SHASHKINA, A.V.; KULAKOVA, I.I. (Moskva)

Determining the degree of adsorption of an organic component in the liquid phase. Zhur.fiz.khim. 35 no.8:1846-1852 Ag '61. (MIRA 14:8)

1. Moskovskiy gosudarstvennyy universitet imeni M.V. Lomonosova, kafedra fizicheskoy khimii, laboratoriya kinetiki i kataliza.

(Adsorption)

KULAKOVA, I.I.; SHASHKINA, A.V.

Mechanism of the reduction and electrolytic reduction of acrylic acid on a Pd electrode. Vest.Mosk.un.Ser.2: Khim. 17 no.2:36-39 Mr-Ap '62. (MIRA 15:4)

1. Kafedra fizicheskoy khimii Moskovskogo universiteta.
(Acrylic acid) (Reduction, Electrolytic)
(Electrodes, Palladium)

SHASHKINA, A.V.; KULAKOVA, I.I.

Electroreduction of vinyl acetate on a Pd-electrode. Izv.vys. ucheb.zav.;khim.i khim.tekh. 5 no.3:398-406 '62. (MIRA 15:7)

1. Moskovskiy gosudarstvennyy universitet imeni Lomonosova, kafedra fizicheskoy khimii.

(Vinyl acetate)
(Reduction, Electrolytic)

KULAKOVA, I. I.; SHASHKINA, A. V.

Electroreduction of methyl acrylate on a Pd-electrode. Vest. Mosk. un. Ser. 2: Khim. 16 [i.e.17], no.6:43-47 N-D '62. (MIRA 16:1)

1. Kafedra fizicheskoy khimii Moskovskogo universiteta.

(Acrylic acid) (Reduction, Electrolytic)

KULAKOVA, I.I.; SHASHKINA, A.V.

Effect of the subsequent poisoning of Pd-electrode by mercury, arsenic, and cyano ions on the electroreduction of methyl acrylate. Report No.2. Vest.Mosk.un. Ser.2:Khim. 18 no.1:23-26 Ja-F '63. (MIRA 16:5)

1. Kafedra fizicheskoy khimii Moskovskogo universiteta.
(Electrodes, Palladium) (Acrylic acid) (Reduction, Electrolytic)

L 18316-63 EPR/EWP(j)/EPF(c)/EWT(m)/BDS ASD/ESD-3 Ps-4/Pc-4/Pr-4
RM/WW/RH

ACCESSION NR: AP3004969 S/0076/63/037/008/1718/1725 79 78

AUTHORS: Shashkina, A. V.; Kulakova, I. I.

TITLE: Reduction and electroreduction of organic compounds on a Pd-electrode

SOURCE: Zhurnal fiz. khimii, v. 37, no. 8, 1963, 1718-1725

TOPIC TAGS: reduction of compound, electroreduction of compound, Pd-electrode, Pd, H sub 2, Hg, As, nitromethane, nitrobenzene, dimethylacetylene, nitro compound

ABSTRACT: Authors studied the rate and mechanism of reduction and electroreduction of nitromethane, nitrobenzene, dimethylacetylene alcohol, primary and secondary allyl alcohols, acrylic and methacrylic acids, acrolein, methyl acrylate and binylacetate, using a Pd-electrode in acid or alkaline media. Method of investigation was previously described by Kulakova (Dissertation, MGU, M., 1962). Reduction was studied by introducing 0.2-0.3 ml of substance into half-cell with Pd-electrode saturated with

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L 18316-63

ACCESSION NR: AP3004969

hydrogen, and electroreduction by introducing substance at potentials of 0.5-0.6 V. Kulakova in her dissertation and in conjunction with Shashkina (Zhurn. fiz. khimii, 35, 1961, 793) showed that poisoning of electrode surface with Hg, As and cyanic ions affects hydrogen adsorption in different degrees. This finding was used to determine the mechanism of reduction. Results of study indicate that reduction of acids and alcohols proceeds by way of adsorbed hydrogen, and velocity of hydrogen diffusion controls the rate of process. Nitro-compounds form an intermediate product with high absorption energy which is reduced by electronic as well as hydrogen mechanism. Orig. art. has: 8 figures.

ASSOCIATION: Moskovskiy gosudarstvenny*y universitet (Moscow State University)

SUBMITTED: 03Nov60 DATE ACQ: 06Sep63 ENCL: 00

SUB CODE: PH, CH NO REF SOV: 009 OTHER: 001

Card 2/2

L 18317-63 EPR/EWP(j)/EPF(c)/EWT(m)/BDS ASD/ESD-3 Ps-4/Pc-4/
Pr-4 RM/WW/RH

ACCESSION NR: AP3004970 S/0076/63/037/008/1726/1732 77

AUTHORS: Kulakova, I. I.; Shashkina, A. V. 76

TITLE: Effect of functional groups upon the electroreduction of unsaturated organic compounds on a Pd-electrode

SOURCE: Zhurnal fiz. khimii, v. 37, no. 8, 1963, 1726-1732

TOPIC TAGS: reduction of double bond, Pd-electrode, electroreduction, unsaturated organic compound, allyl alcohol, acrylic acid, methacrylic acid, methylacrylate, vinylacetate, allyl chloride, Hg, As

ABSTRACT: Authors studied the electroreduction of compounds with double bonds, the effect of functional groups, and electrode poisoning upon the rate of the process. Primary and secondary allyl alcohols, acrylic and methacrylic acids, methylacrylate, vinylacetate, and allyl chloride were tried in 0.1 N H_2SO_4 and 0.1 N KOH using a Pd-electrode. Effect of poisoning of electrode with Hg and As in acid and with CN^- in alkaline media was investigated. Results of investigation show that presence of chlorine inhibits the reactions.

Card 1/2

L 18317-63

ACCESSION NR: AP3004970

Presence of methyl groups lowers the reaction rate. Poisoning of electrode reveals that reduction of double bonds proceeds by electronic and hydrogen mechanisms in acid and alkaline media and effect of poisoning and functional groups upon the process depends upon manner in which the poisons or functional groups affect one or the other mechanism of reduction. Orig. art. has: 9 figures.

ASSOCIATION: Moskovskiy gosudarstvenny*y universitet (Moscow State University)

SUBMITTED: 03Nov60 DATE ACQ: 06Sep63 ENCL: 00

SUB CODE: PH, CH NO REF SOV: 004 OTHER: 000

Card 2/2

SHASHKINA, A.V.; KULAKOVA, I.I.

Effect of mercury, arsenic, and cyan ions on the properties of Pd electrode Zhur. fiz. khim. 37 no.9:1966-1972 S '63. (MIRA 16:12)

1. Moskovskiy gosudarstvennyy universitet imeni Lomonosova, khimicheskiy fakul'tet.

BARKHATOVA, K.A.; SHASHKINA, L.P.
[redacted]

Color-magnitude diagram for the open star cluster NGC6819.
Astron. tsir. no.233:1-3 F '63. (MIRA 16:6)

1. Kafedra astronomii i geodezii Ural'skogo gosudarstvennogo universiteta im. Gor'kogo.
(Stars—Clusters)

BARKHATOVA, K.A.; DRONOVA, V.I.; PANEVA, L.I.; SHASHKINA, L.P.

Study of the open star cluster NGC 6819. Sbor.rab. po astron. no.1:3-13 '63.

(MIRA 18:1)

22017

S/089/61/010/004/020/027
B102/B205

21,5200

AUTHOR: Shashkina, N. N.

