

136146-16

ACC NR: AP6023910

purities producing n- and p-type conductivity, p-n junctions of predetermined configuration can be obtained during the growth process. Orig. art. has: 1 figure and 1 formula.

SUB CODE: 20/ SUBM DATE: 14Oct65/ ORIG REF: 004/ OTH REF: 001

Pulling crystals from a melt /8

Card 2/2

blg

0121-57 INT(M)/INT(t)/INT/INT(K) LIT(e) JB/RW/IN/SS

ACC NR: AP6026704 SOURCE CODE: UR/0181/66/008/008/2461/2462

AUTHOR: Tsvinskiy, S. V.; Koptev, Yu. I.; Stepanov, A. V.

28
B

ORG: Physicotechnical Institute im. A. F. Ioffe, AN SSSR, Leningrad (Fiziko-tekhnicheskii institut AN SSSR)

TITLE: Growing of germanium tubes

SOURCE: Fizika tverdogo tela, v. 8, no. 8, 1966, 2460-2461

TOPIC TAGS: crystal growing, germanium single crystal

ABSTRACT: The method used for growing thin-walled germanium tubes is a modification of one described earlier by A. V. Stepanov (Budushcheye metalloobrabotki. Lenizdat, 1963). The seed (tungsten foil rolled into a tube and wetted by germanium) is immersed in molten germanium, then gradually pulled out of it (at a pulling rate of 60 mm/hr). Thanks to surface tension forces, a thin-walled tube builds up behind the seed. The temperature conditions are chosen such that the crystallization front is located slightly (1 mm) above the upper end of the rod. Thus, during the pulling, crystallization begins under conditions where thin-walled tubes about 1 cm in diameter can be grown onto the seed. In the cross section, one single-crystal grain frequently predominates over other single-crystal grains by displacing them during growth. In good specimens, the thickness of the tubes was 0.20 ± 0.3 mm. The length (90-100 mm) was determined by the performance of the pulling mechanism. Orig. art. has: 2 figures.

15

Card 1/1 SUB CODE: 20 / SUBM DATE: 25 Jan 66 / ORIG REF: 002

L 01814-67 EWT(m)/EWP(1) LJP(c)

ACC NR: AP6035633

SOURCE CODE: UR/0089/66/020/005/0429/0430

3

AUTHOR: Alekseyev, A. G.; Barkovskiy, V. N.; Basargin, Yu. G.; Vasil'yev, V. N.; Litunovskiy, R. N.; Minyayev, O. A.; Nikolayev, V. N.; Stepanov, A. V.

37
B

ORG: none

TITLE: 68.5 cm sector-focused cyclotron

11

SOURCE: Atomnaya energiya, v. 20, no. 5, 1966, 429-430

TOPIC TAGS: cyclotron, deuteron, proton

ABSTRACT: A sector-focusing cyclotron that can deliver protons of 7.5 to 100 Mev and deuterons of 0.5 to 4.0 Mev is described. The acceleration of molecular H₂ ions underscores the essential role of the process of proton dissociation. Under certain conditions intrinsic to the sector-focusing cyclotron where the ions achieve several hundred revolutions, this process can interfere with obtaining the intensity of the ion beam at finite energies, if the vacuum in the accelerator chamber is less than 1.10⁻⁵ mm Hg cm⁻¹. Orig. art. has: 3 figures. (NA)

SUB CODE: 20 / SUBM DATE: 04 Sep 65 / ORIG REF: 002 / OTH REF: 001

Card 1/1 Ev

UDC: 621.384.611

0922 0035

ACC NR: AR6029493

SOURCE CODE: UR/0137/66/000/000/D032/D032

AUTHOR: Stepanov, A. V.

TITLE: Production of articles directly from the melt 14

SOURCE: Ref. zh. Metallurgiya, Abs. 6D225

REF SOURCE: Uch. zap. Leningr. gos. ped. in-ta im. A. I. Gertsena, no. 265, 1965, 3-11

TOPIC TAGS: nonferrous metal, metallurgic process

TRANSLATION: The substance of a method for producing articles directly from the melt as proposed by the Leningrad Pedagogical Institute in Gertsen and students of the author, is presented. This technique was tested under laboratory conditions on materials with different thermophysical and mechanical properties in the solid and liquid state, on Al, Cu and their alloys, cast iron and others. According to the proposed technique it is possible to organize the production of Al and Al alloy parts in the same distinct steps. This technique necessitates extensive changes in the metal processing plant. Thus, for example, it is advisable to produce parts from Al and its alloys at a plant which produces Al. It was noted that the above method for producing parts is still in the development stage. N. Yudina.

