PANIN, V. Ye.

18(7) PHASE I BOOK EXPLOITATION SOV/3355

Akademiya nauk SSSR. Institut metallurgii. Mauchnyy sovet po problemam zharoprochnykh splavov

Issledovaniya po zharoprochnym splavam, t. IV (Studies on Heat-resistant Alloys, vol. 4), Moscow, Izd-vo AN SSSR, 1959. 400 p. Errata slip inserted. 2,200 copies printed.

Ed. of Publishing House: V. A. Klimov; Tech. Ed.: A. P. Guseva; Editorial Board: I. P. Bardin, Academician; G. V. Kurdyumov, Academician; N. V. Agayev; Corresponding Member, USSR Academy of Sciences; I. A. Oding, I. M. Pavlov, and I. F. Zudin, Candidate of Technical Sciences.

PURPOSE: This book is intended for metallurgists concerned with the structural metallurgy of alloys.

COVERAGE: This is a collection of specialized studies of various problems in the structural metallurgy of heat-resistant alloys. Some are concerned with theoretical principles, some with descriptions of new equipment and methods, others with properties of specific materials. Various phenomena occurring under specified conditions are studied and reported on. For details, see Table of Contents. The articles are accompanied by a number of references, both Soviet and non-Soviet.

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3419²
S/139/61/000/006/011/023
E021/E406

K.1220

AUTHORS: Yelsukova, T.F., Panin, V.Ye.

TITLE: The equivalence of the influence of temperature and the deformation rate on the resistance to deformation in the straining of copper

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy. Fizika. no.6, 1961, 81-86

TEXT: The aim of the work was to determine the energy of activation of deformation U of copper under tensile conditions. Wire samples of 0.5 mm diameter and 50 mm working length, made from electrolytic copper M1, were used. Strain rates used were 0.135%/min, 1.65%/min and 23.2%/min and the temperature range was 130 to 230°C. Special experiments were carried out to prove that the cold-worked samples showed no recovery up to 230°C. Specimens were tested in the annealed state and after cold working at room temperature to 24%. Curves of true stress against strain were drawn for the different conditions. From the results, the energy of activation was calculated and found to be 29.9 kcal/mol compared with 27.7 kcal/mol found under conditions of

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The equivalence of the influence ...

compression (Ref.8: V.F.Sukhovarov. Izv. vyzov. MVO SSSR, Fizika, v.5, 1959). The value of the energy of activation was found not to depend on whether the tests conditions allowed the removal of the preliminary cold work in the course of the secondary deformation or not. The values of the energy of activation for both tensile and compression conditions are close to the value for the energy of activation for migration of vacancies in copper. There are 3 figures and 30 references: 9 Soviet-bloc and 21 non-Soviet-bloc. The four most recent references to English language publications read as follows: Ref.16: T. Broom, R. Ham. Vacancies and other point defects in metals and alloys, L. 1958; Ref.25: G.B.Craig, B. Chalmers. Canad. J. Phys. v.35, no.1, 1957, 38-47; Ref.28: O.D.Sherby, J.L.Lytton, J.E.Dorn. Acta met., v.5, no.4, 1957; Ref.29: P.R.Landon, J.L.Lytton, L.A.Sheppard and J.E.Dorn. Trans. ASM, v.51, 1959, 900.

ASSOCIATION: Sibirskiy fiziko-tekhnicheskiy institut pri Tomskom gosuniversitete imeni V.V.Kuybysheva
(The Siberian Physicotechnical Institute of Tomsk University imeni V.V.Kuybyshev)

SUBMITTED: September 17, 1960

S/126/61/012/006/023/023
E193/E383

AUTHORS: Panin, V.Ye., Kudryavtseva, L.A., Sidorova, T.S. and Bushnev, L.S.

TITLE: Intergranular internal adsorption in Cu-Al solid solutions during quenching from elevated temperatures

PERIODICAL: Fizika metallov i metallovedeniye, v. 12, no. 6, 1961, 927 - 928

TEXT: Since solubility of Al in Cu above 565 °C decreases with increasing temperature, it was postulated by V.I. Arkharov (Ref. 1 - Trudy IFM AN SSSR, no.23, 1960, p.87) that internal intergranular adsorption of Al may take place in concentrated Cu-Al solid solutions at sufficiently high temperatures, this phenomenon being associated with the influence of a so-called "pre-precipitation" factor [Abstracter's note: "pre-precipitation" is used instead of the term "preparation to precipitation", which is the literal translation of the term used in the original]. To check this hypothesis, the present authors compared internal friction, etching

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S/126/61/012/006/023/023
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Intergranular internal adsorption...

characteristics, microhardness, lattice parameter and electrical resistance of Cu-Al alloys with 14.3 and 14.9 at.% Al, water-quenched from 900 °C or annealed (i.e. slowly cooled from high temperatures). The existence of granular adsorption was clearly indicated by the results of internal-friction measurements reproduced in a figure, where

Q^{-1} is plotted against the test temperature of Cu + 14.3 at.% Al (broken curve) and Cu + 14.9 at.% Al (continuous curve) alloys, Curves 1 and 2 relating to annealed, Curves 1' and 2' to quenched specimens. The sharp decrease in the magnitude of the internal-friction peak of quenched alloys is obviously due to increased concentration of Al atoms at the grain boundaries. This conclusion was confirmed by the results of other tests. Thus, whereas there was no difficulty in revealing the grain boundaries of annealed specimens by etching in concentrated HNO_3, the grain boundaries in quenched specimens

S/126/61/012/006/023/023

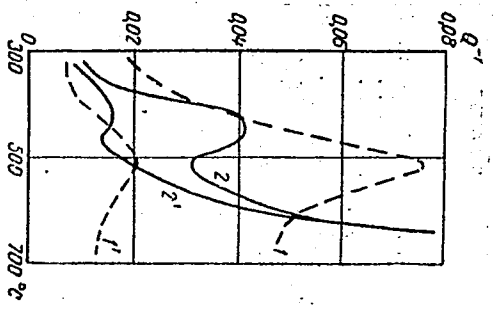
Intergranular internal adsorption ... E193/E383

There are 1 figure and 8 Soviet-bloc references.

ASSOCIATION: Sibirskiy fiziko-tekhnicheskiy institut
(Siberian Physicotechnical Institute)

SUBMITTED: August 5, 1961

Figure:



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PANIN, V.Ye.; FADIN, V.P.; DUDAREV, Ye.F.

Effect of hardening temperatures on the kinetics of ordering in Cu-Al solid solutions. Fiz. met. i metalloved. 13 no.6:886-893 Je '62. (MIRA 15:7)

1. Sibirskiy fiziko-tekhnicheskiy institut pri Tomskom gosudarstvennom universitete.
(Copper-aluminum alloys—Metallography)
(Metals, Effect of temperature on)

FADIN, V.P.; PANIN, V.Ye.; DUDAREV, Ye.F.

Investigating the nature of changes in the state of Cu-Al solid solutions during their heat treatment. Fiz. met. i metalloved. 14 no.1:35-40 Jl '62. (MIRA 15:7)

1. Sibirskiy fiziko-tekhnicheskiy nauchno-issledovatel'skiy institut.
(Copper-aluminum alloys—Metallography)
(Metals, Effect of temperature on)

YELSUKOVA, T.F.; PANIN, V.Ye.

Equivalence of the temperature effect and deformation rate on the tensile strength of copper. Izv. vys. ucheb. zav.; fiz no.6:81-86 '61. (MIRA 15:1)

1. Sibirskiy fiziko-tekhnicheskiy institut pri Tomskom gosudarstvennom universitete imeni Kuybysheva.
(Deformations (Mechanics))
(Copper)

PANIN, V.Ye.; ZENKOVA, E.K.; FADIN, V.P.

Investigating the phenomena of ordering in Cu-Al alloys. Fiz.met.i metalloved. 13 no.1:86-92 Ja '62. (MIRA 15:3)

1. Sibirskiy fiziko-tekhnicheskiy nauchno-issledovatel'skiy institut.
(Copper-aluminum alloys—Metallography)

S/126/62/013/006/008/018
E193/E383

AUTHORS: Panin, V.Ye., Fadin, V.P. and Dudarev, Ye.F.

TITLE: The effect of the quenching temperature on the kinetics of ordering in Cu-Al solid solutions

PERIODICAL: Fizika metallov i metallovedeniye, v. 13, no. 6, 1962, 886 - 893

TEXT: It has already been established that the electrical resistivity ρ of annealed Al-Cu alloys changes after quenching; at first, as the quenching temperature T_k increases ρ also increases, reaching a maximum at T_k = 400 °C, and then decreases again to a value which after quenching from sufficiently high T_k may be lower than that of the annealed material. This anomalous behaviour indicates that Cu-Al alloys quenched from high temperatures are in a complex structural state, the nature of which has not yet been elucidated. The object of the present investigation was to study the effect of T_k on the kinetics of ordering of quenched specimens during subsequent heating. To this

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The effect of ....

end, wire specimens (1 mm in diameter) of a Cu-Al alloy containing 14.3 at.% Al were quenched from 320, 600 and 900 °C and then either aged isothermally at various temperatures or heated up to 300 °C at heating rates of 0.6 and 6 °C per minute, electrical-resistance measurements being used to follow the resultant structural changes. The effect of T_k on the kinetics of ordering is clearly demonstrated in Fig. 1, where ρ ($\mu\Omega$cm) of various specimens is plotted against the ageing time (hours) at 1 - 130 °C, 2 - 150 °C, 3 - 180 °C, 4 - 200 °C, 1' - 60 °C, 2' - 90 °C, 3' - 100 °C and 4' - 130 °C, curves 1, 2, 3 and 4 relating to alloys quenched from 320 °C and 1', 2', 3' and 4' to alloys quenched from 600 °C; the broken horizontal line indicates the value of ρ of the annealed material. The activation energy for ordering was calculated to be about 21 kcal/mole for specimens quenched from 320 °C and 16.7 kcal/mole for ~~quenched from 600 °C~~. This difference was attributed to the fact that whereas ordering in specimens quenched from high temperatures is governed mainly by the high concentration of quenched-in vacancies, ordering in material quenched from

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relatively low temperatures depends mainly on thermal vacancies. Increasing the value of T_k above 400 °C had practically no effect on the activation energy which, for specimens quenched from 900 °C, was about 16.7 kcal/mole. The rate of isothermal ordering of specimens quenched from 900 °C was also similar to that of specimens quenched from 600 °C; in this case, however, it was observed that side-by-side with ordering, which caused a decrease in ρ, another process leading to an increase in ρ took place. Although the nature of this second process cannot yet be explained, it indicates that changes other than order-disorder transformation take place in the alloy studied when it is heated to and quenched from temperatures equal to or greater than 900 °C; the fact that the alloy after this treatment becomes more difficult to age and that the difference in hardness between the material of the grains and the grain-boundary regions increases would indicate that redistribtuion of Al atoms takes place under these conditions. The results of isothermal studies were confirmed by the results of experiments in which quenched specimens were heated at a constant rate through a range of temperatures. In

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this case, however, it was found that the rate of ordering depended also on the rate of heating. On increasing the rate of heating, the temperature at which ordering began was shifted towards higher values. The results of the present investigation indicate clearly the importance of selecting the correct quenching temperature in studies of the disorder-order transformations and, particularly, of avoiding too high quenching temperatures. There are 3 figures and 1 table.

