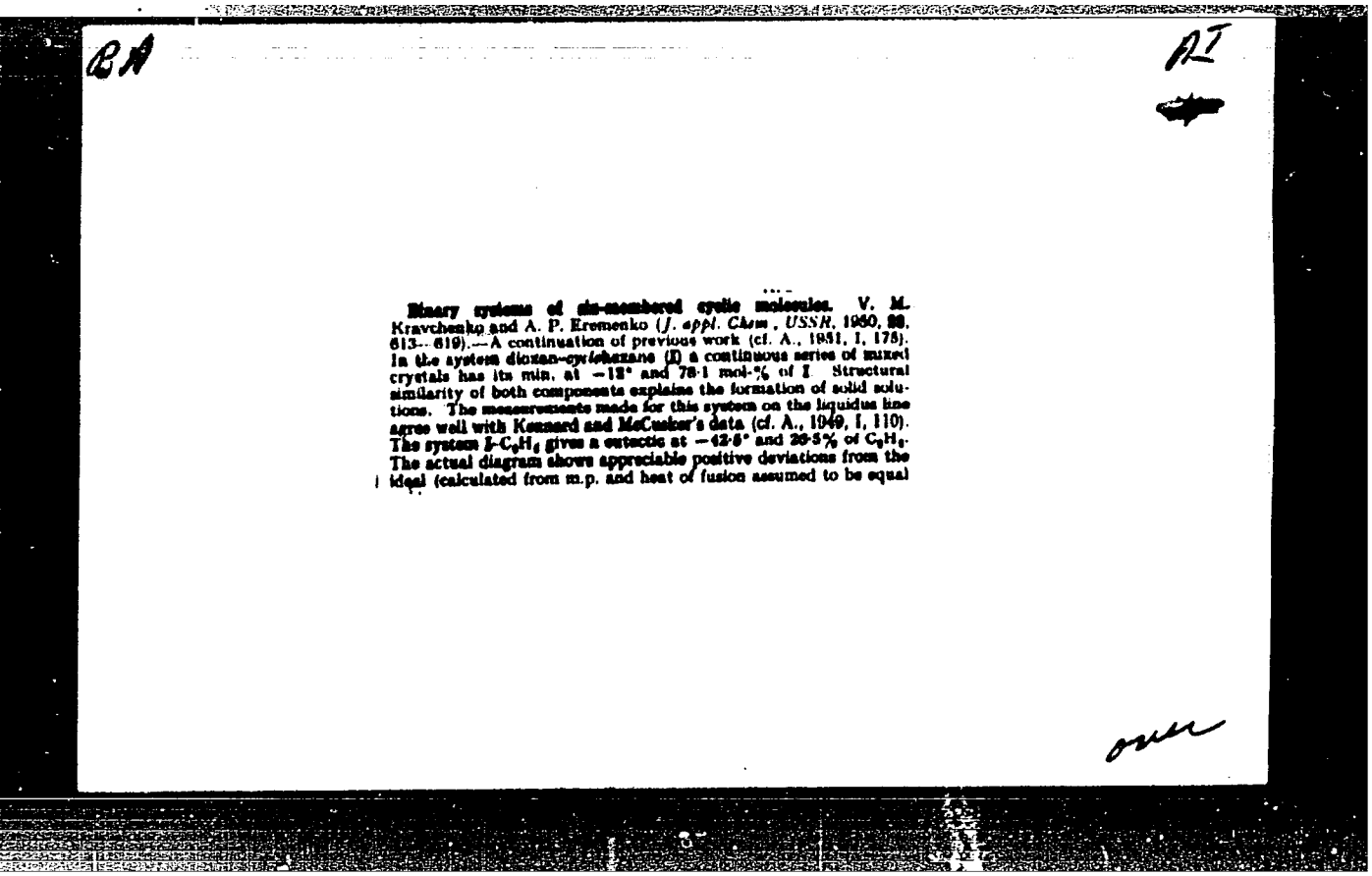
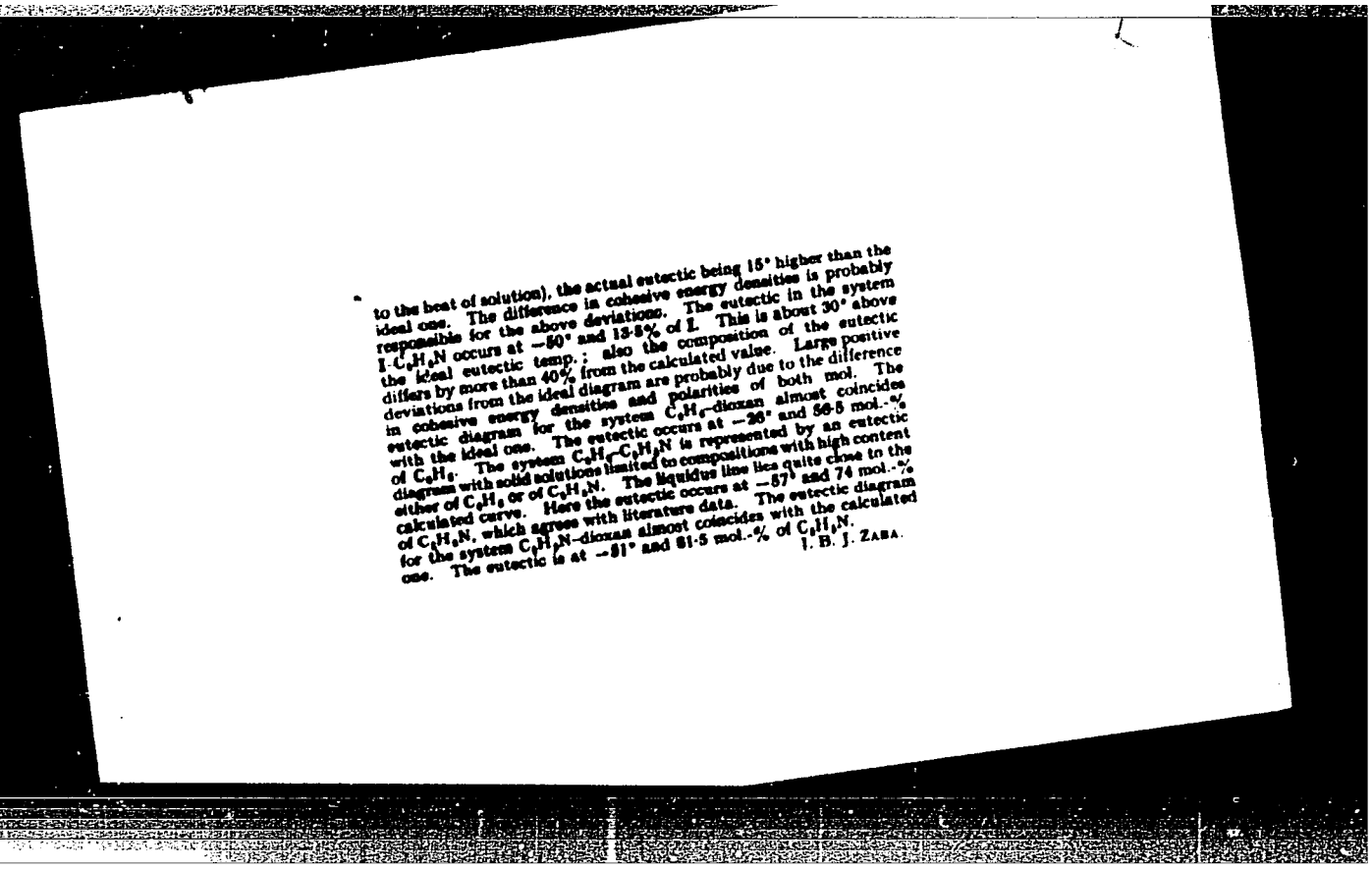