SUB CODE: 11,13

UDC: 621.774.24:669.71

Card 1/1

L 08342-67 EWT(m)/EWP(t)/ETI/EWP(k) IJP(c) JD/HW/JH

ACC NR: AR6033102

SOURCE CODE: UR/0137/66/000/007/G018/G018

AUTHOR: Gol'dfarb, V. M.; Donskoy, A. V.; Stepanov, A. V. 48

TITLE: Producing thin-walled pipes of rectangular cross section directly from the melt

SOURCE: Ref. zh. Metallurgiya, Abs. 7G138

REF SOURCE: Uch. zap. Leningr. gos. ped. in-ta im. A. I. Gertsena, v. 265, 1965, 42-49

TOPIC TAGS: pipe, molten metal, aluminum, alloy microstructure, rectangular pipe

ABSTRACT: The experimental results are described for producing 0.45-gage thin-walled pipes of rectangular cross section 32 x 52 mm from Al and Al-Mg (0.8-16%) alloys directly from the melt. The dependence of the pipe's wall thickness on the mode of drawing, different profile and insert dimensions, and the alloy microstructure and mechanical properties has been studied in finished pipes. Orig. art. has: 6 figures and 1 table. Bibliography of 6 titles. [Translation of abstract]

SUB CODE: 11, 13/
Card 1/1 nst

UDC: 669.71.04

ACC NR: AR6034748 SOURCE CODE: UR/0276/66/000/007/G045/G045

AUTHOR: Gol'dfarb, V. M.; Gol'tsman, B. M.; Stepanov, A. V.

TITLE: Uniform cooling of thin-walled articles drawn from the melt

SOURCE: Ref. zh. Tekhnologiya mashinostroyeniya, Abs. 7G275

REF SOURCE: Uch. zap. Leningr. gos. ped. in-ta im. A. I. Gertsena, v. 265,
1965, 90-104

TOPIC TAGS: metallurgy, metal, metal cooling, cooling

ABSTRACT: A brief analysis is given of five methods of cooling parts drawn from the melt: cooling in a slip mold, cooling in a movable-wall mold, convective cooling in liquid, cooling with a water spray or a water-air mixture, and blasting with air. Computations are presented for estimating the heat regime in cooling drawn ingots. The original article has 2 figures, 4 tables, and 13 bibliographic references.
[Translation of abstract] [SP]

SUB CODE: 11/

Card 1/1

UDC: 621.74.047.2.06

L 09389-67 EWP(k)/EWI(m)/EWP(t)/ETI IJP(c) JD/HW

ACC NR: AR6033107

SOURCE CODE: UR/0137/66/000/007/D043/D043

AUTHOR: Bogolyubov, G. K.; Gol'dfarb, V. M.; Donskoy, A. V.; Kostygov, A. S.;
Stepanov, A. V.

32

TITLE: Producing thin-walled flattened sheet pipe (radiator strip) directly from
the melt

SOURCE: Ref. zh. Metallurgiya, Abs. 7D316

REF SOURCE: Uch. zap. Leningr. gos. ped. in-ta im. A. I. Gertsena, no. 365,
1965, 75-89

TOPIC TAGS: pipe, metal drawing, radiator pipe, flattened pipe

ABSTRACT: Metal drawing for radiator strip has been carried out on a laboratory unit. The strip was drawn from A Mts alloy. The type of equipment and some technological problems were developed and solved for producing 4-, 6- and 10-channel strip with a 0.3-1.0-mm gage. The production technology for a 13 channel strip is described. An experimental batch (~300 m) of radiator strip for two radiators of a tractor radiator was produced and analyzed. Semicontinuous and continuous units were designed for producing thin-walled flattened sheet pipes

Card 1/2

UDC: 621.774.21

L 09389-67

ACC NR: AR6033107

directly from the melt. Orig. art. has: 8 figures. Bibliography of 15 titles.
L. Kochenova. [Translation of abstract]

SUB CODE: 13/

Card

2/2 *mlc*

ACC NR: AP6023643

SOURCE CODE: UR/0149/66/000/002/0154/0161

AUTHOR: Gol'dfarb, V. M.; Gol'tsman, B. M.; Donskoy, A. V.; Stepanov, A. V.ORG: Chair of General Physics, Leningrad State Pedagogical Institute (Leningradskiy gosudarstvennyy pedagogicheskiy institut. Kafedra obshchey fiziki)

TITLE: Thermal conditions for producing thin-walled products from a melt

SOURCE: IVUZ. Tsvetnaya metallurgiya, no. 2, 1966. 154-161

TOPIC TAGS: metal casting, convective heat transfer, thermal analysis, temperature distribution, optimization

ABSTRACT: Thermal conditions and process parameters for the continuous casting of thin-walled products from a melt are given. Four cooling methods are described: 1) drawing from a melt with the crystal front sliding across water-cooled metal shoes; 2) convective cooling in a liquid; 3) convective cooling in a liquid without a buffer zone; 4) by air-blast or water spraying. For method (1) so much friction results from the ingot-wall interface that wall thicknesses must be maintained above 5 mm. Heat conduction coefficients varied from 1000 kcal/m²-deg-hr for (1) to 2000-10,000 kcal/m²-deg-hr for (4). The temperature was given as a function of *x--the vertical coordinate*, by the equation

$$T = T_0 \exp \left[\frac{c \rho v}{2\lambda} \left(1 - \sqrt{1 + \frac{4\alpha \lambda}{lc^2 \rho^2 v^2}} \right) x \right],$$

Card 1/2

UDC: 669.017: 621.77

Card 2/2

ACC NR: AP6034097 (N) SOURCE CODE: UR/0089/66/021/004/0292/0292

AUTHOR: Stepanov, A. V.