ASSOCIATION: Sibirskiy fiziko-tekhnicheskiy institut pri Tomskom gosuniversitete (Siberian Physico-technical Institute of Tomsk State University)

SUBMITTED: July 19, 1961

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S/126/62/014/001/004/018
E193/E383

AUTHORS: Fadin, V.P., Panin, V.Ye. and Dudarev, Ye.F.

TITLE: A study of the nature of the change of state of Cu-Al solid solutions during heat-treatment

PERIODICAL: Fizika metallov i metallovedeniye, v. 14, no. 1, 1962, 35 - 40

TEXT: In spite of extensive studies on this subject, the nature of the solid-state transformations in Cu-Al alloys has not yet been fully elucidated. Although the majority of workers associate these changes with the variation of short-range order in alloys of this type, it has been postulated that excess vacancies also play an important part in these phenomena, the problem being complicated by the fact that in alloys of compositions near to the solid-solubility limits, secondary processes, associated with changes in the solid-solubility limit, may take place - hence the present investigation, in which the changes taking place in a Cu - 14.3 at.% Al alloy were studied with the aid of electrical-resistivity and specific-gravity measurements. All the test pieces were given

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preliminary vacuum heat-treatment, consisting of 2 h at 750 °C followed by cooling at a rate of 50 °C/h. In the first series of experiments the kinetics of disorder-order transformation were studied on specimens which, after quenching from 600 °C (to ensure formation of excess vacancies) had been held for 1 h at 100 °C which, according to the present authors, was sufficient to bring the alloy to the state of equilibrium. The results are reproduced in Fig. 1, where the electrical resistivity (, μΩcm) is plotted against time (min) at 130, 150, 180, 200, 250 and 300 °C (curves 1-6, respectively); curve 7 represents the kinetics of the order-disorder transformation in specimens ordered by quenching from 320 °C and then aged at 200 °C. The results of the next series of experiments are reproduced in Fig. 2, where the change in (, μΩcm) is plotted against the quenching temperature (, °C), curves 1 and 2 relating, respectively, to annealed specimens and specimens ordered by the special treatment described above. Since it has been

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A study of ....

postulated that the ascendance of the $\rho = f(T_{...})$ curve above 200 °C is associated with the presence of quenched-in vacancies, the increase in ρ due to this factor was determined. This necessitated determination of the energy of formation of the vacancies ΔH_f, whose value of 17.4 kcal/mole was calculated from the slope of the $\ln(v_o) = f(1/T_{...K})$ curve, where v_o is the rate of change in ρ. The results are plotted in Fig. 2, where curve 3 represents the increase in ρ due to the presence of quenched-in vacancies. The results of the resistivity measurements were confirmed by the results of density determination. Some of these are reproduced in Fig. 4, where the relative change in density ($\Delta d/d_o$, lefthand scale, curve 1) and the increase in the lattice parameter ($\Delta a \times 10^6$ °A, righthand scale, curve 3) are plotted against $T_{...}$ (°C); curve 2 represents the change in density of the alloy due to formation of quenched-in vacancies. The general conclusion

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reached was that several phenomena may occur in Cu-Al solid solutions at high temperatures; order-disorder transformations, changes in the concentration of vacancies, migration of Al atoms from the interior of the grains to the grain boundaries in specimens quenched from high temperatures, and processes associated with the variation in the solid-solubility limit. The latter factor does not operate in Cu - 15 at.% Al alloys and if the high quenching temperature is excluded it can be stated that the main causes of changes observed in the alloy studied at high temperatures are order-disorder transformation, the part played by excess vacancies being negligible. There are 4 figures.

ASSOCIATION: Sibirskiy fiziko-tekhnicheskiy nauchno-issledovatel'skiy institut (Siberian Physico-technical Scientific Research Institute)

SUBMITTED: November 4, 1961

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SOV/137-58-10-21531

Translation from: Referativnyy zhurnal, Metallurgiya, 1958, Nr 10, p 154 (USSR)

AUTHORS: Makogon, M. B., ~~Panin, V. Ye.,~~ Sidorova, T. S., Konyushina, G. G., Landa, A. L., Shilina, G. V.

TITLE: The Effect of Conditions of Preliminary Cold Hardening on the Recovery of Cu and its Alloys as a Function of Temperature (Vliyaniye usloviy predvaritel'nogo naklepa na temperaturnuyu zavisimost' vozvrata medi i yeye splavov)

PERIODICAL: Dokl. 7-y Nauchn. konferentsii, posvyashch. 40-letiyu Velikoy Oktyabr'sk. sots. revolyutsii. Nr 2. Tomsk, Tomskiy un-t, 1957, pp 57-58

ABSTRACT: Investigations were performed in order to establish how temperature and rate of deformation (D) (the degree of D remaining constant) affect the progress of recrystallization curves of Cu and its alloys containing 10 atom-% Ni and Al. It was established that the increase in recrystallization temperature of Cu and its alloys is directly proportional to the degree of D; it is therefore assumed that for each temperature of D there is a corresponding field of D distortions, the temperature stability of which increases with increasing temperatures of D. It is

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The Effect of Conditions of Preliminary Cold Hardening (cont.)

pointed out that the temperature stability of the cold-hardening of the Cu-base solid solutions investigated is a function of the nature of the alloy. Compared with Al, the addition of which tends to reduce the strength of cohesive bonds, introduction of Ni increases the cohesive forces in the Cu lattice and results in a greater rate of increase in temperature stability of the work-hardened regions.

Z. F.

1. Copper--Crystallization 2. Copper alloys--Crystallization
3. Copper--Temperature factors 4. Copper alloys--Temperature factors

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SOV/124-58-10-11902

Translation from: Referativnyy zhurnal, Mekhanika, 1958, Nr 10, p 160 (USSR)

AUTHORS: Makogon, M. B., Panin, V. Ye., Konyushina, G. G., Landa, A. L., Sidorova, T. S., ~~Shilina, G. V.~~

TITLE: Influence of the Strain Conditions During Compression on the State of Copper - Copper-alloy Solid Solutions (Vliyaniye usloviy deformirovaniya pri szhatii na sostoyaniye medi i yeye splavov - tverdykh rastvorov)

PERIODICAL: Izv. vyssh. uchebn. zavedeniy. Fizika, 1957, Nr 1, pp 23-31

ABSTRACT: A comparison is offered of data on the variation in the hardness of strained alloys during anneal with the values of the rate coefficients of said alloys at various strain temperatures.

From the résumé

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SOV/137-58-10-21523

Translation from: Referativnyy zhurnal, Metallurgiya, 1958, Nr 10, p 152 (USSR)

AUTHORS: Makogon, M. B., Panin, V. Ye., Kitayeva, L. P., Korotayev, A. D., Sukhovarov, V. F., Shcherbakova, N. I.

TITLE: The Effect of Annealing and Intermediate High-temperature Deformation on Compression Curves of Copper and its Alloys (Vliyaniye otzhiga i promezhutochnoy vysokotemperaturnoy deformatsii na krivyye szhatiya medi i yeye splavov)

PERIODICAL: Dokl. 7-y Nauchn. konfe entsii, posvyashch. 40-letiyu Velikoy Oktyabr'sk. sots. revolyutsii, Nr 2, Tomsk, Tomskiy un-t, 1957, pp 59-60

ABSTRACT: The effect of plastic deformation (D) on the progress of recovery processes in Cu and its alloys with Ni (5, 10, 15 atom-%), Al (5, 10, 15 atom-%), and Zn (5 atom-%) was investigated. Mechanical properties of metal which had been subjected to deformation at room temperature were compared after the metal had been annealed as well as subjected to slight deformation under identical temperature conditions. It was established that application of stress stimulates the recovery processes; this is manifested by the fact that mechanical

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The Effect of Annealing (cont.)

properties of work-hardened specimens (S) which have been subsequently subjected to mild deformation at elevated temperatures are lower than the properties of S's which have been annealed only at identical temperatures. A drop in secondary reduction curves of S's which have been preliminarily subjected to deformation at room temperature is observed at elevated temperature. The stimulating effect of loading, which becomes greater with increasing temperatures, begins to diminish as the T_p point is approached and, finally, goes down to zero. It is shown that the D of work-hardened S at temperatures beyond the recrystallization threshold contributes to complete relief of work-hardening stress achieved at room temperature and, at the same time, produces new distortions which cannot be completely relieved during D at the given temperature. Compared with pure Cu, other conditions being equal, the intensity of recovery processes under load is lower in the Cu alloys investigated. As the concentration of Ni is increased and the concentration of Al in the Cu alloy is reduced, the intensity of recovery diminishes. In alloys with relatively small cohesive bonds (Cu-Al), the recovery processes occur more intensively than in the case of alloys in which the cohesive forces are greater (Cu-Ni).

1. Copper--Heat treatment 2. Copper alloys--Heat treatment
3. Copper--Deformation 4. Copper--Mechanical properties

V. N.

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SOV/20-122-2-15/42

18(6)

AUTHORS: Makogon, M. B., ~~Panin, V. Ye.,~~ Sukhovarov, V. F., Abramets, L. P., Korotayev, A. D., Shcherbakova, N. A.