TITLE: Radiometric method of determining the concentration of uranium in ionium-containing solutions

PERIODICAL: Atomnaya energiya, v. 10, no. 4, 1961, 392-393

TEXT: This "Letter to the Editor" describes a method of determining the concentration of uranium, which is particularly suited for organic solutions whose chemical analysis meets with great difficulties. This radiochemical method can be applied if the solution contains no other alpha emitters. The alpha radiation of the solution (in a thick layer) is measured using a device of the type Б (B) with the attachment П-349-2 (P-349-2), or with the help of an ЛАС (LAS) device. The concentration of uranium, Q, is determined by comparing the alpha radiation of the solution with a standard alpha emitter, using the formula

$$Q = q\frac{n}{n'}\frac{\mu'\varrho'}{\mu\varrho};$$

q indicates the uranium concentration in the standard (g/kg); n and n' are

Card 1/4

the numbers of pulses/min from the sample and the standard, respectively; μ and μ' are the moderating power of sample and standard for alpha radiation; and ρ and ρ' denote the densities. Experiments have shown that the product μρ was virtually independent of the composition of the solution; thus, it may be assumed that $\mu'\rho'/\mu\rho = 1$. With the use of the B-type device and its attachment, it is possible to determine the concentration of uranium with an accuracy of up to 0.3 g/l; the α-scintillator combined with the photomultiplier ФЭУ-3Б (FEU-3B) attains an accuracy of 0.05 g/l. However, such solutions often contain ionium (Th^{230}), e.g., in hydrometallurgical ore dressing, which, of course, influences alpha counting. It is therefore necessary to introduce a correction, i.e., the concentration of ionium must be known. The beta radiation $UX_1 + UX_2$ ($E_{max} = 2.32$ Mev) is used for the purpose. The beta radiation is measured in a thick layer, either in a flat cell, or in the cylindrical vessel housing the counter. If the solution contains RaE, too, an Al filter (0.25 g/cm^2) absorbing the beta radiation of RaE ($E_{max} = 1.19$ Mev) is used. A very old solution of uranyl nitrate is taken as a standard. The measurement of the beta radiation indicates the content of ionium in Io-U equilibrium units. According to Ref. 1, the alpha activity of ionium is 55 % the amount of that of UI and UII. Accordingly, $Q_U = Q_\alpha - 0.55Q_\beta$ (2), where Q_α and Q_β are the alpha and beta activity of the analyzed solution expressed in uranium units. The results of radiometric and chemical analyses are intercompared in the attached table. There are 1 table and 2 references: 1 Soviet-bloc and 1 non-Soviet-bloc. The reference to the English-language publication reads as follows: R. Evans, Phys. Rev. 45, No. 1, 38 (1934).

SUBMITTED: December 9, 1960

Legend to the Table: 1) Concentration of alpha emitters in g/l uranium equivalent; 2) concentration of beta emitters in g/l uranium equivalent; 3) correction for ionium (g/l uranium equivalent); 4) concentration of uranium (g/l), 5) calculated from Eq. (2), 6) determined by chemical analysis; 7) difference between radiochemical and chemical analysis (%).

Концентрация α-излучающих элементов, г/л эквивалентного урана (1)	Концентрация β-излучающих элементов, г/л радиоактивного урана (2)	Поправка на ионий, г/л эквивалентного урана (3)	Концентрация урана, г/л (4)		Расхождение между радиометрическим и химическим анализом, % (7)
			вычисленная по формуле (2) (5)	найденная в результате химического анализа (6)	
0,073	0,035	0,019	0,054	0,052	+3,5
0,086	0,037	0,020	0,066	0,066	0
0,155	0,054	0,030	0,125	0,132	−5,0
0,160	0,054	0,030	0,130	0,122	+6,5
0,343	0,139	0,076	0,267	0,256	+4,0
0,365	0,109	0,060	0,305	0,309	−1,0
0,413	0,191	0,105	0,308	0,320	−3,5
0,432	0,174	0,095	0,337	0,331	+1,6

36782
S/089/62/012/005/014/014
B102/B104

21.6000

AUTHORS: Lenin, S. S., Shashkina, N. N., Shashkin, V. L.

TITLE: Use of α-scintillation chambers in the emanation method of radium isotope determination

PERIODICAL: Atomnaya energiya, v. 12, no. 5, 1962, 429-431

TEXT: Emanation measurements were made with α-scintillation chambers recently devised specifically for field measurements [ЭМ-6 (EM-6)] and for laboratory use [РАЛ-1 (RAL-1)]. The chambers are cylindrical and their inner surface is covered with a ZnS coating of 50 - 100 mg/cm^2. The measurements were made with four chambers, 68 mm in diameter and 60, 100, 150, and 250 mm high respectively. The sensitivity was $(3 - 4)\cdot 10^{-13}$ Cu/pulse·min, the α-radiation utilization factor was 50%, the total utilization factor was between 11.3 and 18.5%. The former was equal for RaA and RaC' within limits of 10%. The experiments showed that all Rn decay products were deposited at the chamber walls, whereas the Rn was evenly distributed over the volume of the chamber. The background

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amounted to about 1pulse/min. The sensitivities for Th determination were measured at optimal air-jet flow rates (0.15 - 0.38 l/min) and were $(1.1 - 1.8)\cdot 10^{-5}$ g Tn/pulse·min. The chambers can also be used for actinone determination by determining AcX. For these measurements the optimal air flow rate is 2 - 4 l/min. There are 1 figure and 2 tables.

SUBMITTED: February 12, 1960

L 3138-66 EWT(m)/EPF(c)/ETC/EPF(n)-2/EWG(m)/EWP(t)/EWP(b) IJP(c) JD/WW/JG

AM5022854 BOOK EXPLOITATION UR/ 621.039.7

29 27 B+1

Bakhurov, Vasiliy Gerasimovich; Lutsenko, Inna Kirillovna; Shashkina, Nadezhda Nikolayevna

Radioactive wastes from uranium plants (Radioaktivnyye otkhody uranovykh zavodov) Moscow, Atomizdat, 1965. 150 p. illus., biblio. 2500 copies printed

TOPIC TAGS: radioactive waste disposal, radioactive contamination, uranium, radioactive waste storage

PURPOSE AND COVERAGE: This book is intended for engineering and technical personnel concerned with radioactive wastes from uranium processing plants. The characteristics of radioactive industrial wastes, methods for their removal from uranium processing plants, waste storage, effect of wastes on their surroundings, methods for analyzing small amounts of radioactive substances, and some procedures to purify and decontaminate wastes are covered. Some foreign sources were used for the material on the purification and decontamination of wastes and on uranium-processing plants.

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L 3138-66

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2

Introduction and Chs. 4, 6, 7, and 8 were written by V. G. Bakhurov, Chs. 1, 2, and 3, by I. K. Lutsenko, and Chs. 5 and 9, by N. N. Shashkina. The authors thank B. S. Kolychev and B. V. Nevskiy.

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SUB CODE: NP SUBMITTED: 14Apr65 NO REF SOV: 106

OTHER: 040

Card 3/3

NOVIKOV, G.I.; SERGEYEVA, N.S.; IVANOVA, N.N.; IVANOVA, Ye.I.; SHASHKINA, S.I.

Conditions of the genesis and development of air-mass thunderstorms in the region of the Shosseynaya Meteorological Station. Sbor. rab. po sinop. no.5:87-91 '60. (MIRA 14:8)

1. Meteostantsiya Shosseynaya.
(Shosseynaya region--Thunderstorms)

1ST AND 2ND ORDERS

3RD AND 4TH ORDERS

PROCESSES AND PROPERTIES INDEX

2

The action of admixtures upon the mutual solubility of fused salts. V. K. Semenchenko and T. I. Shashkina. *Compt. rend. acad. sci. U. R. S. S.* 30, 120-4(1941)(in English).—Values are given in tabular and graphic form for the crit. soln. temp. of 1 mol. % of CsCl, RbCl, KCl, LiCl, $BaCl_2$, $SrCl_2$, $CaCl_2$, $MgCl_2$, $BeCl_2$, KI, KBr, KCl or KF in 1:3, 1:1 and 3:1 mixts., resp., of TlBr and KNO_3. The value of Δt (change in crit. soln. temp. per 1 mol. % of added salt) varies with the generalized moment (e/r, where e is the charge and r the radius) of the ions except with Cs. When the Δt values are plotted against values of the generalized moment of the ions, sep. groups of curves are obtained for alk. and alk. earth cations, which indicates that generalized moment values only roughly approximate the characteristics of ions. The results agree with the theory of Semenchenko and Davidovskaya (*C. A.* 29, 7762[1]). O. W. Ayers

Lab. Mineral Synthesis, A-U Inst. Mineral Raw Materials; Moscow Pedagogical Inst.