Binary systems of thiophene with benzene, *m* xylene, ethylbenzene, cyclohexane, pyridine, and dioxane. V. M. Kravchenko. *J. Applied Chem. U.S.S.R.* 23, 301-11 (1950)(Engl. translation); *Zhur. Priklad Khim.* 23, 288-98 (1950).—Phase equilibria of binary systems of cyclic compds. were investigated by thermal analysis, supplemented with visual observation. M.ps., heats of fusion, the dipole moments, and the internal pressures of thiophene and the 2nd constituent of the described systems are tabulated. Of the 7 systems investigated contg. thiophene, 6 have diagrams of the eutectic type; various forms and dimensions of mols. may be responsible for the eutectic types.

M. McMahon



Binary systems of six-membered cyclic molecules. V. M. Kravchenko and A. P. Eremenko (*J. appl. Chem., USSR*, 1950, **23**, 613–619).—A continuation of previous work (cf. A., 1951, I, 178). In the system dioxan–cyclohexane (I) a continuous series of mixed crystals has its min. at −12° and 78·1 mol-% of I. Structural similarity of both components explains the formation of solid solutions. The measurements made for this system on the liquidus line agree well with Kennard and McCusker's data (cf. A., 1949, I, 110). The system I–C_6H_6 gives a eutectic at −42·6° and 29·5% of C_6H_6. The actual diagram shows appreciable positive deviations from the ideal (calculated from m.p. and heat of fusion assumed to be equal