TITLE: On the Rôle of External Stress in the Weakening During a Plastic Deformation (O roli vneshnego napryazheniya v razuprochnenii pri plasticheskoy deformatsii)

PERIODICAL: Doklady Akademii nauk SSSR, 1958, Vol 122, Nr 2, pp 219-221 (USSR)

ABSTRACT: It was interesting experimentally to detect a stimulating influence of external stress on the intensity of recovery immediately during the plastic deformation itself, and to investigate the influence of the nature of the material and of the deformation conditions (velocity, temperature) on the intensity of the recovery. The measurements were carried out on samples of electrolytic copper and their alloys with Ni, Al (5; 10; 15 atomic %) and with Zn (5 atomic %). All these samples (d = 11.00 ± 0.01 mm, h = 7.00 ± 0.01 mm) were deformed by compression up to 30 % at room temperature with an average velocity of 4,3 %/min. The deformations and the tempering were carried out at various temperatures. A figure

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shows the curves of the flowing for one of the investigated alloys. According to these curves, the stress weakens the samples so intensely that resistance against deformation is diminished by this deformation. If the temperature of the deformation increases, the decrease of the resistance becomes more noticeable. If other conditions are equal, this decrease is more intense for the alloys of the systems Cu-Al, Cu-Zn than for the alloys of the system Cu-Ni. The curves of the third contraction of the samples tempered after a cold deformation are always higher than the curves of samples which were deformed at the temperature of the first series of samples. The plastic deformation, therefore, caused an additional weakening. The nature of the alloy has no influence on the value of the relaxation coefficient K, if the percentage of the admixture is lower than 5 %. However, for higher percentages of admixture, this influence is well noticeable. The alloys of the system Cu-Al relaxate noticeably more intensely than the corresponding alloys of the system Cu-Ni. The results of this paper are an experimental proof of the weakening caused by the deformation and of the stimulating influence of the external stress on the intensity of this weakening.

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On the Rôle of External Stress in the Weakening During a Plastic Deformation

Weakening depends on the conditions of the deformation (temperature, velocity) and on the nature of the deformed alloy. There are 2 figures, 1 table, and 14 references, 12 of which are Soviet.

ASSOCIATION: Sibirskiy fiziko-tekhnicheskiy nauchno-issledovatel'skiy institut pri Tomskom gosudarstvennom universitete im. V. V. Kuybysheva
(Siberian Physical-Technical Scientific Research Institute at Tomsk State University imeni V. V. Kuybyshev)

PRESENTED: May 7, 1958, by G. V. Kurdyumov, Academician

SUBMITTED: April 29, 1958

Card 3/3

PANIN, V.YE.

PANIN, V.YE.--"The Influence of Friction inthe Ends on the Mechanical Properties and Absorption of Energy in the Case of Compression." Tomsk U imeni V. V. Kuybyshev, Tomsk, 1955. (Dissertation for the Degree of Candidate in Physico-mathematical Science)

SO: Knizhnaya Letopis', No. 35, 1955

BOL'SHANINA, M. A., and PANIN, V. Ye.

"Latent Energy of Defromation" p. 193-233, in the book Research in the Physics of Soldids, Moscow, Izd-vo AN SSSR, 1957. 277 p. Ed. Bol'shanina, M. A.; Tomsk Universitet, Siberskiy fiziko-tekhnicheskiy institut.

Personalities: Bol'shanina, M. A.; Khotkevich, V. I.; Kunin, N. F.; Senilov, G. V.; Fedorov, A. A.; Degtyarev, M. M.; Studenok, Yu. A.; Panin, V. Ye.; Tyzhnova, N. V.; Fastov, N. S.; Shermergor, T. D.; Nikitina, A. K.; Shelepukhin, P. R.; Gruzin, P. L., and Milevskaya, V. G., Materials studied: copper, aluminum, nickel, steel, 3, iron, brass, bronze, zinc, silver, and tin. There are 19 figures, 4 tables, and 64 references, 23 of which are Soviet.

This collection of articles is meant for metallurgical physicists and for engineers of the metal-working industry. This book contains results of research in the field of failure and plstic deformation of materials, mainly of metals. Problemsjof cutting, abrasion, friction, and wear of solid materials (metal) are discussed.

126-1-18/40

AUTHORS: Panin, V. Ye. and Milevskaya, V. G.

TITLE: On the problem of the latent deformation energy of alloys of solid solutions. (K voprosu o skrytoy energii deformatsii splavov tverdykh rastvorov).

PERIODICAL: Fizika Metallov i Metallovedeniye, 1957, Vol.5, No.1, pp. 120-126 (USSR)

ABSTRACT: Fedorov, A. A. has shown (Ref.1) that for pure metals with an equal crystal structure a certain relation exists between the melting temperature and the magnitude of the latent deformation energy; the latter will be the higher the higher the melting temperature of the material. This phenomenon is attributed to the fact that with increasing melting point temperature the intensity of relaxation decreases during deformation, which leads to an additional accumulation of deformational lattice distortions. The picture is much more complicated for alloys than it is for pure metals; in this paper only those alloys are dealt with which represent solid solutions. As a result of the presence in the lattice of the solvent metal of atoms of the other component, the lattice of the alloy is strongly distorted even in the annealed state and the sliding conditions in it become more complicated. Therefore, the magnitude of the latent deformation energy

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as well as the resistance to deformation should be larger than in the pure solvent even if the latter has a higher melting point. This idea was first expressed by M. A. Bol'shanina (Ref.2) and was partly verified by N. V. Tyzhnova (Ref.3). Tyzhnova investigated Cu-Ni alloys containing 10, 30, 50 and 70% Ni and also pure copper. The deformation was effected by compression. Some of her results are graphed in Fig.1 of this paper. As was to be anticipated, the absorbed energy in the alloys is considerably higher than in pure copper. Thereby, the magnitude of the latent energy increases monotonously with increasing nickel content. The authors of this paper believe that the latent energy cannot increase monotonously with increasing nickel content and that this should apply only for nickel contents up to 50% when the lattice of the alloy has a minimum distortion. Further increase of the nickel content reduces the contents of copper atoms in the nickel and this should lead to a decrease in the degree of deformation of the lattice of the solvent metal and thus also to a decrease of the latent deformation energy. Therefore, when

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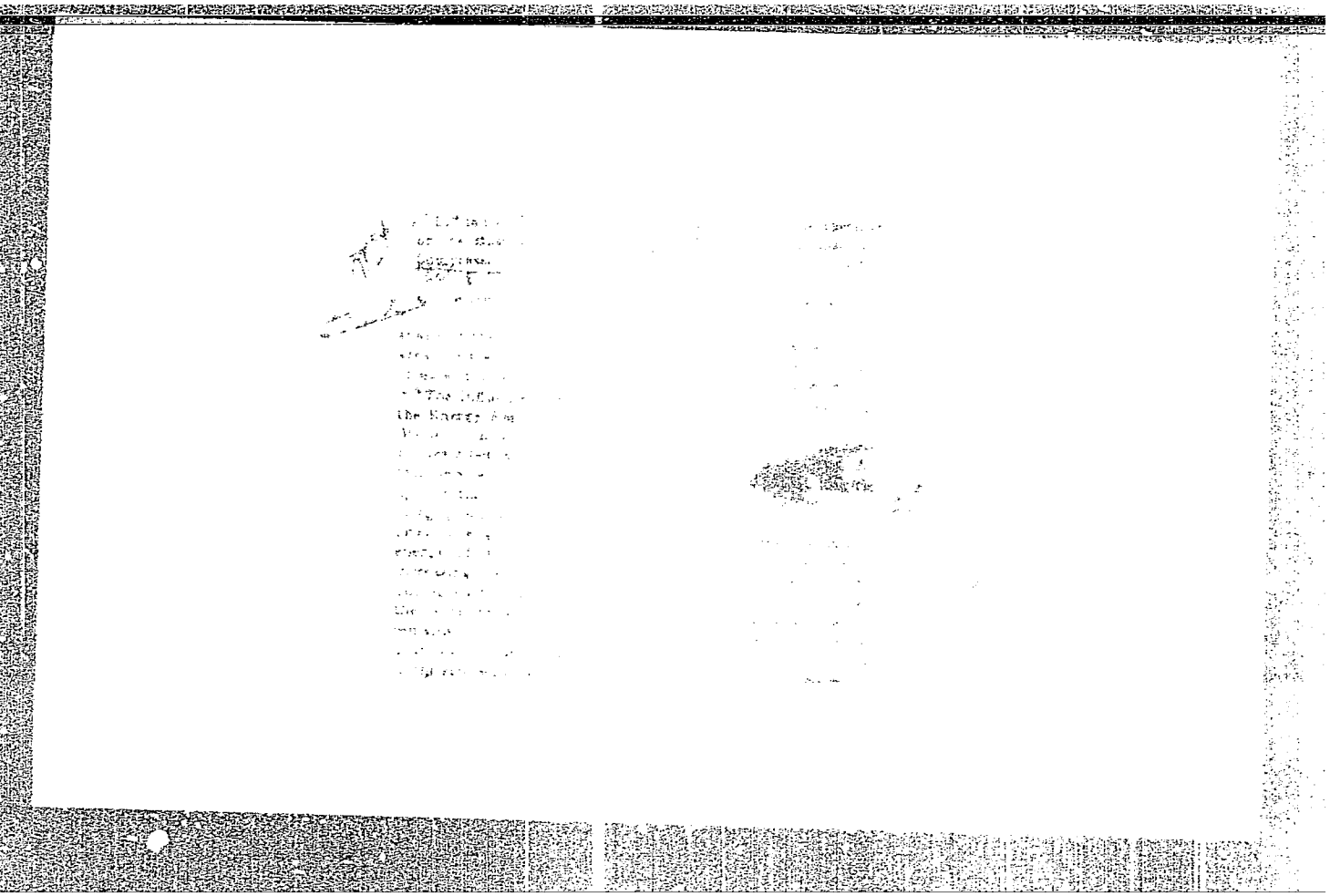
On the problem of the latent deformation energy of alloys of solid solutions.

concentration of the Cu-Ni alloy the latent deformation energy should change along a curve, the maximum of which is in the medium range of concentrations. Tyzhnova did not obtain such a curve because in the second half of the system she only investigated the single alloy containing 70% Ni. Also she did not investigate pure nickel and comparison of the results obtained for pure copper with those obtained for Cu-Ni alloys is not quite appropriate owing to the lower melting point of the copper. For verifying the here expressed views, the authors investigated pure nickel and pure copper and also alloys containing 40, 60 and 80% Ni, the exact analyses of which are given in a table, p.122. Furthermore, they investigated a copper-zinc alloy containing 61.20% Cu, 38.61% Sn without any Pb and Mn contents; this alloy was chosen because its melting point is lower than that of copper. The magnitude of the latent energy was determined as the difference between the plastic deformation work and the heat generated during the deformation, a method described by various authors (Refs.1-3). The scattering of the values of the absorbed energy amounts to 1-2%; owing to the nonuniform distribution of the temperature

On the problem of the latent deformation energy of alloys of solid solutions.

at the contacting surfaces, there was a systematic error as a result of which the energy values were 10 to 12% too high. Since this error applies to all the results, it is of no consequence from the point of view of studying relative relations. The results are graphed in Figs.2-6 and it can be clearly seen that the individual curves have fairly pronounced maxima. The following conclusions are arrived at. The latent deformation energy of solid solutions with unlimited solubility of the system Cu-Ni changes with the composition of the alloy in accordance with a curve with a maximum which passes through the medium range of concentrations. This corresponds with changes in the hardness, the electric resistance, the dynamic coefficient, the thermo e.m.f. and other characteristics which depend on the composition. On changing over from pure copper to brass Л62, which is an α-solid solution of limited solubility, the latent deformation energy increases. The increase of the absorbed energy with increasing deformation is considerably larger for brass than it is for alloys of copper with nickel. A correspondence between the flow curves



PANIN, V.Ye.