ASB-SLA METALLURGICAL LITERATURE CLASSIFICATION

COMMON ELEMENTS

OPEN

MATERIALS INDEX

CA

2

PROCESSES AND PROPERTIES INDEX

Effect of admixtures on [illegible] of salt systems. V. K. [illegible] and T. [illegible]. *J. Phys. Chem.* (U.S.S.R.) 10, 133–41 (1940).—Miscibility of TlBr and KNO_3 is detd. by measuring the elec. cond. of the mixt. at rising and falling temps. For the mixts. TlBr 13, KNO_3 87; TlBr 50, KNO_3 50; and TlBr 85, KNO_3 15 mole %, the temps. of complete miscibility are 735°, 800°, and 785° resp. These temps. are lowered by addn. of salts; 1 mol. % of CsCl, NaCl, KCl, LiCl, $BaCl_2$, $SrCl_2$, $CaCl_2$, $MgCl_2$, $BeCl_2$, KI, KBr, and KF lowers the miscibility temp. of the 50:50 mixt. by 0, 33, 34, 50, 60, 66, 78, 86, 115, 13, 32, and 41° resp. This lowering is greater the greater z/r of the added ion; z is its valency and r its radius in crystal lattices. For a given salt the lowering is not proportional to its concn. J. J. Bikerman

ASB.SLA METALLURGICAL LITERATURE CLASSIFICATION

CA

2

Influence of admixtures on the [illegible] of salt systems. V. K. [illegible] and T. I. [illegible] (Inst. Economic Mineralogy, Moscow). Acta Physicochim. U.R.S.S. 20, 759-68(19[illegible]).—See C.A. [illegible] E. M. K.

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

1. IAMZIN, I. I., SHASHKINA, T. I.

2. USSR (600)

4. Chemistry, Analytical

7. New method of qualitative chemical analysis, Priroda 42, no. 3, 1953.

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

SHASHKINA, T. I.

USSR/Chemistry

Card 1/1

Authors : Semechonko, V. K., and Shashkina, T. I.

Title : Effect of the Concentration of Admixtures on the Mutual Solubility of Melted Salts.

Periodical : Zhur. Fiz. Khim. Vol. 28, Ed. 4, 735-744, Apr 1954

Abstract : A study of the effect of admixtures on the mutual solubility of $TlBr$-KNO_3 system, is presented. The author states that the introduction of $NaCl$ into $TlNO_3$+KBr system, verified the ionization of its salt compositions, and the introduction of $BaCl_2$ into the $AgCl$+KNO_3 system, permitted the full blending in the field of partial solubility. Nine references; tables; graphs.

Institution : Institute of Crystallography of the AS of the USSR, and M. V. Lomonosov's State Institute.

Submitted : July 31, 1953

Shashkina, T. I.

MT

Structure and morphological peculiarities of fluorophlogopite and teniolite. I. I. YAMZIN, V. A. TIMOFEEVA, T. I. SHASHKINA, E. N. BELOVA, AND N. V. GLIKI. *Zapiski Vsesoyuz. Mineralog. Obshchestva*, 84 [4] 415-24 (1955).—Two different micas were synthesized, fluorophlogopite, $KMg_3(Si_3AlO_{10})F_2$ (I), and teniolite, $KMg_2Li(Si_4O_{10})F_2$ (II), having the fluorophlogopite structure. The micas were obtained by slow cooling of a melt of the pure oxides and fluorides in stoichiometric proportions. Differential thermal analysis of the melts yielded melting points of 1340° ± 5°C. and 1185° ± 5°C. for I and II, respectively. X-ray measurement of interplane distances showed the same values as in various natural micas of the I type; values of distances a, b, c_0, and c were 5.32, 9.16, 10.03, and 10.2, respectively; the monoclinic angle was 100°. The micas synthesized showed no change in structure when heated from room temperature to 1000°C. from the powder X-ray patterns, in contrast to natural phlogopite. Optical properties measured were n_γ, n_β, and n_α, having values of 1.549, 1.548, and 1.522, respectively, for I and 1.540, 1.540, and 1.513 for II. Birefringence was 0.41 and the angle $2V$ was nearly 0. II was transparent in the visible range above 270 mμ. Morphological characteristics shown reveal the spiral growth of crystals and the presence of screw dislocations. Star formations and stepped "hills" on crystal faces were observed. 12 figures, 22 references. D.T.W.

(4)

Shashkina, V. P.

USSR/Cosmochemistry - Geochemistry. Hydrochemistry. D.

Abs Jour : Ref Zhur - Khimiya, No 9, 1957, 30368

Author : Shashkina, V.P.
Inst : Lvov Geological Society at the University
Title : Chlorophaite from Volynian Basalts.

Orig Pub : Mineralog. sb. L'vovsk. geol. o-va pri un-te, 1956, No 10, 346-352

Abst : Description of chlorophaite which fills the amygdaloidal cavities in basalt of Dolge Pole quarry (Rovenskaya Oblast'). Associated minerals: calcite, zeolites, quartz. Chemical composition (in %): SiO_2 37.60, TiO_2 0.05, Al_2O_3 6.35, Fe_2O_3 11.07, FeO 9.80, MnO 0.06, MgO 14.48, CaO 2.78, Na_2O 0.50, K_2O 0.09, H_2O 4.15, H_2O^- 12.77. Crystallochemical formula:

Card 1/2

USSR/Cosmochemistry - Geochemistry. Hydrochemistry. D.

Abs Jour : Ref Zhur - Khimiya, No 9, 1957, 30368

$(Mg_{1.97}Fe_{0.74}^{2+}Ca_{0.27})_{2.98}(Al_{0.11}Fe_{0.76}^{3+})_{0.87}(OH)_4-$
$-[Si_{3.43}Al_{0.57}O_{10}] \cdot 3.1\ H_2O$

Values calculated for the unit cell:
$b_0 = 9.26$ and $c_0 \sin\beta = 13.91$ kX. The described mineral differs from lime chlorophaites by the increased content of sesquioxides. Roentgenographic and thermal characteristics confirm the intermediate position of chlorophaites and saponites in relation to montmorillonites and chlorites.

Card 2/2

SHASHKINA, V.P.

Zeolites from basalts of Volhynia. Min.sbor. no.12:380-395 '58. (MIRA 13:2)

1. Institut geologii poleznykh iskopayemykh AN USSR, L'vov.
(Volhynia--Zeolite)

SHASHKINA, V.P.

Polygorskites from Volhynian basalts. Min.sbor. no.12:396-405 '58. (MIRA 13:2)

1. Institut geologii poleznykh iskopayemykh AN USSR.
(Volhynia--Polygorskite)

SHASHKINA, V. P., Candidate Geolog-Mineralog Sci (diss) -- "The mineralogy of the basalts of western Volhynia". L'vov, 1959. 18 pp (Min Higher Educ Ukr SSR, L'vov State U im Ivan Franko), 200 copies (KL, No 25, 1959, 129)

LAZARENKO, Ye.K. [Lazarenko, IE.K.]; MATKOVSKIY, O.I. [Matkovs'kyi, O.I.]; VINAR, O.M. [Vynar, O.M.]; SHASHKINA, V.P.; GNATIV, G.M. [Hnativ, H.M.]; POLUBICHKO, B.V., red.; SARANYUK, T.V., tekhred.