to the heat of solution), the actual eutectic being 15° higher than the ideal one. The difference in cohesive energy densities is probably responsible for the above deviations. The eutectic in the system I-C_6H_5N occurs at −50° and 13·8% of I. This is about 30° above the ideal eutectic temp.; also the composition of the eutectic differs by more than 40% from the calculated value. Large positive deviations from the ideal diagram are probably due to the difference in cohesive energy densities and polarities of both mol. The eutectic diagram for the system C_6H_6–dioxan almost coincides with the ideal one. The eutectic occurs at −26° and 56·5 mol.-% of C_6H_6. The system C_6H_6–C_5H_5N is represented by an eutectic diagram with solid solutions limited to compositions with high content either of C_6H_6 or of C_5H_5N. The liquidus line lies quite close to the calculated curve. Here the eutectic occurs at −57° and 74 mol.-% of C_5H_5N, which agrees with literature data. The eutectic diagram for the system C_5H_5N–dioxan almost coincides with the calculated one. The eutectic is at −81° and 81·5 mol.-% of C_5H_5N.

J. B. J. ZABA.

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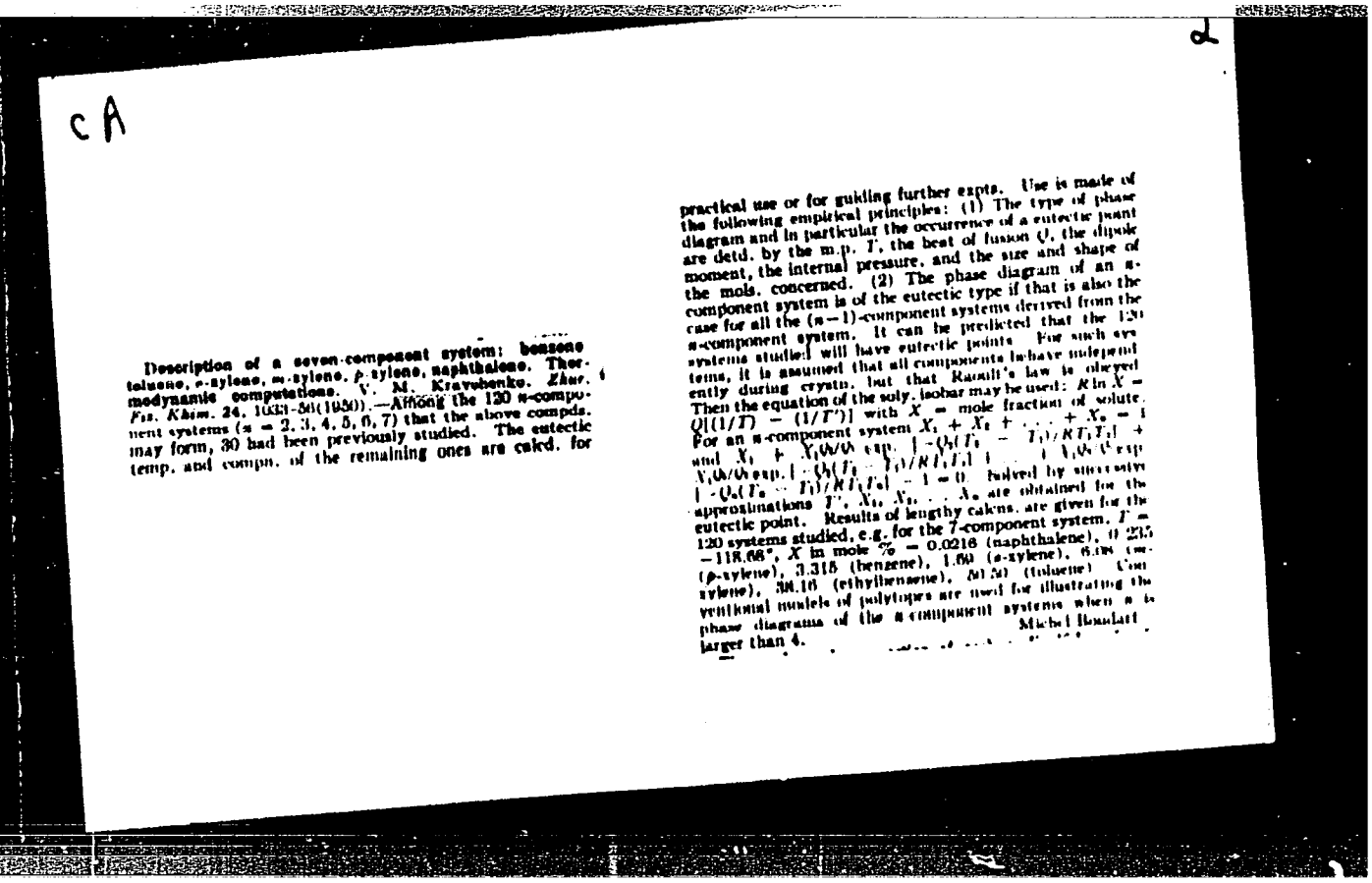
Binary systems of six membered cyclic molecules. V. M. Kravchenko and A. P. Eremenko. *Zhur. Obshchei Khim. (J. Gen. Chem.) U.S.S.R.* **23**, 647-50 (Engl. translation, pp. 649-52) (1953).—The phase equilibria existing between the liquid and cryst. phases were investigated by thermal analysis for six related binary systems made up of 4 components. Cyclohexane-dioxane gives a solid soln. diagram with min. point at −12.0° and 21.9 mol. % dioxane. Steric similarity of the mols. explains the extensive solid soln. The remaining systems give eutectic phase diagrams with the following eutectic points: cyclohexane-benzene −12.5°, 26.5 mol. % benzene; cyclohexane-pyridine −50.0°, 13.5 mol. % cyclohexane; benzene-dioxane −28.0°, 13.5 mol. % dioxane; benzene-pyridine −57.0°, 25.5 mol. % benzene; pyridine-dioxane −51.0°, 18.5 % dioxane. Deviations from the ideal diagrams are explained as due to polarity differences, internal pressures, and steric factors of the constituent mols.