Effect of friction of the end planes on the energy consumption in compression. Fiz.met.i metalloved. 3 no.1:172-178 '56. (MLRA 9:11)

1. Sibirskiy fiziko-tekhnicheskiy nauchno-issledovatel'skiy institut.
(Metals--Testing) (Deformations (Mechanics)) (Friction)

PANIN, V.Ye.; GRIBANOV, S.A.; ZILING, K.K.

Effect of temperatute on the heat conductivity of some alloys of solid solutions with copper as the major component. Izv.vys.ucheb. zav.;fiz. no.2:121-126 '60. (MIRA 13:8)

1. Sibirskiy fiziko-tekhnicheskiy institut pri Tomskom gosuniversitete im. V.V.Kuybysheva.
(Copper alloys--Thermal properties)

PANIN, V.Ye.; ZENKOVA, E.K.

Superstructure in aluminum bronze. Izv.vys.ucheb.zav.;fiz. no.2: 201-205 '60. (MIRA 13:8)

1. Sibirskiy fiziko-tekhnicheskiy institut pri Tomskom gosuniversitete im. V.V. Kuybysheva.
(Aluminum bronze)

L 10875-66 EWT(m)/T/EWP(t)/EWP(b)/EWA(c) IJP(c) JD

ACC NR: AP5026367 SOURCE CODE: UR/0370/65/000/005/0173/0179

AUTHOR: Bushnev, L. S. (Tomsk); Dudarev, Ye. F. (Tomsk); Panin, V. Ye. (Tomsk)

ORG: none

TITLE: The formation of dislocation structure during the high temperature deformation of alloys with low stacking fault energies

SOURCE: AN SSSR. Izvestiya. Metally, no. 5, 1965, 173-179

TOPIC TAGS: tensile test, deformation rate, material deformation, copper containing alloy

ABSTRACT: The basic cause of anomalous strengthening during high temperature deformation of alloys possessing low stacking fault energies was investigated. Dislocation structures of Cu-Al, Cu-Ga, and Cu-Ge alloys after processing was observed by electron microscopy and a comparison was made between the structure and properties of the respective materials. The alloys were melted from high purity base metals under a vacuum. The solid solutions of the final ingots ranged in composition up to the limit of solubility. These ingots were further processed into wire form for tensile testing, the grain size (0.05 mm) being constant in each case. Grain size was controlled by selectively heat treating the various alloys. Tensile tests were performed on the wire and foils were prepared from the strained samples (elongation = 1%

Card 1/2 UDC: 669.35-157.9

L 10875-66

ACC NR: AP5026367

and 7%). One particular alloy (Cu + 17.3 at % Al + 0.5 at % Fe) was purposely made up with Fe present in order to study grain boundary segregation effects. Experimental data drawn from electron microscopy were presented in the form of curves showing strength plotted as a function of deformation temperature and dislocation structures for 1% and 7% elongation. An anamolous increase in strength occurred ($\Delta\sigma$ = 5 kg/mm^2) at a certain deformation temperature for Cu-Al and Cu-Ge but not for the Cu-Ga system. General rules for the occurrence of the phenomenon were set down; the effect may arise at the yield point or during the actual course of deformation. The absence of an effect in the Cu-Ga alloys was due both to the lack of short range order and to the fact that grain boundary migration started before the appropriate temperature region was reached. In other cases the migration occurs immediately afterward. The dislocation structures represented samples strained either 1% or 7% before and during the anamolous strengthening region. Before this region (300°C) was attained, the photograph resembled that for low temperature deformation--a general accumulation of dislocations--while the region of intensive strengthening (390°C) multiple slip there was with dislocation stacking up parallel to each other. The final analysis showed that the cause of the phenomenon could be attributed to the formation of a homogeneous dislocation structure with a high density of dislocations. Furthermore, diffusion strengthening processes which appear in the course of the treatment enhance the effect. At lower deformation temperatures, much higher deformations must be attained before the above dislocation structure sets in. Orig. art. has: 3 figures.

SUB CODE: 11, 20 SUBM DATE: 06May65/ ORIG REF: 005/ OTH REF: 014

Card 2/2

PANIN, V.Ye.; DUDAREV, Ye.F.; BUTKEVICH, L.M.; DOLMATOVA, R.P.

Effect of short-range order on the mechanical properties of solid solutions. Fiz. met. i metallored. 20 no.3:469-472 S '65. (MIRA 18:11)

1. Sibirskiy fiziko-tekhnicheskiy institut imeni V.D.Kuznetsova.

L 07568-67 EWT(m)/EWP(w) IJP(c) WW/EM/GD

ACC NR: AT6029372 SOURCE CODE: UR/0000/66/000/000/0285/0292

AUTHOR: Panin, Ye. A. (Kuybyshev)

23
B+1

ORG: none

TITLE: Forced vibrations of a straight pipe, pinched at both ends, and which has an intermediate elastic hysteresis collar

SOURCE: AN UkrSSR. Institut problem materialovedeniya. Rasseyaniye energii pri kolebaniyakh uprugikh sistem (Energy dissipation during vibrations of elastic systems). Kiev, Naukova dumka, 1966, 285-292

TOPIC TAGS: vibration analysis, elastic hysteresis

ABSTRACT: A newly developed elasto-hysteresis collar is shown in Fig. 1.

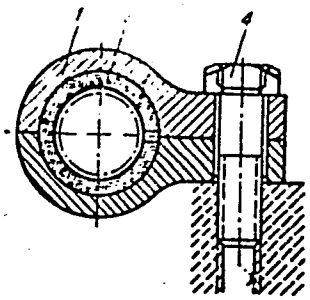


Figure 1.

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It consists of two blocks 1, an elasto-hysteresis element 2, a protective sleeve 3 which shields the pipe from wear, and a tightening bolt 4. The elastic and damping properties of a collar are characterized by the parameters γ, n, and m, which are expressed by the formulas

$$\gamma = \frac{\Gamma}{\varrho}, \qquad n = \frac{\Delta W}{2\pi W}, \qquad m = \frac{2W_1}{W} \qquad (1)$$

Here γ is the coefficient of the linear component of the elastic resistance; n is the coefficient of the nonelastic resistance; m is the coefficient of the non-linear elastic resistance; Δ W is the area of the hysteresis loop (see Fig. 3); W is the area of the triangle OAE (see Fig. 3); W_1 is the area of the figure OmAn (see Fig. 3).

L 07568-67 EWT(m)/EWP(w) IJP(c) WW/EM/GD

ACC NR: AT6029372

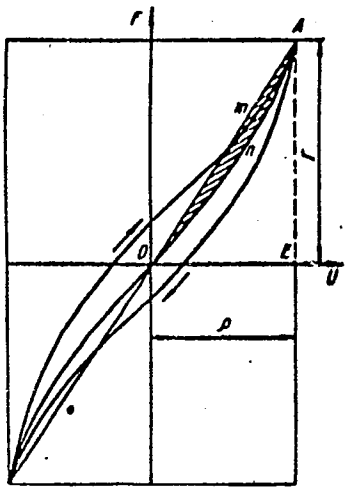


Figure 3.

A figure shows the experimental dependences of the parameters γ, n, and m on the amplitudes of the linear displacements ρ for a collar on a pipe with an outside diameter of 8 mm. The system was placed on a platform which vibrated according to

Card 3/4

L 07568-67

ACC NR: AT6029372 O

the harmonic law $S = L\cos\theta,$

where $\theta = \omega t + \varphi_0.$

The vibrations were assumed to be small and to be in a direction perpendicular to the axis of the pipe. The effect of the transverse force and the rotational inertia were not taken into account. The remainder of the article is devoted to a mathematical solution of the problem on the above premises. Orig. art. has: 12 formulas and 5 figures.

SUB CODE: 20/ SUBM DATE: 22Feb66/ ORIG REF: 003

Card 4/4 nst

ACC NR: AP6029058 SOURCE CODE: UR/0413/66/000/014/0085/0085

INVENTOR: Korobov, V. I.; Panin, Ye. I.; Prusov, N. K.; Filippov, V. I.; Solov'yev, A. K.

ORG: None

TITLE: A device for checking the thickness of an enamel film. Class 42, No. 183956 [announced by the Independent Technological Design Office for Microconductors (Samostoyatel'noye konstruktorsko-tekhnologicheskoye byuro po mikroprovodam)]

SOURCE: Izobret prom obraz tov zn, no. 14, 1966, 85

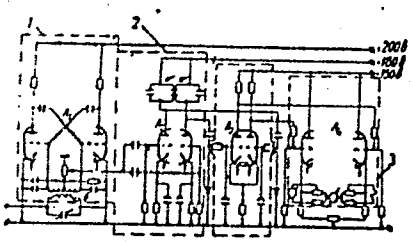
TOPIC TAGS: surface film, protective coating, measuring instrument

ABSTRACT: This Author's Certificate introduces a device for checking the thickness of an enamel film which may be used during enamel coating of wire. The unit contains a capacitance pickup connected to a self-excited oscillator. A high-frequency amplifier, detector, DC amplifier with cathode follower and an indicator are connected in series to the oscillator output. The circuit of the device is simplified and measurement accuracy is improved by using a high-frequency oscillator with a load in the high-frequency amplifier in the form of high-Q stagger-tuned tanks with symmetric resonance curves and a narrow passband. An unblanced signal appears at the load output which is proportional to the change in thickness of the enamel film shown by the indicator.

UDC: 531.717.55

Card 1/2

ACC NR: AP6029058



1—self-excited oscillator; 2—high-frequency amplifier; 3—indicator

SUB CODE: 13, 11/ SUBM DATE: 12Apr65

Card 2/2

PANIN, Ye.N.

New design of holders for welding electrodes. Sbor. rats. predl. vnedr. v proizv. no.2:71-72 '61. (MIRA 14:7)

1. Vyksunskiy metallurgicheskiy zavod.
(Electric welding—Equipment and supplies)

PANIN, Yu.I.