[Mineralogy of igneous complexes in western Volhynia] Mineralogiia vyverzhenykh kompleksiv Zakhidnoi Volyni. L'viv, Vyd-vo L'vivs'koho univ., 1960. 508 p. (MIRA 13:9)
(Volhynia--Rocks, Igneous)

SHASHKO, D. I.

PA 15/49T7

USSR/Agronomy
Climate
Moisture

Apr 48

"Agroclimatological Zones and Rayons of Western Siberia and Northeastern Oblasts of Kazakhstan by Humidity," D. I. Shashko, Cand Agr Sci, All-Union Sci-Res Sta of Agr Meteorology, 7 pp

"Dok V-S Ak Selkhoz Nauk" No 4

Divides area into five zones: overmoist, moist, semimoist, semidry, and dry. Discusses characteristics of each zone. Map. Submitted 15 Mar 1947.

[redacted] 15/49T7

SHASHKO, D. I.

"The Division of the USSR into agroclimatic areas to assure vegetation with warmth and moisture"

report presented at the first plenum of the Section for Agricultural Meteorology of VASKhNIL (on tasks and research to be undertaken) 21-23 May 1957 (Meteorologiya i Gidrologiya, Leningrad, No. 8, 1957, pp 72-73)

SHASHKO, Daniil Ivanovich; KOLOSKOV, P.I., prof., doktor geogr. nauk, otv. red.; KAVUN, P.K., red. izd-va; RYLINA, Yu.V., tekhn. red.

[Climatic conditions for farming in central Yakutia; methods for the agricultural evaluation of climate] Klimaticheskie usloviia zemledeliia TSentral'noi IAkutii; s voprosami metodiki sel'skokhoziaistvennoi otsenki klimata. Moskva, Izd-vo Akad. nauk SSSR, 1961. 261 p. (MIRA 14:9)

(Meteorology, Agricultural)

LETUNOV, P.A., doktor sel'khoz. nauk, otv. red.; IVANOVA, Ye.N., doktor sel'khoz. nauk, red.; ROZOV, N.N., kand. geogr. nauk, red.; FRIDLAND, V.M., kand. geol.-miner. nauk, red.; SHASHKO, D.I., doktor geogr. nauk, red.; SHUVALOV, S.A., kand. geol.-miner. nauk, red.; GERASIMOV, I.P., akad. red. kart; MARKOV, V.Ya., red. izd-va; KASHINA, P.S., tekhn. red.; RYLINA, Yu.V., tekhn. red.

[Subdividing the territory of the U.S.S.R. into soil zones; in connection with agricultural use of the land] Pochvenno-geograficheskoe raionirovanie SSSR (v sviazi s sel'sko-khoziaistvennym ispol'zovaniem zemel'). Moskva, Izd-vo Akad. nauk SSSR, 1962. 422 p. (MIRA 15:5)

1. Akademiya nauk SSSR. Sovet po izucheniyu proizvoditel'nykh sil.

(Soils)

ACC NR: AT7007642 (N) SOURCE CODE: UR/0000/66/000/000/0100/0106

AUTHOR: Berezhnoy, Ye. F.; Kobelev, V. V.; Nenarokov, A. F.; Shashko, V. D.

ORG: none

TITLE: Thin film matrix memory with conductive substrate

SOURCE: Vsesoyuznoye soveshchaniye po magnitnym elementam avtomatiki i vychislitel'noy tekhniki. 10th, Kaunas, 1964. Magnitnyye elementy vychislitel'noy tekhniki (Magnetic elements in computer engineering); trudy soveshchaniya, pt. 2. Moscow, Izd-vo Nauka, 1966, 100-106

TOPIC TAGS: computer memory, thin film memory, magnetic film storage, computer output unit

ABSTRACT: A model of a new high-speed, destructive-readout film memory with a 500-nsec cycle time is described. The memory is based on four matrix blocks which have a total capacity of sixty-four 56-bit words. An individual storage element is a vacuum-deposited 1.2 x 2.4 mm magnetic film approximately 1000 Å thick, on a highly-polished duralumin substrate. Each substrate block measures 100 x 100 x 4 mm. Read windings are mounted in the easy direction, write and signal windings in the hard direction. Write current does not exceed 120 ma; erase

Card 1/2

ACC NR: AT7007642

current must be at least 350 ma. A block diagram of the memory and associated units is given and their functions described. Debugging and routine memory checkout schedules are given. Orig. art. has: 5 figures.

[WA-81]
[BD]

SUB CODE: 09/ SUBM DATE: none/ ORIG REF: 001/ OTH REF: 001

Card 2/2

SKIRDOVA, K.M.; SHASHKO, V.D.; LABKOVSKIY, S.S.

Method of finishing chip boards by coating it with polyvinyl chloride films. Plast.massy no.5:47-49 '63. (MIRA 16:6)
(Hardboard) (Plastic films)

SHASHKOV, A. G.

Shashkov, A. G.

"Experimental and Theroretical Investigation of Throttle Equipment and of a Hydraulic Relay of the 'Nozzle-'Gate' Type Operating in Oil." Acad Sci USSR. Inst of Automechanics and Telemechanics. Moscow, 1955 (Dissertation for the degree of Candidate in Technical Sciences)

SO: Knizhnaya letopis' No. 27, 2 July 1955

SHASHKOU, A.G.

Experimental investigation of viscous flow of fluids through valve blocks. Vestsi AN BSSR Ser.fiz.-tekh.nav.no.2:81-89 '56. (MIRA 10:1)

(Fluid mechanics) (Viscosity)

DMITRIYEV, V.N. (Moskva); SHASHKOV, A.G. (Moskva)

Force effect of an air jet on a flapper in pneumatic and hydraulic control devices of the "nozzle-flapper" type. Avtom. i. telem. 17 no.6:559-569 Je '56. (MLRA 9:10)

(Pneumatic control) (Nozzles) (Air jets)

SHASHKOV, A.G. (Minsk).

Theory of an oil-operated "nozzle-flapper" type control device [with English summary in insert]. Avt.i telem. 17 no.11:1000-1019 N '56. (MLRA 9:12)

(Automatic control) (Nozzles)

SHASHKOV, A.G.

SOV/124-58-11-12705

Translation from: Referativnyy zhurnal, Mekhanika, 1958, Nr 11, p 111 (USSR)

AUTHOR: ~~Shashkov~~ [Shashkow, A. H.]

TITLE: The Flow of a Viscous Fluid Through a Ball Valve (Techeniye vyazkoy zhidkosti cherez sharikovyy klapan) in Belorussian

PERIODICAL: Izv. AN BSSR. Ser. fiz.-tekhn. n., 1957, Nr 2, pp 29-36

ABSTRACT: An experimental investigation is described on the flow of transformer oil through a constant slot between the ball and the seat of a ball valve. An experimental formula has been fitted to an experimentally determined curve for the relationship between the mass-flow coefficient and the Reynolds number.

Authors' résumé

Card 1/1

SHASHKOV, A.G.

Investigating a direct-current circuit containing thermistor. Trudy Inst.energ.AN BSSR no.3:184-198 '57. (MIRA 12:1)
(Electric circuits) (Thermistors)

SHASHKOV, A.G.; KASPEROVICH, A.S.

Determining the heat capacity of thermistors. Inzh.-fiz.zhur. no.1:103-104 Ja '58. (MIRA 11:7)

1. Institut energetiki AN BSSSR, g.Minsk.
(Thermistors--Testing)

67206

SOV/58-59-7-15973

9.2100

Translation from: Referativnyy Zhurnal Fizika, 1959, Nr 7, p 191, (USSR)

AUTHOR: Shashkov, A.G.