Leroy Alexander



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Description of a seven-component system: benzene, toluene, o-xylene, m-xylene, p-xylene, naphthalene. Thermodynamic computations. V. M. Kravchenko. *Zhur. Fiz. Khim.* 24, 1033-58(1950).—Among the 120 *n*-component systems ($n = 2, 3, 4, 5, 6, 7$) that the above compds. may form, 30 had been previously studied. The eutectic temp. and compn. of the remaining ones are calcd. for practical use or for guiding further expts. Use is made of the following empirical principles: (1) The type of phase diagram and in particular the occurrence of a eutectic point are detd. by the m.p. T, the heat of fusion Q, the dipole moment, the internal pressure, and the size and shape of the mols. concerned. (2) The phase diagram of an n-component system is of the eutectic type if that is also the case for all the $(n-1)$-component systems derived from the n-component system. It can be predicted that the 120 systems studied will have eutectic points. For such systems, it is assumed that all components behave independently during crystn. but that Raoult's law is obeyed. Then the equation of the soly. isobar may be used: $R \ln X = Q[(1/T) - (1/T')]$ with X = mole fraction of solute. For an n-component system $X_1 + X_2 + \ldots + X_n = 1$ and $X_1 + X_1Q_1/Q_2 \exp.[-Q_2(T_2 - T_1)/RT_1T_2] + \ldots + X_1Q_1/Q_n \exp.[-Q_n(T_n - T_1)/RT_1T_n] - 1 = 0$. Solved by successive approximations T', X_2, X_3, $\ldots$ X_n are obtained for the eutectic point. Results of lengthy calcns. are given for the 120 systems studied, e.g. for the 7-component system, $T = -118.66°$, X in mole % = 0.0216 (naphthalene), 0.235 (*p*-xylene), 3.315 (benzene), 1.60 (*o*-xylene), 6.08 (*m*-xylene), 38.16 (ethylbenzene), 50.51 (toluene). Conventional models of polytopes are used for illustrating the phase diagrams of the n-component systems when n is larger than 4.

Michel Boudart

KRAVACHENKO, V. M.

Chemical Abst,
Vol. 48 No. 4
Feb. 25, 1954
General and Physical Chemistry

Use of the ideal solubility curve for determining greatly dissociated compounds. V. M. Kravchenko. *Doklady Akad. Nauk S.S.S.R.* 76, 847-9(1951).—M.ps. were detd. for triphenylmethane (m. 92.5°) with benzene (m. 5.5°), thiophene (m. −38.5°), mesitylene (m. −44.5°), and *m*-xylene (m. −47.8°) over the entire concn. range and were compared with the ideal soly. curve for the depression of the f.p. of triphenylmethane by solutes forming ideal solns. The system with *m*-xylene is very nearly ideal, the curve being just below the ideal curve from pure triphenylmethane to the eutectic at approx. 1% (all concns. in mole % of triphenylmethane), m. approx. −50°. There is thus no evidence of compd. formation in this system. The curve for the system with mesitylene is also just below the ideal curve from 100 to 60%. From 60 to 40% the curve is slightly S-shaped, and over the rest of the concn. range it is just above the ideal curve down to the eutectic at approx. 1%, m. −46°. This suggests that a 1:1 compd. is formed in this system which is almost completely dissocd. and which has a transition point at 50°. The system with thiophene deviates more sharply from the ideal from 100 to 55%, m. 53°, where the curve has a sharp break to a slight max. (almost horizontal) at 55°, and the curve then goes down to the eutectic (m. −30°) well above the ideal curve. The benzene system is similar initially, has a break at 65%, m. 70°, the curve then rising to a well-defined but rather broad max. of 77° for the 1:1 compd., and then drops to the eutectic, m. 4°. In the latter two systems the compds. are more clearly defined and somewhat less highly dissocd.