Our comments on the Molchanov automatic machine. Neftianik 3 no.5:13 My '58. (MIRA 11:9)

1. Zaveduyshchiy mekhanicheskoy masterskoy Makhachkalinskogo nefteпromysla nefteпromyslovogo upravleniya Dagneft'.
(Oil wells--Equipment and supplies--Repairing)

92-58-5-12/30

AUTHOR: Panin, Yu. I., Head of a Mechanical Workshop

TITLE: Our Comments on Molchanov's Automatic Wrench (Nashi zamechaniya k avtomatu Molchanova)

PERIODICAL: Neftyanik, 1958, Nr 5, p 13 (USSR)

ABSTRACT: The author states that one of the most cumbersome operations in oil well maintenance is the underground fastening and unfastening of pump tubing joints. In the past, due to the unsatisfactory design of the Molchanov automatic wrench and of the AD-25 wrench, this operation could not be carried out entirely automatically. Both tools are bulky and have electrical equipment which does not operate satisfactorily, and which often gets out of order. Therefore, in 1956 the author of the article and the mechanic N. A. Resnyanskiy decided to improve the Molchanov wrench which has been kept in storage without being used since 1951. The wrench was redesigned, simplified, and the size of its shifting mechanism was reduced, so that it became

Card 1/2

possible to attach it directly to the electric motor. A friction clutch was put in instead of a rigid connection. Now it is much easier to reverse the rotation and to handle the electric motor as well as the wrench, which operates satisfactorily. Two Molchanov automatic wrenches have been redesigned and improved. Two teams use them now in the Makhachkalinsk oil field. There is 1 photograph showing a general view of the improved Molchanov automatic wrench.

ASSOCIATION: Makhachkalinskiy neftepromysel NPU Dagneft' (Makhachkala Oilfield of the NPU Dagneft')

1. Wrenches--Automatic--Revision

NESTERENKO, Yu.A. (Moskva, Taganskaya ul., d.24, kv.46); PANIN, Yu.P.; VOROB'YEV, G.I.

Electrostimulation of the heart; experimental data. Grud. khir. 6 no.1:28-31 Ja-F '64. (MIRA 18:11)

1. Gospital'naya khirurgicheskaya klinika lechebnogo fakul'teta (zav. - prof. V.S. Mayat) II Moskovskogo meditsinskogo instituta imeni Pirogova. Submitted December 7, 1962.

YARTSEVA, A.M.; PANINA, A.A. (Moskva)

Changes in nonhemoglobin iron in the blood serum in Botkin's disease and mechanical jaundice. Klin.med. 38 no.8:121-128 Ag '60. (MIRA 13:11)

1. Iz kliniki infektsionnykh bolezney (dir. - chlen-korrespondent AMN SSSR prof. A.F. Bilibin) II Moskovskogo meditsinskogo instituta imeni N.I. Pirogova.
(IRON IN THE BODY) (HEPATITIS, INFECTIOUS)
(JAUNDICE)

YEVDOKIMOV, I.I.; ALEKSEYEV, V.D.; ASHIKHMIN, A.K.; BAYEV, N.V.; BEGLAR'YAN, P.A.; BYCHKOV, I.A.; VESLOVA, Ye.T.; VYZHEKHOVSKAYA, M.F.; GURETSKIY, S.A.; DEMIDOV, I.M.; YESIPOV, Ye.P.; ZHUKOV, V.D.; ZELINSKIY, M.G.; ZOL'NIKOV, F.T.; ZOLOTOVA, L.I.; KIVIN, A.N.; KOMARNITSKIY, Yu.A.; KONSTANTINOV, A.N.; KUL'CHITSKAYA, A.K.; MAKSIMENKO, I.I.; MELENT'YEV, A.A.; MOROZOV, I.G.; MURZINOV, M.I.; OZEMBLOVSKIY, Ch.S.; OSTRYAKOV, K.I.; PANINA, A.A.; PAVLOVSKIY, V.V.; PERMINOV, A.S.; PERSHIN, B.F.; PROHIN, S.F.; PSHENNYY, A.I.; POKROVSKIY, M.I.; RASPONOMAREV, Ye.A.; SEMIN, I.N.; SKLYAROV, Yu.N.; TIBABSHEV, A.I.; FARBEROV, Ya.D.; FEDOROV, G.P.; SHUL'GIN, Ya.S.; YAKIMOV, I.A.; VERINA, G.P., tekhn.red.

[Labor feats of railway workers; stories about the innovators] Trudovye podvigi zheleznodorozhnikov; rasskazy o novatorakh. Moskva, Gos.transp.zhel-dor.izd-vo, 1959. 267 p. (MIRA 12:9)
(Railroads) (Socialist competition)

PANINA, A. M.
F. P. IVANOVSKI, Zh Khim Prom 1934, 10, No. 2, 37-44

PANINA, A. M.
E. P. IVANOVSKII, Zh Khim Prom 1934, No. 2, 37-44

PANINA, A. M.
E. P. IVANOVSKII, Zh Khim Prom 1934, No. 2, 37-44

PANINA, A. V.

SOKOLOV, N.I., inzhener; PANINA, A.V., inzhener.

Method of air separation for reclamation of used burned foundry sands; experience of the Krasnaia Vagranka Plant. Proizv.-tekh. inform. no.2:39-43 '51. (MLRA 10:3)
(Sand, Foundry) (Separators (Machinery))

1. SOKOLOV, N. I., PANINA, A. V.

2. USSR (600)

4. Sand, Foundry

7. Reconditioning used molding sand by separation in a stream of air. Lit. proiz. no. 9, '52.

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

PANINA, A.V.

Modification of the Bielschowsky's method for the detection of reticular fibers on celloidin sections. Arkh. pat. 23 no.3:81 '61. (MIRA 14:3)

(CONNECTIVE TISSUE)

USSR/Physics - Paramagnetism Jul 51

"Galvanomagnetic Properties of Iron-Nickel Alloys in the Region of Paraprocesses," K. P. Belov, I. K. Panina, Moscow State U

"Zhur Eksper i Teoret Fiz" Vol XXI, No 7, pp 809-813

Examines galvanomagnetic effect in invar iron-nickel alloys in magnetic flds above technical satn and near Curie point (region of paraprocesses) for various temps. Gives results in graphs. Submitted 3 Jul 50.

LC 189T85

NEGNEVITSKIY, I.B.; PANINA, I.K.; MISHCHENKO, V.P.

Curves of simultaneous magnetization by constant and alternating fields. Elektrichestvo '53, No.3, 63-4. (MLRA 6:3)
(ERA 56 no.672:4699 '53)

PANINA, I.K.

CARD 1 / 2 PA - 1864

SUBJECT USSR / PHYSICS
AUTHOR BELOV,K.P., PANINA,I.K.
TITLE The Determination of the Spontaneous Deformation of the Lattice on the occasion of Ferromagnetic Transformation.
PERIODICAL Dokl.Akad.Nauk 111, fasc.5, 985-987 (1956)
Issued: 1 / 1957

The present work describes a method for the determination of the spontaneous deformation of the lattices of ferromagnetica based upon measuring the temperature dependence of magnetostriction, and furnishes results for several alloys. According to K.P.BELOV, F.M.M. (= ?) 2, fasc.3, (1956) the thermodynamic potential of the ferromagneticum near CURIE temperature can be represented in the form $\Phi = \Phi_0 + a\sigma^2 + b\sigma^4 + cp + dp^2 + e\sigma^2 p - H\sigma$. ($\sigma$ - specific magnetization, p - mechanical voltage, $H\sigma$ - energy of the magnetic field; a,b,c,d,e - thermodynamic coefficients). Here d and e are proportional to the elasticity modulus and the magnetostriction constant respectively. For the relative modification of the volume $\omega = c + 2dp + e\sigma^2$ is found. For p = 0 it is true that $\omega = e\sigma^2$ if the additive constant is omitted. For a linear deformation it holds that $\lambda = e(\sigma_s + \sigma_i)^2/3$. Here σ_s denotes spontaneous magnetization and σ_i - true magnetization and it holds that $\sigma = \sigma_s + \sigma_i$. Thus, the aforementioned equation can be derived also by rigorous thermodynamic equations. This dependence is also graphically represented. In the case of a lacking spontaneous

[illegible] is known, the ferromagnetic anomaly of thermal expansion in the ferromagnetica can be determined.
INSTITUTION: Moscow State University.

PANINA, I. K.

AUTHOR: Belov, K.P. and Panina, I.K. 129

TITLE: Calculation of the shift in the Curie temperature as a function of the pressure on the basis of magnetostriction data. (Vychislenie velichin smeshcheniya temperatury kyuri ot davleniya iz magnitostriktsionnykh dannykh.)

PERIODICAL: "Fizika Metallov i Metallovedenie" (Physics of Metals and Metallurgy), 1957, Vol. IV, No.1 (10), pp.185-186 (U.S.S.R.)

ABSTRACT: On the basis of the theory of Type II phase transitions an equation was derived in an earlier paper of the author (same journal, 1956, Vol.2, No.3, p.447) for calculating the real magnetisation near the Curie point, taking into consideration elastic stresses acting on the ferro-magnetic:

$$(\alpha + \gamma\Delta p)\,\sigma + \beta\sigma = H$$

where σ - specific magnetisation;
Δp - stress, for instance hydrostatic pressure;
α and β - temperature dependent thermodynamic coefficients;
γ - magnetostriction.

It is shown that by determining γ from the magnetostriction - square of real magnetisation curves measured near the Curie point it is possible to carry out the desired calculations. Calculated data are given for various Ni-Fe, Ni-Fe-Co, Ni-Fe-Mo Ni-Fe-W etc. alloys. 2 graphs, 1 table, 5 references, four of which are Russian.

Moscow State University imeni M. V. Lomonosov.

Recd. July 28, 1956.

PANINA, I.K.

BELOV, K.P.; PANINA, I.K.

Effect of the K-state on the thermal dependence of spontaneous magnetization and magnetostriction. Vest.Mosk.un. 12 no.1:44-46 '57. (MLRA 10:8)

1.Moskovskiy universitet, Kafedra obshchey fiziki dlya biologicheskogo i drugikh fakul'tetov.
(Nickel alloys--Magnetic properties)

PANINA, I.K.

USSR/Magnetism - Ferromagnetism F-2

Abs Jour : Ref Zhur - Fizika, No 1, 1958, 1152

Author : Belov, K.P., Panina, I.K.
Inst : -
Title : Effect of the K State on the Temperature Dependence of the Spontaneous Magnetization and Magnetostriction.