TITLE: Polarized Thermistor

PERIODICAL: Tr. In-ta energ. AS BSSR, 1958, Nr 6, pp 216 - 221

ABSTRACT: The author discusses the properties of a thermistor whose mode of operation is determined by a certain point on the descending branch of its volt-ampere characteristic, which is brought about by means of DC. It is shown that when a supplementary small-magnitude alternating current with a determinate frequency is passed through the polarized thermistor, the variable component of the voltage executes a certain phase shift with respect to it, similar to that which takes place in the case of inductance. The impedance increment of the thermistor is determined under the condition that its heat-transfer coefficient and the temperature of the surrounding medium remain constant. Expressions are derived for the operating and incremental impedance of the polarized thermistor. It is shown that there exists a certain critical frequency of

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SOV/58-59-7-15973

Polarized Thermistor

alternating current at which the current executes a 90° phase shift with respect to the voltage. An expression is derived for free oscillations in a circuit consisting of capacitance and the polarized thermistor. It is noted that the application of such circuits in electronic amplifiers makes it possible to construct small-size, very low frequency oscillators.

G.K. Nechayev

Card 2/2

9(4) PHASE I BOOK EXPLOITATION SOV/1973

Voloshin, I.F., A.S. Kasperovich, and A.G. Shashkov

Poluprovodnikovyye termosoprotivleniya (Thermistors) Minsk, Izd-vo AN BSSR, 1959. 196 p. Errata slip inserted. 4,000 copies printed.

Sponsoring Agency: Akademiya nauk BSSR. Institut energetiki.

Ed.: N.Ya. Karachentseva, Candidate of Technical Sciences; Ed. of Publishing House; L. Mariks; Tech. Ed.: I. Volokhanovich.

PURPOSE: This book is intended for engineers, designers, and scientists in transistor electronics.

COVERAGE: This book summarizes the results of several years of scientific research and investigations carried out at the Electrical Engineering Laboratory of the Institut energetiki Akademii nauk BSSR (Electric Power Institute of the BSSR Academy of Sciences). The authors also used material from Soviet and non-Soviet literature on the theory and application of thermistors in various

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apparatus and circuits. They did not include a-c circuits with thermistors because they state that this problem still has not been worked out. I.F. Voloshin wrote the introduction, Chapters II, III, IV, and also Sections 9, 10, 11, 12, 13 of Chapter VI. A.S. Kasperovich wrote Ch. I, Sections 7, 8, 9, 10 of Ch. V and Sections 1, 2, 5, 6 of Chapter VI. A.G. Shashkov wrote Sections 1,2,3,4,5,6 of Ch. V. and 3 and 4 of Ch. VI. The authors thank Professor L.B. Geyler, Doctor of Technical Sciences, and Candidate of Technical Sciences N.Ya. Karachentseva. There are 53 references: 45 Soviet, 7 English and 1 German.

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Thermistors SOV/1973

Ch. III. Static Volt-Ampere Characteristics of Thermistors 40

Ch. IV. Basic D-C Circuits With Thermistors 66

Ch. V. Dynamic Characteristics of Circuits with Thermistors 95

Ch. VI. Examples of the Application of Thermistors 142

Bibliography

AVAILABLE: Library of Congress

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Card 3/3

SHASHKOV, A.G. (Minsk).

Transients in d.c. circuits consisting of a thermistor and ohmic resister [with summary in English]. Avtom. i telem. 20 no.1:23-30 Ja '59. (MIRA 12:1)

(Electric circuits)

NAUMOVICH, V.M. [Navumovich, V.M.], doktor tekhn.nauk; SHASHKOV, A.G. [Shashkou, A.H.], kand.tekhn.nauk; KRYLOVICH, V.I.

Aleksei Vasil'evich Lykov; on his 50th birthday. Vesti AN BSSR. Ser.fiz.-tekh.nav. no.3:120-123 '60. (MIRA 13:9)
(Lykov Aleksei Vasil'evich, 1910-)

S/170/60/003/03/22/034
B014/B007

AUTHOR: Shashkov, A. G.

TITLE: The Accuracy of Temperature Measurements by Means of Thermistors

PERIODICAL: Inzhenerno-fizicheskiy zhurnal, 1960, Vol. 3, No. 3, pp. 123-125

TEXT: By way of introduction, the author refers to the fact that when measuring temperature by means of thermistors, the temperature of the thermistor, in the case of thermal equilibrium, is higher than that of the surrounding medium, which is due to measurement current, which, though being low, is nevertheless present. He mentions the two analytical expressions (1) and (2), which describe the connection between the temperature of the thermistor and that of the surrounding medium as well as the deviation of the coefficient of heat exchange. These formulas were derived with the help of the scheme of action shown in Fig. 1, with restriction to static errors. From these two expressions formula (3) is derived for the relative error of temperature measurement, and is transformed into

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The Accuracy of Temperature Measurements by Means of Thermistors

S/170/60/003/03/22/034
B014/B007

a form that is suited for calculation. There are 1 figure and 1 Soviet reference.

ASSOCIATION: Institut energetiki AN BSSR, g. Minsk (Institute of Power Engineering of the AS BSSR, City of Minsk)

Card 2/2

S/170/60/003/07/03/011
B012/B054

AUTHORS: Shashkov, A. G., Kasperovich, A. S.

TITLE: An Oscillation Circuit With a Thermistor

PERIODICAL: Inzhenerno-fizicheskiy zhurnal, 1960, Vol. 3, No. 7, pp. 37 - 42

TEXT: First the authors show that oscillations may occur in a closed circuit of a polarized thermistor and a capacitance under certain conditions, i.e. sinusoidal undamped oscillations whose frequency depends on the thermal relation between thermistor and surrounding medium and on the thermistor parameters. For investigating the conditions under which such oscillations occur and clarifying their character, the authors study the processes going on in the circuit shown in Fig. 2. They investigate the processes in the current circuit $R_T c$ which consists of the thermistor R_T, the key K_1, the capacitance c, and the oscilloscope loop. They determine the condition on the basis of which it is possible to find the amount of capacitance with the action of which

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undamped oscillations will occur. To obtain oscillation circuits $R_T c$ with a relatively small capacitance c it is necessary to dispose of thermistors in which a small time constant (up to 1 second) is coupled with a high rated resistance. It is shown that the serially produced thermistors generally do not fulfill this condition. It is pointed out that therefore it is convenient to change the thermistor time constant artificially. This may be attained by creating favorable conditions for heat emission from the thermistor. To check the results obtained, the current oscillations were recorded by the oscilloscope. A comparison of calculated and measured results showed good agreement. Fig. 3 shows the static and dynamic external characteristics of the thermistor, Fig. 4 the dynamic characteristic on an enlarged scale. There are 4 figures.

ASSOCIATION: Institut energetiki AN BSSR, g. Minsk (Institute of Power Engineering of the AS BSSR, Minsk)

25559
S/170/61/004/008/009/016
B116/B201

9.4320

AUTHOR: Shashkov, A. G.