Arild J. Miller

2-31-54

KRAVCHENKO, V. M.

Metallurgical Abstracts
July 1954
Properties of Alloys

Ideal Type of [Equilibrium] Diagram of a Two-Component Simple Continuous Solid Solution. V. M. Kravchenko (*Doklady Akad. Nauk S.S.S.R.*, 1951, 79, (3), 443-446).—(In Russian). K. compares the experimentally obtained equilibrium diagrams with the liquidus curves calculated by use of Shreder's equation $\ln x = Q(1/T - 1/T_1)/R$ (*Zeits. Phys. Chem.*, 1890, 12, 272) for 9 binary systems of organic compounds, ranging from eutectic, through min.-melting soln., to solid soln. with the liquidus almost a straight line, and finally a horizontal line (*d,l* camphor mixtures). The fundamental types of equilibria of condensed phases are the eutectic and the simplest continuous solid soln. (without min. or max.); limited solubility in the solid state, and solid soln. having a min. not connected with compound formation, are intermediate types of equilibria. The ideal type of diagram of a two-component continuous solid soln. is a straight line joining the two m.p. An ideal substitutional continuous solid soln. is a homogeneous cryst. complex formed by different atoms, ions, or mol. which crystallizes or melts at const. temp. Only a few organic, metallic, or inorganic systems approximate to the ideal type. K. also considers the relation between the temp./compn./thermodynamic potential and temp./compn./dilution.

G. V. E. T.

6/14/54

USSR/Chemistry - Nitro Compounds 21 Oct 51

"Limiting (Ideal) Type Diagrams of the Crystallization of Systems Forming Chemical Compounds," V. M. Kravchenko, Donets Industrial Inst imeni N. S. Khrushchev

"Dok Ak Nauk SSSR," Vol LXXX, No 6, pp 885-888

Melting point-compn diagrams were constructed for systems of naphthalene and each of the following compds: p-chlornitrobenzene, m-dinitrobenzene, 2,4-dinitrotoluene, 2,4,6-trinitrochlorbenzene, 2,4,6-trinitrotoluene, and 2,4,6-trinitrocresol. A diagram was also plotted for aniline and allyl

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KRAVCHENKO, V. M.

isothiocyanate with the crystn temp and the coeff of viscosity along the ordinate and the compn as the abscissa.

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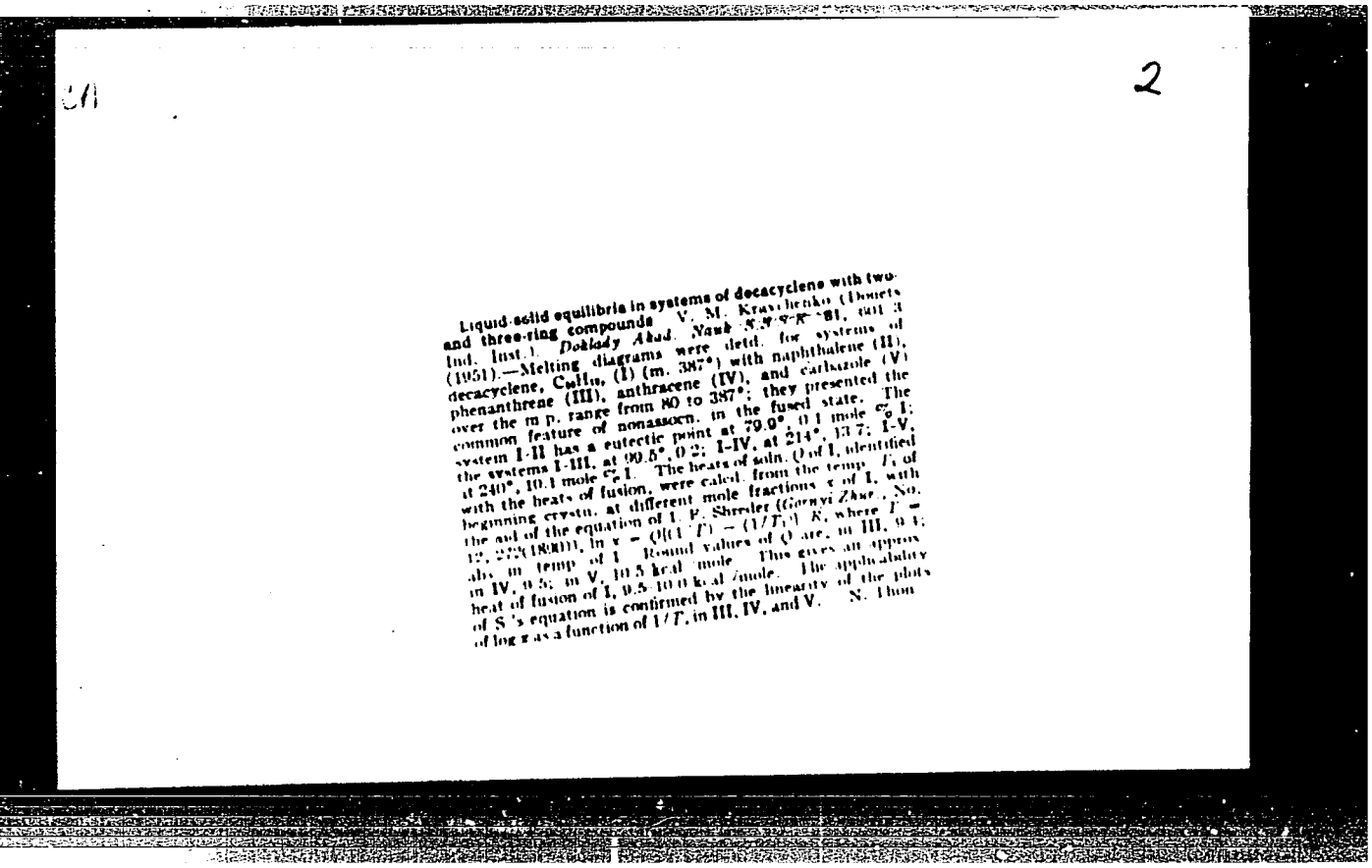