Orig Pub : Vestn. Mosk. un-ta, ser. matem., mekhan., astron., fiz., dhimii, 1957, No 1, 44-46

Abstract : An investigation was made of the temperature behavior of the spontaneous magnetization σ_s and the magnetostriction λ in an alloy of the invar type (36% Ni, 6% Mo, 58% Fe), subjected to hear treatment leading to the establishment of the K-state (state with disturbed distribution of atoms in the solid solution). In the hardened state, the temperature course of the magnetization has an appearance that is usual for a single-phase solid solution. After low-temperature tempering, the curves σ_s (t) and

Card 1/2

FAMIN, I. M. Cand Phys-Math Sci -- (diss) "Magnetostriction of ferromagnetics in the region of Curie temperature" Mos, 1957. 6 pp 20 cm. (Mos State Univ im M. V. Lomonosov), 100 copies

(KL, 20-57, 81)

5

PANINA, I.K.

137-58-1-1555

Translation from: Referativnyy zhurnal, Metallurgiya, 1958, Nr 1, p 208 (USSR)

AUTHORS: Belov, K. P., Panina, I. K.

TITLE: Effect of the K State on the Temperature Dependence of Spontaneous Magnetization and Magnetostriction (Vliyaniye K-sostoyaniya na temperaturnuyu zavisimost' spontannoy namagnichennosti i magnitostriktsii)

PERIODICAL: Vestn. Mosk. un-ta, ser. matem., mekhan., astron., fiz., khimii, 1957, Nr 1, pp 44-46

ABSTRACT: Measurement of the temperature dependence of spontaneous magnetization σ_s and the magnetostriction constant λ was performed on an invar-type alloy (36% Ni, 6% Mo, 58% Fe), in which ordering does not occur. The purpose of the tests was a study of the low-temperature annealing in alloys in which a K state obtains. After hardening from 950°C and 8-hour tempering at 500°, an increase in electrical resistivity, which was ascribed to the K state, was observed in the alloy. The variation of the $\sigma_s = f(t)$ and $\lambda_s = \varphi(t)$ curves in the 20-200° interval was determined by extrapolation of the curves for the relationship of magnetostriction to the square of magnetization

Card 1/2

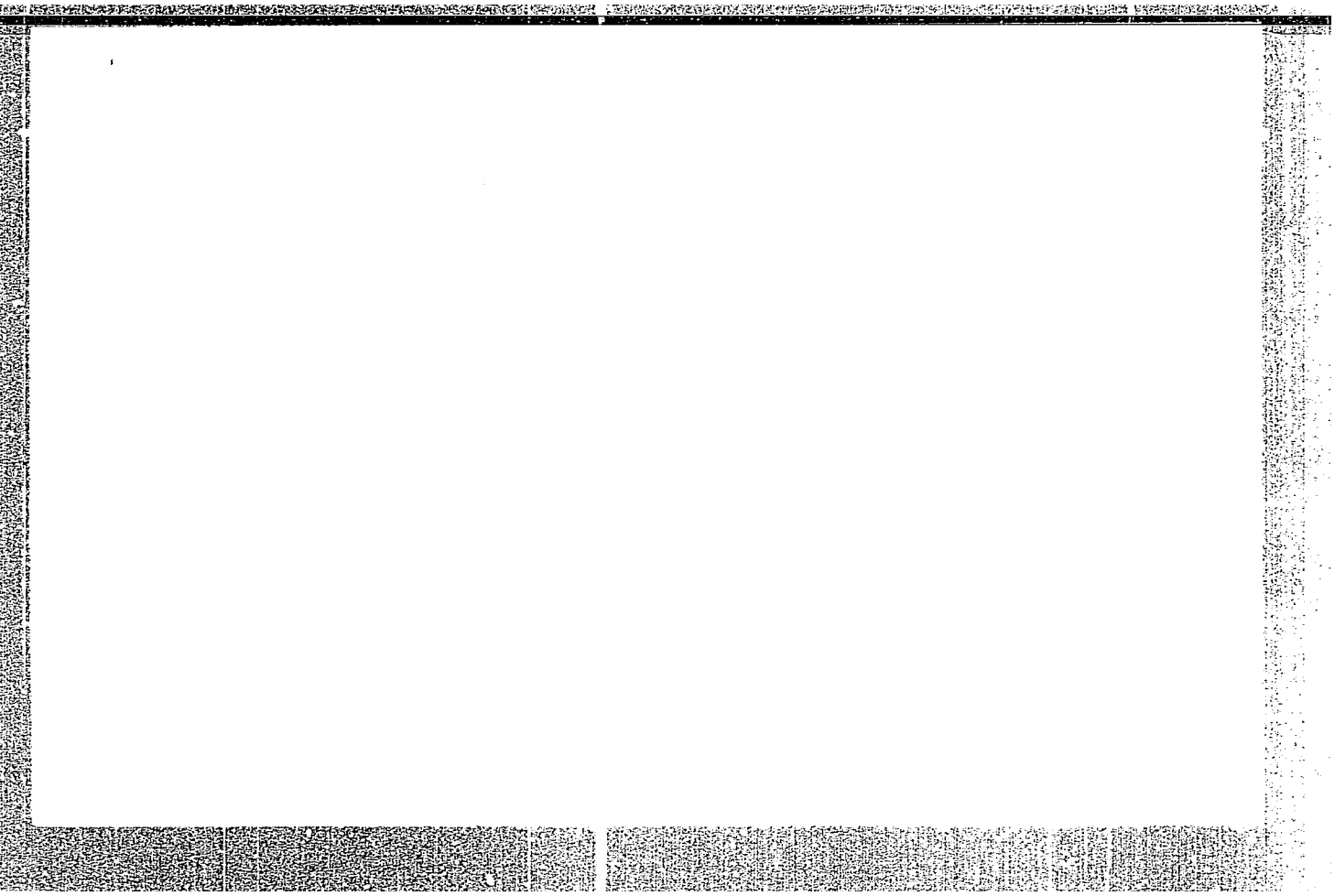
Effect of the K State on (cont.)

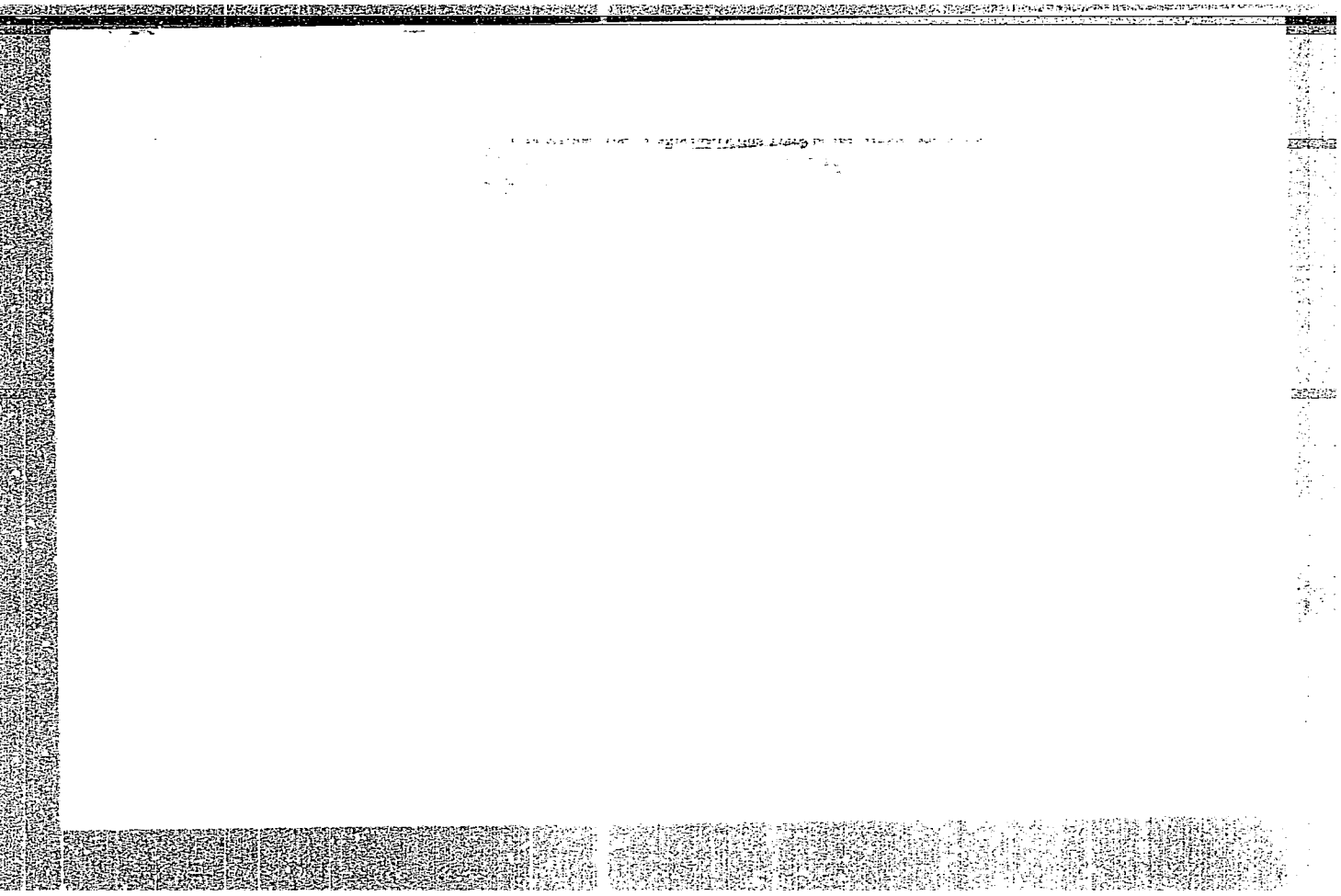
and by the method employing the thermodynamic coefficient. It is shown that after heat treatment corresponding to that required for the formation of the K state, the alloy has two Curie temperatures (155 and 168°), testifying to the appearance of "atomic segregation", exhibiting the properties of a phase with 155° as its Curie(magnetic transformation) temperature.