TITLE: Determination of the thermal time constant of a thermistor

PERIODICAL: Inzhenerno-fizicheskiy zhurnal, v. 4, no. 8, 1961, 87 - 92

TEXT: A method of determining the thermal time constants τ of a polarized thermistor is offered here. The method is based upon the use of amplitude-phase relations (Ref. 2: Shashkov A. G. Trudy Instituta energetiki AN BSSR, vyp. 6, M., 1958)

$$\left.\begin{aligned} \operatorname{mod} z(j\omega) &= \frac{\Delta \overline{U}}{\Delta \overline{I}} = R_{\tau 0}\left[\frac{(\omega\tau)^2+(1-D)^2}{(\omega\tau)^2+(1+D)^2}\right]^{1/2} \\ \arg z(j\omega) &= \varphi = \operatorname{arctg}\frac{2D\omega\tau}{(\omega\tau)^2+(1-D)^2} \end{aligned}\right\}, \qquad (1)$$

which can be easily calculated from the dynamic volt-ampere characteristics of the thermistor. $\Delta\overline{U}$ and $\Delta\overline{I}$ are voltage and current amplitudes,

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respectively; D is the dynamic factor (Ref. 2). In linear approximation, the dynamic volt-ampere characteristic of a polarized thermistor is an orthogonal combination of two sinusoidal quantities: (ΔI and ΔU_T):

$$\Delta I = \Delta \bar{I} \cos \omega t$$
$$\Delta U_T = \Delta \bar{U}_T \cos (\omega t + \varphi) \quad (3)$$

The equation of the dynamic volt-ampere characteristic of the polarized thermistor is obtained therefrom:

$$\frac{\Delta U_T^2}{\Delta \bar{U}^{2}} + \frac{\Delta I^2}{\Delta \bar{I}^{2}} - 2 \frac{\Delta U_T \; \Delta I}{\Delta \bar{U}_T \; \Delta \bar{I}} \cos \varphi = \sin^2 \varphi \quad (4)$$

In the general form, this is the equation of an ellipse, whose axes are inclined by the angle α toward the axes of the I and U coordinates. The equation

$$\alpha = \frac{1}{2} \arctan \left(2 \frac{\Delta \bar{I} \; \Delta \bar{U}}{\Delta \bar{I}^{2} - \Delta \bar{U}^{2}} \cos \varphi \right). \quad (7)$$

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is derived for α. In the general case, α is determined by the frequency and the amplitude of the superposed current. If τ and D are known, the dynamic volt-ampere characteristic can be set up (Fig. 1), using

$$\left.\begin{aligned} \Delta U_{\tau} &= z(j\omega)\,\Delta\bar{I}\cos\omega t = \Delta\bar{U}\cos(\omega t+\varphi) \\ \Delta\bar{U} &= R_{\tau 0}\left[\frac{(\omega\tau)^2+(1-D)^2}{(\omega\tau)^2+(1+D)^2}\right]^{1/2}\Delta I \\ \varphi &= \operatorname{arctg}\frac{2D\omega\tau}{(\omega\tau)^2+(1-D)^2} \end{aligned}\right\} \quad (2)$$

and (7). If, however, the characteristic is known, τ and D can be determined from it. In the general case, the solution of (1) is too cumbersome. If, however, $\omega = \omega_k^*$ is assumed, one obtains

$$\tau = \frac{1}{\omega_{\kappa}}\left[2\left(\frac{\Delta\bar{U}}{\Delta\bar{I}}\right)R_{\tau 0}\right]\Big/\left[R_{\tau 0}^2-\left(\frac{\Delta\bar{U}}{\Delta\bar{I}}\right)^2\right]; \quad (10)$$

$$D = \left[1+\frac{1}{R_{\tau 0}^2}\left(\frac{\Delta\bar{U}}{\Delta\bar{I}}\right)^2\right]\Big/\left[1-\frac{1}{R_{\tau 0}^2}\left(\frac{\Delta\bar{U}}{\Delta\bar{I}}\right)^2\right]. \quad (11)$$

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Determination of the thermal time constant ... S/170/61/004/006/009/016
B116/B201

where ω_k is the critical frequency at which the phase angle between current and voltage amounts to 90^o. τ and D can also be determined even if the characteristic cannot be taken. An $R_T C$ resonant circuit is constructed (Ref. 3: Shashkov A. G., Kasperovich A. S., IFZh no. 7, 1960), in which the capacitance, C, is chosen such as to allow undamped oscillations to be excited in the circuit. Amplitude and frequency of current fluctuations can be determined from the oscillogram of these oscillations. $\Delta \bar{U} = \Delta \bar{I} / \omega_k C$ is then determined and τ and D are calculated from (10) and (11). There are 2 figures and 4 Soviet-bloc references.

ASSOCIATION: Institut energetiki AN BSSR, g. Minsk (Institute of Power Engineering, AS BSSR, Minsk)

SUBMITTED: April 25, 1961

Card 4/6

SHASHKOV, A.G.; FRAYMAN, Yu.Ye.; VERZHINSKAYA, A.B.; KATIBNIKOVA, E.V.

Methods for determining the thermophysical characteristics of materials at room and medium temperatures. Inzh.-fiz. zhur. 4 no.9:111-119 S '61. (MIRA 14:8)

1. Institut energetiki AN BSSR, g. Minsk.
(Materials--Thermal properties)
(Thermoelectricity)

SHASHKOV, A.G.; YAS'KO, O.I.; SERGEYEV, V.L.; YUREVICH, F.B.

Electric arc heaters for obtaining high-temperature streams.
Inzh.-fiz.zhur. 5 no.1:115-129 Ja '62. (MIRA 15:3)
(Electric arc) (Electric heating)

9,2586
9,4370

S/170/62/005/011/003/008
B104/B102

AUTHOR: Shashkov, A. G.

TITLE: Self-oscillations in thermistor circuits

PERIODICAL: Inzhenerno-fizicheskiy zhurnal, v. 5, no. 11, 1962, 64 - 73

TEXT: A thermistor - capacitor oscillatory circuit (Fig. 1) is studied. The nonlinear equations for the heating of the thermistor, for the voltage drop at the thermistor, and for the current passing through the thermistor are written in linearized form

$$\frac{d\Delta R_{\tau}}{dt} + \frac{1-D}{\tau}\Delta R = -\frac{2D}{\tau I_{\tau 0}}\Delta U_{\tau}, \qquad (1a)$$

$$\Delta R_{\tau} = -\beta_0 R_{\tau 0}\Delta T, \quad \beta_0 = \frac{B}{T_0^2},$$

$$D = \beta_0 P_{\tau 0}\frac{1}{k},$$

$$\frac{d\Delta U_{\tau}}{dt} + \frac{1}{C}\left(\frac{1}{R_{\tau 0}} + \frac{1}{R_1}\right)\Delta U_{\tau} = \frac{I_{\tau 0}}{CR_{\tau 0}}\Delta R_{\tau}. \qquad (2a)$$

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which give $$\frac{d^2\Delta U_\tau}{dt^2}+\left[\frac{1}{C}\left(\frac{1}{R_{\tau 0}}+\frac{1}{R_1}\right)+\frac{1-D}{\tau}\right]\frac{d\Delta U_\tau}{dt}+$$
$$+\frac{1}{\tau C}\left[\left(\frac{1}{R_{\tau 0}}+\frac{1}{R_1}\right)+\left(\frac{1}{R_{\tau 0}}-\frac{1}{R_1}\right)D\right]\Delta U_\tau=0. \quad (4).$$