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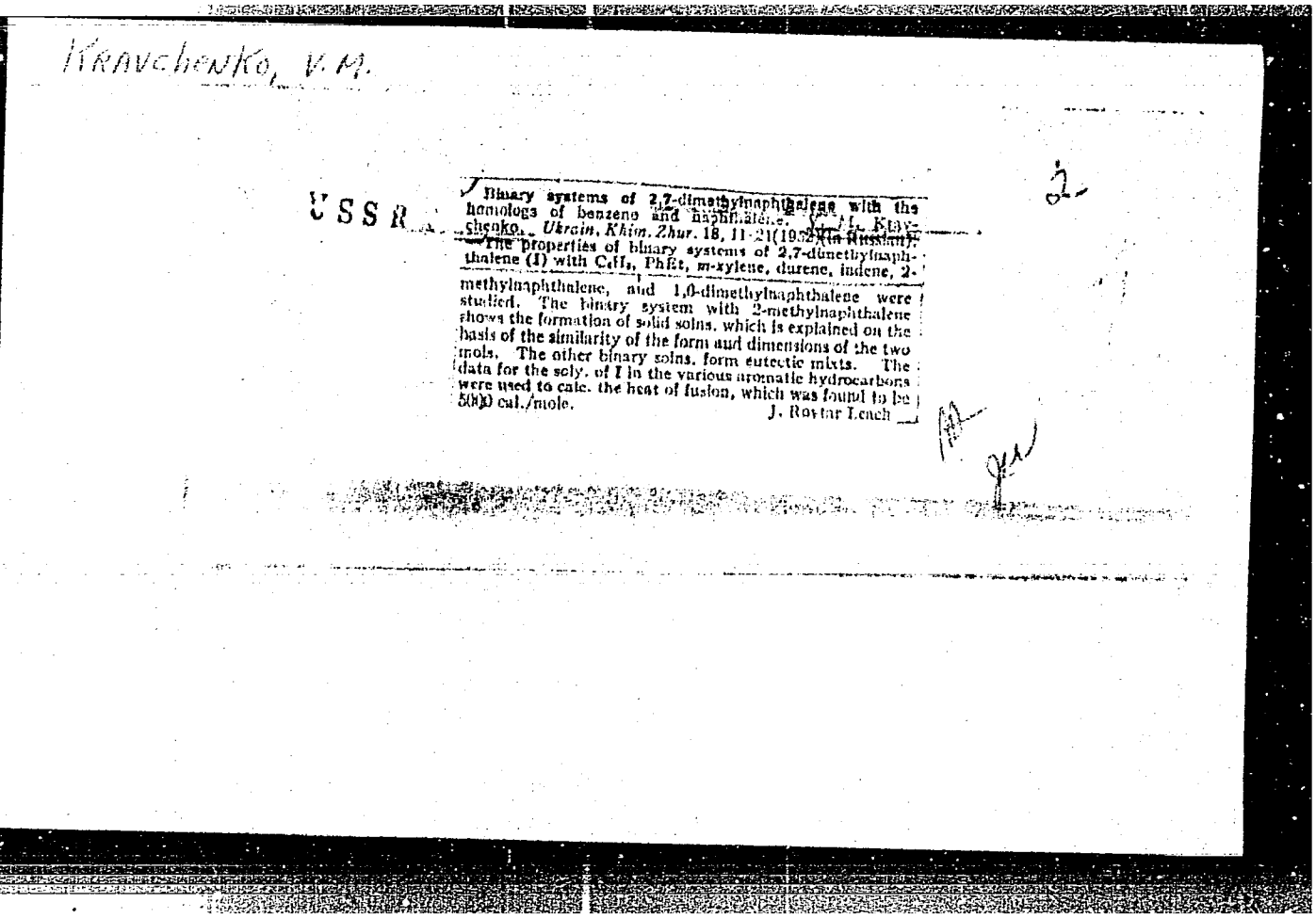
Liquid-solid equilibria in systems of decacyclene with two- and three-ring compounds V. M. Kravchenko (Donets Ind. Inst.). *Doklady Akad. Nauk S.S.S.R.* 81, 441-3 (1951).—Melting diagrams were detd. for systems of decacyclene, $C_{36}H_{18}$, (I) (m. 387°) with naphthalene (II), phenanthrene (III), anthracene (IV), and carbazole (V) over the m. p. range from 80 to 387°; they presented the common feature of nonassocn. in the fused state. The system I-II has a eutectic point at 79.9°, 0.1 mole % I; the systems I-III, at 99.5°, 0.2; I-IV, at 214°, 13.7; I-V, at 240°, 10.1 mole % I. The heats of soln. Q of I, identified with the heats of fusion, were calcd. from the temp. T_1 of beginning crystn. at different mole fractions x of I, with the aid of the equation of I. P. Shreider (*Gornyi Zhur.*, No. 12, 223(1900)), $\ln x = Q(1/T - 1/T_1)/R$, where T = abs. m. temp. of I. Round values of Q are, in III, 9.1; in IV, 9.5; in V, 10.5 kcal./mole. This gives an approx. heat of fusion of I, 9.5–10.0 kcal./mole. The applicability of S.'s equation is confirmed by the linearity of the plots of log x as a function of $1/T$, in III, IV, and V. N. Thon