V. R.

1. Magnetostriction--Temperature effects 2. Magnetism--Measurement

Card 2/2

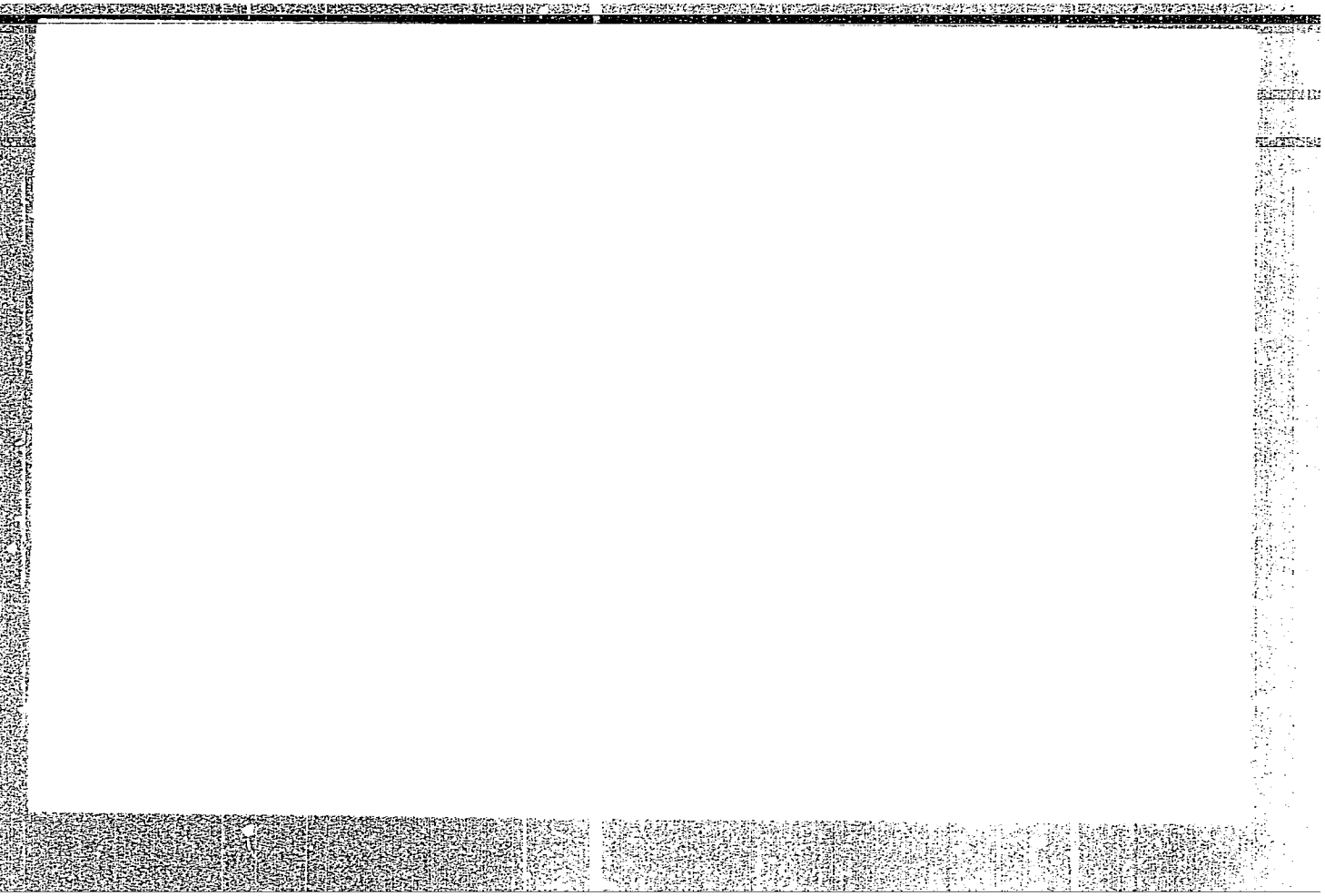




BELOV, K.P.; PANINA, I.K.

Magnetostriction data used for the calculation of the magnitude of Curie temperature shifts under the effect of pressure. Fiz. met. i metalloved. 4 no.1:185-186 '57. (MLRA 10:6)

1. Moskovskiy gosudarstvennyy universitet imeni M.V. Lomonosova.
(Magnetostriction) (Ferromagnetism)



PANINA, K. A.

"Analysis Of The Changes "En Masse" Of Extra Bristles In Drosophila Fasciata Meig. (Melanogaster) Evolutionary Brigade, Department Of Genetics, Institute Of Experimental Biology (Director: Academician N. K. Koltsov), Moscow." (p. 217) by Panina, K. A.

SO: PREDECESSOR OF JOURNAL OF GENERAL BIOLOGY.)Biologicheskii Zhurnal) Vol. VII, 1938 No. 1

PANINA, K. A.

"Studying the Variability of Sternopleural Brushed in Drosophila Melanogaster, in Natural Populations and Lines Highly-Inbred by Selection," Sub. 14 Apr 47, Moscow State Pedagogical Inst imeni V. I. Lenin.

Dissertations presented for degrees in science and engineering in Moscow in 1947.

SO: Sum.No.457, 18 Apr 55

BOGOMOLOV, A.I.; PANINA, K.I.

Low-temperature catalytic conversions of organic compounds on clays. Report No.5: Conversion of abietic acid. Trudy VNIGRI no.212. Geokhim. sbor. no.8:77-86 '63. (MIRA 16:12)

PANINA, K.I.

I-8

USSR/Chemical Technology - Chemical Products and Their Application. Treatment of Natural Gases and Petroleum. Motor and Jet Fuels. Lubricants.

Abs Jour : Ref Zhur - Khimiya, No 1, 1958, 2531

Author : Bogomolov, A.I., Panina, K.I.

Inst : All-Union Scientific Research Institute of Geological Petroleum Exploration.

Title : Investigation of Aromatic Hydrocarbons of North-Eastern Caucasus Petroleum in Connection with the Question as to Their Genesis.

Orig Pub : Tr. Vses. neft. n.-i. geologorazved. in-ta, 1957, No 105, 210-220

Abstract : Investigation of aromatic hydrocarbons (AH) of paraffinic and paraffin-free tarry petroleum varieties of north-eastern Caucasus. The AH were isolated quantitatively from

Card 1/4

USSR/Chemical Technology - Chemical Products and Their Application. Treatment of Natural Gases and Petroleum. Motor and Jet Fuels. Lubricants.

I-8

Abs Jour : Ref Zhur - Khimiya, No 1, 1958, 2531

the kerosene and oil fractions of the distillate by the method of silica gel chromatography and a determination was made of their specific gravity, refraction index, molecular weight, elemental composition, and in the case of some fractions also of their optical rotation value. The n-d-M method was utilized to characterize the AH fractions of petroleum. The proportion of C in the aromatic structures of kerosine and oil fractions of petroleum AH amounted to 50-55% of the total amount of C in the molecule and varies but little on transition from low-molecular to the high-boiling fractions. The proportion of C in the naphthenic structures is considerably lower and in the 200-500° fractions it amounts to 35-10%. As a result the content of C in the alkyl radicals increases, on transition from light to the heavy fractions, from 10 to 35%.

S/081/62/000/021/011/069
B156/B101

AUTHORS: Bogomolov, A. I., Panina, K. I.

TITLE: Low-temperature catalytic conversions of organic compounds on clay. II. Conversion of oleic acid

PERIODICAL: Referativnyy zhurnal. Khimiya, no. 21, 1962, 134, abstract 21Zh68 (Tr. Vses. neft. n.-i. geologo-razved. in-ta, no. 174, 1961, 17 - 25)

TEXT: If oleic acid (I) is kept for 10 hrs at 250°C in contact with active clay, it undergoes complex transformations resulting in gaseous reaction products, liquid hydrocarbons, acids, condensation products on the clay, water of dissociation, and acid resins. The gaseous products consist mainly of lowmolecular-weight saturated and unsaturated hydrocarbons. When experiments were carried out in a glass vessel, 25% of the volume of gases was CO_2, and CO and H_2 were entirely absent; this eliminates the conversion of I into CO and H_2O and diolefine as the primary product. The yield of liquid hydrocarbons is ~30 % related to I. Of these, 50 % are gasoline and kerosene fractions, and ~50 % distillate oil

Card 1/2

BOGOMOLOV, A.I.; PANINA, K.I.; ANDREYEVA, L.G.

Characteristics of the chemical composition of petroleums in the southern Mangyshlak Peninsula. Trudy VNIGRI no.218: 54-61 '63. (MIRA 17:3)

BOGOMOLOV, A.I.; PANINA, K.I.

Low-temperature catalytic conversions of organic compounds on clay. Report No. 3: Condensation of [illegible]. Trudy VNIGRI no.174:26-34 '61. (MIRA 14:12)

(Beeswax)

BOGOMOLOV, A.I.; PANINA, K.I.

Low-temperature catalytic conversions of organic compounds on clay. Report No.2: Conversion of oleic acid. Trudy VNIGRI no.174:17-25 '61. (MIRA 14:12)

(Oleic acid)

BOGOMOLOV, A.I.; LYUTKEVICH, Ye.M.; PANINA, K.I.

Petroleums of White Russia. Trudy VNIGRI no.174:271-27[illegible] '61.
(MIRA 14:12)
(White Russia—Petroleum)

BOGOMOLOV, A.I.; PANINA, K.I.

Carbazole in the composition of Bogachevka petroleum in Kamchatka.
Zhur. prikl. khim. 38 no.7:1635-1636 Jl '65. (MIRA 18:7)

BOGOMOLOV, A.I.; PANINA, K.I.

Low-temperature catalytic conversions of high molecular weight naphthenes from petroleum over natural clay. Zhur. prikl. khim. 33 no.12:2757 D '60. (MIRA 14:1)

(Naphthenes)

BOGOMOLOV, A.I.; STRIGALEVA, N.V.; PANINA, K.I.

The Nazino petroleum of Western Siberia. Trudy VNIGRI no.155:85-89 '60. (MIRA 14:1)
(Nazino—Petroleum—Analysis)

BOGOMOLOV, A.I.; KHOTYNTSEVA, L.I.; PANINA, K.I.

Low-temperature catalytic conversion of organic compounds over clay; conversion of stearic acid. Trudy VNIGRI no.155:163-193 '60. (MIRA 14:1)

(Stearic acid) (Petroleum geology) (Gumbrin)

BOGOMOLOV, A.I.; PANINA, K.I.; BATALIN, O.Ye.

Thermocatalytic conversion of polycyclic naphthenes of petroleum in connection with problems of their genesis. Trudy VNIGRI no.155: 194-212 '60. (MIRA 14:1)
(Naphthenes) (Petroleum geology)

BOGOMOLOV, A.I.; PANINA, K.I.; KHOTYNTSEVA, L.I.

Physicochemical factors in reactions of the conversion of the initial organic substance into petroleum. Avtoref. nauch. trud. VNIGRI no.17:45-48 '56. (MIRA 11:6)
(Petroleum geology) (Organic matter)

BOGOMOLOV, A.I.; PANINA, K.I.

Study of the aromatic hydrocarbons of northern Caucasus petroleums in connection with their genesis. VNIGRI no.105:210-220 '57. (MIRA 11:9)

(Hydrocarbons)
(Caucasus, Northern--Petroleum geology)

PANINA, K.I.