From this equation the stability criterion

$$\frac{1}{C}\left(\frac{1}{R_{\tau 0}}+\frac{1}{R_1}\right)+\frac{1-D}{\tau}>0,$$
$$\frac{1}{R_{\tau 0}}+\frac{1}{R_1}+\left(\frac{1}{R_{\tau 0}}-\frac{1}{R_1}\right)D>0. \quad (5)$$

is derived as well as the condition

$$\frac{1}{C}\left(\frac{1}{R_{\tau 0}}+\frac{1}{R_1}\right)+\frac{1-D}{\tau}=0, \quad (6)$$

for self-excitation , and formula

$$C_\kappa=\frac{\tau}{(D-1)R_{\tau 0}}\left(1+\frac{R_{\tau 0}}{R_1}\right). \quad (7)$$

for the capacitance C at which the oscillatory circuit is excited harmonically. C_k has real values only if $D > 1$, i.e. if the operating point lies on the descending branch of the static volt-ampere characteristics. For this case the self-oscillation frequency is

$$\omega_K = \sqrt{\frac{1}{\tau C}\left(\frac{D+1}{R_{T0}} - \frac{D-1}{R_1}\right)} = \sqrt{\frac{1}{\tau C}\left[\left(\frac{1}{R_{T0}} - \frac{1}{R_1}\right)D + \left(\frac{1}{R_{T0}} + \frac{1}{R_1}\right)\right]}, \quad (8)$$

from which it follows that ω increases with D. The dynamic volt-ampere characteristics is described by

$$\frac{\Delta U_T^2}{\Delta I_m^2}\omega_K^2 C_K^2 + \frac{\Delta I_T^2}{\Delta I_m^2} = 1, \quad (9).$$

On the basis of these equations it is shown that the energy stored in the circuit remains constant and is equal to the sum of the energies in C and L, corrected with the factor $R_{T\theta}/(R_{T\theta} - R_T)$. Furthermore, the sum of the squares of the energy accumulated in the circuit and the energy dissipated by the thermistor, multiplied by the dimensionless quantity $(\omega_k \tau)^2$, remains constant during the steady-state oscillation. The relaxation- type self-oscillations were studied experimentally by the circuit shown in the figure. The dynamic volt-ampere characteristics and the static volt-ampere characteristics

(Fig. 2) were taken. The types of oscillations occurring after the circuit has been switched on are discussed. There are 3 figures.

ASSOCIATION: Energeticheskiy institut AN BSSR, g. Minsk (Power Engineering Institute AS BSSR, Minsk)

SUBMITTED: May 26, 1962

Fig. 1. Circuit diagram

Fig. 2. Static and dynamic volt-ampere characteristics.
Legend: KMT-11 (KMT-11) thermistor, R_{20} = 12 kiloohms, C = 90 microfarads, R = 8 kiloohms, θ = 20°C, γ = arc tan R, γ_1 = arc tan R_1.

KASPEROVICH, A.S.; SHASHKOV, A.G.

Effect of the parameters and conditions of heat transfer on the oscillation frequency in a circuit containing a thermistor. Inzh.-fiz. zhur. 5 no.7:65-69 Jl '62. (MIRA 15:7)

1. Energeticheskiy institut AN BSSR, Minsk.
(Heat—Transmission) (Electric circuits) (Thermistors)

SHASHKOV, Anatoliy Gerasimovich; TKACHEVA, T., red. izd-va; SVIRIDOV, V., tekhn. red.

[Oscillations in networks containing thermistors] Kolebaniia v tsepiakh s ermistorami. Minsk, Izd-vo AN Bel.SSR, 1963. 146 p. (MIRA 16:8)

(Electric networks) (Thermistors)

LYKOV, A.V., akademik, red.; SMOL'SKIY, B.M., prof., red.; SHASHKOV, A.G., kand. tekhn. nauk, red.; PLYAT, SH.N., kand. tekhn. nauk, red.; POMERANTSEV, A.A., prof., red.; ROMANENKO, P.N., prof., red.; PEREL'MAN, T.L., kand. fiz.-mat. nauk, red.; YAROSHEVICH, O.I., kand. tekhn. nauk, red.; BEL'ZATSKAYA, L., red. izd.-va; TIMOFEYEV, L., red.izd-va; SIDERKO, N., tekhn. red.; VOLOKHANOVICH, I., tekhn. red.

[Heat and mass transfer] Teplo i massoperenos. Minsk, Izd-vo AN BSSR. Vol.1.[Thermophysical characteristics of materials and methods for their determination] Teplofizicheskie kharakteristiki materialov i metody opredeleniia. Pod obshchei red. A.V. Lykova i B.M.Smol'skogo. 1962. 216 p. Vol.5. [Methods for calculating and modeling heat-and mass-transfer processes] Metody rascheta i modelirovaniia protsessov teplo- i massoobmena. 1963. 471 p. (MIRA 16:10)

1. Vsesoyuznoye soveshchaniye po teplo- i massoobmenu. 1st, Minsk, 1961. Akademiya nauk Bel.SSR (for Lykov).
(Materials--Thermodynamic properties)
(Heat--Transmission) (Mass transfer)

SHASHKOV, A.G.

Design of thermeanemometer thermistor circuits. Inzh.-fiz. zhur. 6 no.9:18-26 S '63. (MIRA 16:8)

1. Institut teplo- i massoobmena AN BSSR, Minsk.

BULYGA, A.V.; SHASHKOV, A.G.

Semiconductor vacuum gauge. Inzh.-fiz. zhur. no.12:95-100 D '63. (MIRA 17:2)

1. Institut teplo- i massoobmena AN BSSR, Minsk.

L 10394-65 EPR ASD(d)/ESD(c)/AFMDC/AFWL/AEDC(b)/ASD(p)-3/SSD/AS(mp)-2/
AFTC(a)/AEDC(a)/ASD(f)-2/ESD(t)/RAEM(t) WW

ACCESSION NR: AP4047445 S/0170/64/000/009/0083/0087

AUTHOR: Shashkov, A. G.

TITLE: Block diagrams for measuring flow parameters by means of thermistors B

SOURCE: Inzhenerno-fizicheskiy zhurnal, no. 9, 1964, 83-87

TOPIC TAGS: turbulent flow, thermistor, dispersion relation, flow probe, turbulent fluctuation, temperature measurement

ABSTRACT: Block diagrams are presented for measuring velocity, temperature, and their fluctuations in a turbulent stream. A generalized block diagram for the flow velocity is obtained first by relating the dispersion coefficient of the thermistor

$$k(v) = af(v),$$

where

$$f(v) = F\frac{\lambda_f}{d}\left[\frac{1}{v}0{,}42\,\mathrm{Pr}^{0.3} + 0{,}57\,\mathrm{Pr}^{0.5}\left(\frac{d}{\nu_f}\right)^{0.5}(\sqrt{v})^{-1}\right].$$

For small turbulent fluctuations (~ 10 percent) k(v) is represented as the sum of

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ACCESSION NR: AP4047445

a mean $\bar{k}$ plus a fluctuating component Δk. Unlike in case one (velocity block diagram), the fluctuating case has as its readout the mean velocity $\bar{v}$. To measure the temperature fluctuations, the dispersion coefficient is represented (approximately) by

$$k(v,\theta) \simeq \bar{k} + \beta_{T0}R_{T0}\frac{m}{2}\frac{A_0}{\lambda_0 + m\theta_{f0}}\Delta\theta + \beta_{T0}R_{T0}\frac{m}{2}\frac{A_0}{\lambda_0 + m\theta_{f0}}\Delta T + \beta_{T0}R_{T0}B\frac{1}{2\sqrt{\bar{v}}}\Delta v,$$

where

$$\bar{k} = k(\bar{v},\bar{\theta});\ \Delta\theta = \theta - \bar{\theta};\ \theta_{f0} = \frac{1}{2}(T_0 + \theta_0);\ \lambda_f = \lambda_0 + m\theta_{f0};$$

$$A_0 = 0{,}42\frac{F}{\beta_{T0}R_{T0}d}\mathrm{Pr}^{0.3}(\lambda_0 + m\theta_{f0}).$$

This expression is then used in a third block diagram to study the effect of temperature on the thermophysical nature of the flow. The energy balance for a thermistor is given through the expression

L 10394-65
ACCESSION NR: AP4047445

which is then found to agree very well with experimental results. Orig. art. has: 6 formulas and 2 figures.