KRAVCHENKO, V.M.; PASTUKHOVA, I.S.; KIPRIANOV, A.I., diysnyy chlen.

Indol in binary systems binuclear compounds. Dop.AN URSR no.3:193-200 '52.
(MLRA 6:9)

1. Akademiya nauk Ukrayins'koyi RSR (for Kiprianov). 2. Donets'kyy industrial'nyy instytut im. M.S.Khrushchova (for Kravchenko and Pastukhova).
(Indol)



Kravchenko, V. M.

USSR

Binary systems of 2,7-dimethylnaphthalene with the homologs of benzene and naphthalene. V. M. Kravchenko. *Ukrain. Khim. Zhur.* 18, 11-21(1952)(in Russian). The properties of binary systems of 2,7-dimethylnaphthalene (I) with C_6H_6, PhMe, *m*-xylene, durene, indene, 2-methylnaphthalene, and 1,6-dimethylnaphthalene were studied. The binary system with 2-methylnaphthalene shows the formation of solid solns. which is explained on the basis of the similarity of the form and dimensions of the two mols. The other binary solns. form eutectic mixts. The data for the soly. of I in the various aromatic hydrocarbons were used to calc. the heat of fusion, which was found to be 5000 cal./mole.

J. Rovtar Leach

Kravchenko, V. M.

USSR.

Equilibrium of the condensed phases in systems of triphenylmethane with the homologs of benzene, cyclohexane, and cyclohexene. V. M. Kravchenko. *Ukrain. Khim. Zhur.* 13, 22-35(1939). The following 9 binary systems were studied: $HCPh_3$ with toluene, PhC_2H_5, *m*-xylene, pseudocumene, mesitylene, durene, cyclohexane, and cyclohexene. The presence of the complexes 1:1 $HCPh_3.C_6H_6$ and 1:1 $HCPh_3.1,2,3\text{-}C_6H_3(Me)_3$ was established. The latter dissoc. strongly at 58°. The remaining systems are of the eutectic type. Deviations from properties of ideal solns. were pos. for the aromatic-polymethylene systems and neg. for the aromatic systems. This difference is attributed to differences in the properties of the components.

J. Rovtar Leach

KRAVCHENKO, V. M.