Petroleums of Cambrian sediments in Yakutia. Trudy VNIGRI no.212. Geokhim.sbor. no.8:193-201 '63. (MIRA 16:12)

Panina, K I

11(0) PHASE I BOOK EXPLOITATION SOV/1960

Vsesoyuznyy neftyanoy nauchno-issledovatel'skiy geologorazvedochnyy institut

Geokhimicheskiy sbornik, no. 5 (Collected Papers on Geochemistry, Nr 5) Leningrad, Gostoptekhizdat, 1958. (Series: Its: Trudy, vyp. 123) 1000 copies printed.

Ed.: Pavel Fedorovich Andreyev; Exec. Ed.: L. Ya. Rusakova; Tech. Ed.: I. M. Gennad'yeva.

PURPOSE: The book is intended for the technical and scientific personnel of institutes and TsNIL (Central Scientific Research Laboratories) of the petroleum industry, and all those interested in the geology and geochemistry of petroleum.

COVERAGE: The book is the fifth issue of the Geokhimicheskiy sbornik (Collected Papers on Geochemistry) and contains articles contributed by VNIGRI staff members (All-Union Scientific Research Institute for Geological Survey) on various aspects of geochemistry. The work is divided into two parts, the first of which consists of 12 articles dealing with the development of theoretical problems in petroleum chemistry. The second part reviews problems connected with the study of organic and mineral crudes. In Part I, A. F. Dobryanskiy posits the low temperature origin of petroleum and rejects the popular claim concerning high temperature origin. The joint work of A. F. Dobryanskiy, P. F. Andreyev, and A. I. Bogomolov directs attention to the uniform phenomena in the composition of crudes that result from spontaneous changes in their substances through geological periods and which occur in full conformance with the basic laws of nature. The article supplements the basic principles developed by A. F. Dobryanskiy ten years ago in his well-known work, "Geokhimiya nefti" (Geochemistry of Petroleum). P. A. Desenkova, L. N. Zakharenkova, and A. F. Kurbatskaya report on the correlation of some microcomponents in the composition of crudes. Their extensive research combined with existing information permits them to draw interesting basic conclusions bearing directly on the origin of crude. Part II contains articles on new chemical, physical, and geochemical studies conducted at VNIGRI in recent years. Among these A. I. Bogomolov and K. I. Panina report on the particular characteristics of the aromatic hydrocarbon structure, which may prove useful for future research and exploration and in solving many genetic problems. I. K. Voronova describes a new method of counting the total number of live bacteria. It may be applied in various microbiological studies. References accompany each article.

Collected Papers (Cont.) SOV/1960

Card 5/7

BOGOMOLOV, A.I.; PANINA, K.I.; ANDREYEVA, L.G.

Composition and properties of Berezovo oil of Tyumen' Province.
Trudy VNIGRI no.95:400-404 '56. (MLRA 9:12)

(Tyumen' Province--Petroleum--Analysis)

PANINA K.I.

BOGOMOLOV, A.I.; PANINA, K.I.

Petroleums found in Cambrian deposits of Yakutia. Trudy VNIGRI no.95:411-421 '56. (MLRA 9:12)

(Yakutia--Petroleum--Analysis)

PANINA, K.I.

PHASE I BOOK EXPLOITATION SOV/4941

Mezhvuzovskoye soveshchaniye po khimii nefti, Moscow, 1956.

Sbornik trudov Mezhvuzovskogo soveshchaniya po khimii nefti (Collection of Transactions of the Inter-University Conference on Petroleum Chemistry) [Moscow] Izd-vo Mosk. univ., 1960. 313 p. Errata slip inserted. 1,600 copies printed.

Organizing Committee of the Conference: Chairman: B. A. Kazanskiy, Academician; Vice-Chairman: S. I. Khromov, Docent; G. M. Panchenkov, Professor; A. F. Plate, Professor; Secretary: Ye. S. Halenkova, Scientific Worker. Editorial Board: Resp. Ed.: A. F. Plate; I. V. Gostunskaya, I. N. Tits-Skvortsova, L. A. Erivanskaya.

PURPOSE: This collection of articles is intended for the teaching staff of universities and schools of higher education training specialists for the petroleum and petroleum-refining industries.

Card 1/7

COVERAGE: The collection includes articles dealing with the present state of the petroleum industry, the scientific research problems in petroleum chemistry, the chemistry of petroleum, the composition of petroleum and petroleum products, the scientific principles of refining petroleum into motor fuels and lubricants, and the manufacture of synthetic products from hydrocarbon gases and petroleum. One article discusses the effect of chemical composition and additives on fuel combustion in jet engines. The material was presented at the Inter-University Conference on Petroleum Chemistry, held at the Moscow State University by Imeni M. V. Lomonosov November 26-29, 1956. No personalities are mentioned. References accompany most of the articles.

Collection of Transactions (Cont.) SOV/4941

Fedorov, V. S. [Deputy Minister of the USSR Petroleum Industry (Currently Chairman of the State Committee of the USSR Council of Ministers for Chemistry)]. Present State of the Petroleum Industry and Scientific Research Problems in the Field of Petroleum Chemistry 5

Mamedaliyev, Yu. G., Academy of Sciences, Azerbaydzhanskaya SSR. Organic Synthesis Based on Hydrocarbons of Petroleum 25

Dobryanskiy, A. F., Leningradskiy gosudarstvennyy universitet im. A. A. Zhdanova (Leningrad State University Imeni A. A. Zhdanov). Conversions of Hydrocarbons at Low Temperatures as the Cause of the Diverse Types of Petroleum 61

Bogomolov, A. I., K. I. Panina, and L. I. Khotyntseva, Vsesoyuznyy nauchno-issledovatel'skiy geologorazvedochnyy institut (All-Union Scientific Research Institute for Geological Exploration). Catalytic Conversions of Acids in Contact With Aluminum Silicates (Aspect of the Problem

Card 3/7

S/080/60/033/012/016/024
D209/D305

AUTHORS: Bogomolov, A.I., and Panina, K.I.

TITLE: A low-temperature catalytic transformation over natural clay of low-molecular-weight naphthene hydrocarbons of petroleum

PERIODICAL: Zhurnal prikladnoy khimii, v. 33, no. 12, 1960, 2757 - 2762

TEXT: Although catalytic changes and cracking of various hydrocarbons over artifical and natural aluminosilicates at the high temperature range, 450-500°C, have been extensively studied, catalytic reaction at lower temperatures have only recently been studied. At low temperatures, with prolonged thermal and contact effect of clays, the reactions to some extent follow a different pattern to that of ordinary cracking. A heavy fraction of petroleum, of b.p. range 500-550°C from which aromatic hydrocarbons were practically absent, consisting in the main of high molecular weight polycyclic

Card 1/3

S/080/60/033/012/016/024
D209/D305

A low-temperature catalytic ...

hydrocarbons and iso-substituted methanes, was used. As catalyst, natural clay was used both in an acid-activated form and in a non-activated state. The clay was compressed into tablets for use. Proportions by wt. of clay: oil were 5:1 (activated) and 10:1 (non-activated). The contact transformation of the oil was carried out under atmospheric pressure at a temperature of 150°C with heating for 8 hours. The clay, after the experiment was finished, was extracted with petroleum ether (b.p. up to 60°C) and with an alcohol-benzol mixture, the former extracting practically all the hydrocarbon content of the reaction product together with unreacted initial oil and the latter dissolving out the resins formed. The reaction products contained 93.4 % liquid hydrocarbons, 4.2 % resins and 1.4 % high-hydrocarbon residue in the clay. About 50 % of the initial oil was converted into lighter hydrocarbons with activated clay, the benzine and kerosene fraction formed were 25.6 % and with non-activated clay, 17.8 %, consisting mainly of methane, olefines and naphthene hydrocarbons. The reaction mechanism, in the first stage, is considered to be due to cyclic scission and break-

Card 2/3

Science Abstract
Sect. A.

6658. On galvanomagnetic properties of iron-nickel alloys in the region of the paraprocess. K.P. Panina. Zh. Eksper. Teor. Fiz., 2 1, 809-13 (No. 7, 1 951, In Russian.

PANINA, L., brigadir

For the best enterprise of communist labor. Muk.-elev.prom. 26 no.7:2 Jl '60. (MIRA 13:8)

1. Brigada kommunisticheskogo truda Stalinogorskogo mel'kombinata. (Stalinogorsk--Flour mills)

TSENTER, Ya.A.; PANINA, L.A.; LANDIKHOV, A.D.

Secondary magnesium alloy for automobile castings. Lit. proizv. no.12:5-6 D '64. (MIRA 18:3)

DRONOV, S.F.; VASIL'YEVA, K.A.; PANINA, L.I.; KURILENKO, N.K.; SUROVOVA, O.F.

Low-modulus hemicellulose hydrolysis of plant tissues with a pentose hydrolizate. Gidroliz. i lesokhim.prom. 16 no.3:17-19 '63. (MIRA 16:5)

1. Moskovskoye otdeleniye Gosudarstvennogo nauchno-issledovatel'skogo instituta gidroliznoy i sul'fitnospirtovoy promyshlennosti.
(Hydrolysis) (Hemicellulose)

MAYBORODA, V.I.; PANINA, L.D.; VANIFAT'YEVA, K.P.; NIKITINA, A.M.; CHUDAKOVA, N.I.

Mass coloration of capron. Khim.volok. no.5:52-55 '62. (MIRA 15:11)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut iskusstvennogo volokna (for Mayboroda, Panina, Vanifat'yeva).
2. Klinskiy kombinat iskusstvennogo i sinteticheskogo volokna (for Nikitina, Chudakova).
(Dyes and dyeing--Nylon)

TRET'YAKOV, A.F.; BOGOLEPOV, N.K.; ZIMKINA, A.M.; SPIVAK, F.N.; BUREYKO, V.M.; AVERBAKH, A.Ya.; LEVSHIN, A.V.; PANINA, L.G., red.; BALDINA, N.F., tekhn.red.

[Principles of disability evaluation; theory, methodology, organization. Guide for physicians of the Medical Experts' Commission on Workers' Disability, medical and prophylactic and other institutions, teachers and students of medical institutes] Osnovy vrachebno-trudovoi ekspertizy; teoriia, metodika, organizatsiia. Rukovodstvo dlia vrachei VTEK, lechebno-profilakticheskikh i drugikh uchrezhdenii, prepodavatelei i studentov meditsinskikh institutov. Moskva, Medgiz, 1960. 326 p. (MIRA 14:12)
(DISABILITY EVALUATION)

PANINA, L.S.

Use of penicillin preparations with delayed action in certain infectious diseases, particularly in scarlet fever. Pediatriia no.2:63-64 Mr-Ap '53.

1. Kafedra infektsionnykh zabolevaniy Gor'kovskogo meditsinskogo instituta imeni S.M. Kirova. (Scarlatina) (Penicillin--Therapeutic use)