ASSOCIATION: Institut teplo-i massoobmena AN BSSR g. Minsk (Institute of Heat and Mass Transfer, AN BSSR)

SUBMITTED: 03Apr64 ENCL: 00

SUB CODE: ME, TD NO REF SOV: 011 OTHER: 002

Card 3/3

LYKOV, A. V.; VASIL'YEV, L. L.; SHASHKOV, A. G.

"A method for simultaneous determination of all thermal properties of bad heat conductors over the temperature range 80° to 500°K."

report submitted but not accepted for 3rd Symp on Thermophysical Properties, Lafayette, Ind, 22-26 Mar 65.

Heat & Mass Transfer Inst, AS BSSR, Minsk.

VERZHINSKAYA, A. B.; SHASHKOV, A. G.

"Method and instrument for measuring heat conductivity and thermal diffusivity."

paper submitted but not accepted for 3rdSymp on Thermophysical Properties, Lafayette, Ind, 22-26 Mar 65.

Heat & Mass Transfer Inst, AS BSSR, Minsk.

LYKOV, A. V.; VASIL'YEV, L. L.; SHASHKOV, A. G.

"A method for simultaneous determination of all thermal properties of poor heat conductors over the temperature range 80 to 500°K."

report submitted for 3rd Symp on Thermophysical Properties, Purdue Univ, Lafayette, Ind., 22-25 Mar 65.

SHASHKOV, A. G.

"The construction of thermoanemometric circuits and the possibilities for using thermistors in them."

report submitted for 2nd All-Union Conf on Heat & Mass Transfer, Minsk, 4-12 May 1964.

Inst of Heat & Mass Transfer, AS BSSR.

SHASHKOV, A.G.

Block diagrams for measuring flow parameters with the aid of thermistors. Inzh.-fiz. zhur. 7 no.9:83-87 S '64. (MIRA 17:12)

1. Institut teplo- i massoobmena AN Belorusskoy SSR, Minsk.

L 25037-66 EPF(n)-2/EWP(j)/EWT(1)/EWT(m)/ETC(m)-6/T/EWA(1) IJP(c) RM/WW

ACC NR: AP6010494 SOURCE CODE: UR/0201/65/000/003/0049/0054

61
B

AUTHORS: Shashkov, A. G.; Abramenko, T. N.

ORG: none

TITLE: Concerning the calculation of the thermal conductivity of binary gas mixtures

SOURCE: AN BSSR. Vestsi. Seryya fizika-tekhnichnykh navuk, no. 3, 1965, 49-54

TOPIC TAGS: thermal conduction, gas kinetics, thermodynamic calculation

ABSTRACT: The authors compare the calculated values of the thermal conductivity, calculated by means of formulas published by J. O. Hirschfelder et al. (Molecular Theory of Gases and Liquids, Wiley, 1954) and by N. V. Tsederberg (Teploprovodnost' gazov i zhidkostey [Thermal conductivity of gases and liquids] Gosenergoizdat, 1963), with results of measurements reported by H. Geier and K. Schafer (Allgemeine Warmetechnik, v. 10, no. 4, 1961), and A. Vasil'yeva

L 25037-66

ACC NR: AP6010494

(Wassiljewa, Phys. Zeits. v. 5, 22, 1904). Experimental data were used on the thermal conductivity of the mixtures $CO-CO_2$, N_2-CO, and NH_3-N_2 at the different temperatures, and for the mixture H_2-O_2 at 295K. It is concluded that the formula derived by Vasil'yeva gives better results than the formula of Hirschfelder et al., which does not give satisfactory results at all in the case of a mixture of a polar and nonpolar gas. The values of the constants in the Vasil'yeva formula are calculated. From these constants and from the coefficients of thermal conductivity it is possible to use the Vasil'yeva formula to determine the concentrations of the components in the mixture from its thermal conductivity. Orig. art. has: 2 figures, 5 formulas, and 1 table.

SUB CODE: 20/ ORIG REF: 003/ OTH REF: 003/ SUBM DATE: none

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L 37158-66 EWT(1)/EWT(m)/EWP(j) IJP(c) WW/JW/RM

ACC NR: AP6017284 SOURCE CODE: UR/0201/65/000/004/0025/0028

AUTHOR: Shashkov, A. G.; Abramenko, T. N.

ORG: none

TITLE: Concerning the calculation of thermal conductivity of binary gas mixtures. II.

SOURCE: AN BSSR. Vestsi. Seryya fizika-tekhnichnykh navuk, no. 4, 1965, 25-28

TOPIC TAGS: gas kinetics, thermal conduction, thermodynamic calculation

ABSTRACT: Although not stated specifically in the article, it is assumed that part I was published in the same source, no. 3, 1965. In view of the complexity of the rigorous thermal-conductivity formulas based on the rigorous kinetic theory of gas mixtures, the authors present simple approximate formulas, based on the assumption that the thermal conductivity of a mixture of polyatomic gases can be represented in the form of a sum of two parts, one characterizing the transport of translational kinetic energy by collision, and the other the diffusion transport of internal energy. Approximate formulas are written for each of the components. Formulas are also presented for the thermal conductivities of a mixture containing a polar component and for a polar gas. The thermal conductivities of a number of mixtures (CO-CO_2, H_2-CO_2, H_3-CO_2, CH_4-air, NH_3-CO, NH_3-C_2H_4, Xe-He, Xe-Kr, and Xe-Ar) were calculated on the basis of these formulas and found to be in satisfactory agreement with the experimental data cited in various references. Orig. art. has: 1 figure and 10 formulas.

SUB CODE: 20/ SUBM DATE: 00/ ORIG REF: 003/ OTH REF: 006

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L 36269-66

ACC NR: AP6017285 SOURCE CODE: UR/0201/65/000/004/0039/0046

AUTHOR: Rutskiy, I. N.; San'ko, Yu. P.; Shashkov, A. G.

ORG: none

TITLE: Thermistor thermoanemometer

SOURCE: AN BSSR. Vestsi. Seryya fizika-tekhnichnykh navuk, no. 4, 1965, 39-46

TOPIC TAGS: thermistor, anemometer, resistance bridge, flow measurement, temperature measurement

ABSTRACT: The authors describe a semiconductor instrument (Fig. 1) in which thermistors are used to measure currents of air having a relatively small slowly-varying velocity. The instrument is based on the use of a bridge circuit with feedback which automatically compensates for the change of the resistance of a thermistor connected in one of the arms. The instrument can be used to measure temperature between 0 and 50C and to measure air stream velocity in two ranges, 0 - 4 and 0 - 20 m/sec. The theory of the instrument is described in detail and the electrical and air dynamic formulas involved in the theory are derived. The measurement error does not exceed 5% of the air stream velocity and 0.5C. Orig. art. has: 4 figures and 12 formulas.

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ACC NR: AP6017285

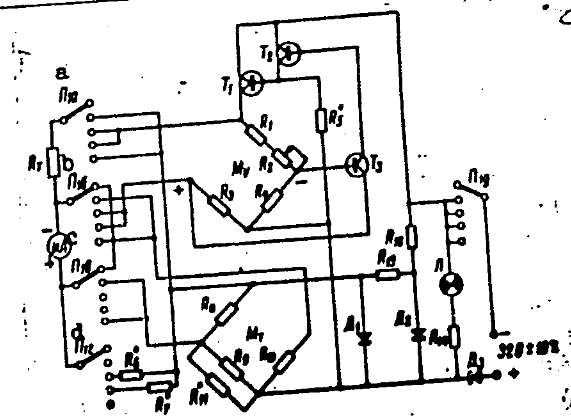

Fig. 1. Diagram of instrument. Switch positions: a - off, b and e - temperature measurement, c - velocity measurement, 0 - 4 m/sec, d - velocity measurement, 0 - 20 m/sec.

SUB CODE: 09/ 20/ SUBM DATE: 00/ ORIG REF: 011/ OTH REF: 001

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