USSR

Chemical Abst.
Vol. 48
Apr. 10, 1954
General and Physical Chemistry

The condensed-phase equilibria in the systems of triphenylmethane with the heterocyclics thiophene and homologs of pyridine. V. M. Kravchenko. *Ukrain. Khim. Zhur.* 18, 36–43(1952)(in Russian); cf. *C.A.* 46, 5946*e*, 7869*i*; 47, 9742*d*, 9947*b*.—The condensed-phase equilibria were studied for the systems Ph_3CH–thiophene (I), Ph_3CH–pyridine (II), Ph_3CH–2-picoline (III), Ph_3CH–3-picoline (IV), and Ph_3CH–2,4-lutidine (V). The thermal-analysis technique was used. The cooling rate for crystn. was 0.25–0.3° per min. For I a 1:1 mol. complex was observed which was appreciably dissocd. at 50°. The eutectic of this crystg. at −39° contained 98.8 mol. % thiophene. No complex was observed for II. A eutectic was observed at −48° contg. 71.2 mol. % Ph_3CH. Systems III, IV, and V are probably of the eutectic type, although no eutectic was observed, owing to glass formation rather than crystn. The deviation of the exptl. data from the ideal calcd. soly. curves was greatest in II (of the order of 6%) and least for V. The heats of fusion used to calc. the ideal curves in cal./mol. were Ph_3CH 5150 and pyridine 1975. The equation used was that of Shreder (*Gornyi Zhur.* 12, 272(1890)) $\ln X = [(1/T) - (1/T_1)]/R$, where T is the abs. m.p. and T_1 the abs. crystn. temp. X is the soly. Joseph B. Lee

KRAVCHENKO, V. M.

Chemical Abst.
Vol. 48 No. 9
May 10, 1954
General and Physical Chemistry

Binary systems of phenanthrene with benzene homologs. V. M. Kravchenko (Ind. Inst., Donets). *Ukrain. Khim. Zhur.* 18, 480–72(1952)(In Russian).—Binary systems of phenanthrene with various homologs of C_6H_6 were examd. thermally, with the following results: Phenanthrene-C_6H_6 forms a eutectic with 11.7 mol. % phenanthrene, f.p. −1.6°; both components crystallize from the melt with little supercooling. Phenanthrene-EtPh forms a eutectic at 90.5% (mol.) EtPh, with min. at −94.7°; EtPh supercools very much in this system. Phenanthrene-toluene gives a eutectic at 99.40 mol. % toluene, f.p. −95.4°; toluene supercools seriously in this system. Phenanthrene-*o*-xylene forms a eutectic at 95 mol. % *o*-xylene with f.p. −28°; xylene supercools considerably in this case. Phenanthrene-*m*-xylene gives a eutectic at 97 mol. % *m*-xylene, f.p. −50°. Phenanthrene-1,2,4-trimethylbenzene gives a eutectic at 3.8 mol. % phenanthrene, f.p. −45.7°, with much supercooling of the latter component. Phenanthrene-1,3,5-trimethylbenzene gives a eutectic at 97.2 mol. % mesitylene, f.p. −46.5°, with much supercooling of mesitylene. Phenanthrene and 1,2,4,5-tetramethylbenzene give a eutectic at 42.9 mol. % phenanthrene, f.p. 53°, with little supercooling. The eutectic form of the systems corresponds to the theoretically expected one in consideration of mol. dimensions and geometry of the components.

G. M. Kosolapoff

KRAVCHENKO, V. M.

Chemical Abst.
Vol. 48 No. 9
May 10, 1954
General and Physical Chemistry

Binary systems of phenanthrene with indene and homologs of naphthalene. Review and prognosis of phenanthrene systems. V. M. Kravchenko (Ind. Inst., Donets). *Ukrain. Khim. Zhur.* 18, 473-87 (1952) (in Russian).—The binary systems of phenanthrene and aromatic substances are summarized into 3 classes: the solid soln. form occurs rarely; mol. compds. form with trinitro hydrocarbons, whereas the eutectic form predominates. On the basis of available data for other substances it is expected that eutectic systems will form with phenanthrene on the one hand and quinoline, isoquinoline, indole, and coumarone, as well as with the majority of homologs of bicyclic substances. Phenanthrene-indene forms a eutectic at 89.1 mol. % indene, f.p. −12.3°. Phenanthrene-$C_{16}H_8$ forms a eutectic at 57.3 mol. % $C_{16}H_8$, f.p. 51°. Phenanthrene-1-$MeC_{10}H_7$ forms a eutectic at 4 mol. % phenanthrene, f.p. −32.5°. Phenanthrene-2-$MeC_{10}H_7$ forms a eutectic at 16.4 mol. % phenanthrene, f.p. 31°, but the low-temp. area is rather diffuse, owing to formation of a solid soln. at the $MeC_{10}H_7$ side of the diagram. Phenanthrene-2,7-$Me_2C_{10}H_6$ forms a eutectic at 53 mol. % phenanthrene, f.p. 58°. Pure phenanthrene, m. 99.3°, on the basis of the above study is shown to have the heat of fusion, that is probably different from 4450 cal./mole, assigned to it by Park and Huffman (*C.A.* 25, 5830), since the specimen cited by them m. 96.3°. G. M. Kosolapoff

1. KRAVCHENKO, V. N.

2. USSR (600)

4. Systems (Chemistry)

7. Equilibrium of condenses phases or triphenylmethane in systems with napthalene, 2 methynaphthalene and indene, Ukr. khim. zhur., 18, No. 1, 1952.

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

KRAVCHENKO, V.M.; PASTUKHOVA, I.S.

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(BA -AI My '53:415)

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