ORG: none

TITLE: Stationary diffusion of thermal neutrons in media with random inhomogeneities

SOURCE: Atomnaya energiya, v. 21, no. 4, 1966, 292

TOPIC TAGS: thermal neutron, neutron diffusion, neutron absorption, neutron distribution, relaxation process

ABSTRACT: This is a summary of paper No. 105/3727, submitted to the editor and filed but not published in full. The article deals with diffusion of thermal neutrons from a stationary source in a medium in which the degree of absorption of neutrons varies from point to point in accordance with a random law, with a constant diffusion coefficient. An approximation using the second moments of the distribution of the neutrons is employed. Cases of isotropic (on the average) and strongly anisotropic media are considered. An expression is obtained for the relaxation constant of the neutron density in the medium, in which the homogeneity is violated by means of localized inclusions.

SUB CODE: 18/ SUBM DATE: 12May66/ OTH REF: 001

UDC: 539.125.52

Card 1/1

ACC NR: AM6034415

Monograph

UR/

Stepanov, Aleksandr Vasil'yevich (*DOCTOR OF PHYSICO-MATHEMATICAL SCIENCES,
PROFESSOR*)

Producing articles directly from melts (Polucheniye izdeliy neposredstvenno iz rasplava) Moscow, Izd-vo "Znaniye", 1966. 48 p. illus. 46,700 copies printed.

Series note: Novoye v zhizni, nauke, tekhnike. Seriya IV: Tekhnika, 1966, no. 17

TOPIC TAGS: metal melt, metallurgic process, metal forming

PURPOSE AND COVERAGE: This book is intended for engineers-metallurgists, engineering personnel of metallurgical plants and for students specializing in metallurgical processes. The book describes the process of obtaining articles directly from the melt, stresses its advantages, and outlines new machinery introduced to carry out this process. Various shaped articles produced by applying the described method are illustrated and the possibility of controlling the process is shown.

TABLE OF CONTENTS:

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ZLDC: NONE

ACC NR: AM6034415

Why is it desirable to produce articles directly from the melt -- 6
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SUB CODE: 13,11/ SUM DATE: 18Aug66/ ORIG REF: 003/

Card 2/2

ACC NR: ARG035101

SOURCE CODE: UR/0137/66/000/008/G016/G016

AUTHOR: Gol'dfarb, V. M.; Gol'tsman, B. M.; Donskoy, A. V.; Stepanov, A. V.

TITLE: Thermal conditions for drawing parts from the melt with various methods of cooling

SOURCE: Ref. zh. Metallurgiya, Abs. 8G160

REF SOURCE: Uch. zap. Leningr. gos. ped. in-ta im. A. I. Gertsena, no. 265, 1965, 118-143

TOPIC TAGS: metal drawing, cooling, *MOLTEN METAL, DRAWN ALUMINUM*

ABSTRACT: Test data, diagrams and equations are presented for various conditions of the process of drawing parts from molten aluminum (strips, pipes, and intricate shapes). The prospects are worked out for various methods of cooling while drawing. Orig. art. has: 18 figures and 5 tables. The bibliography contains 22 titles. A. Tseydler. [Translation of abstract] [NT]

SUB CODE: 13/

Card 1/1

UDC: 669.71.04

SHVEDOV, V.P.; STEPANOV, A.V.

Separation of rare earth elements by continuous electrophoresis.

Part 1: Separation by means of citric acid. Radiokhimiia 1 no.1:

112-115 '59.

(MIRA 12:4)

(Rare earth metals--Analysis) (Electrophoresis)

(Citric acid)

SHVEDOV, V.P.; STEPANOV, A.V.

Electrical migration method for the determination of the instability constants of complex compounds of elements present in micro-concentrations. Part 1: Determination of the instability constant of complex compounds of some lanthanides with the anion of ethylenediaminetetraacetic acid. Radiokhimiia 1 no.2:162-167 '59.
(MIRA 12:7)

(Rare earth compounds) (Acetic acid)

STEPANOV, A.V.; SHVEDOV, V.P.

Electromigration method of determining the instability constants of complex compounds of infinitely diluted elements.
Part 2: Determination of constants for complex formation between some lanthanides and citric acid. Radiokhimiya 1
no.6:668-673 '59. (MIRA 13:4)
(Rare earth compounds) (Citric acid)

STEPANOV, A. V., Cand Chem Sci — (diss) "Study of the separation
of rare-earth elements by electrophoresis," Leningrad, 1960, 18 pp, 200 cop.
(Leningrad State U im Zhdanov) (KL, 44-60, 128)

S/081/61/000/022/003/076
B102/B108

AUTHORS: Shvedov, V. P., Petrzhak, K. A., Sedletskiy, R. V.,
Stepanov, A. V.

TITLE: Extraction of the rare-earth group from U^{238} photofission
fragments by continuous electrophoresis

PERIODICAL: Referativnyy zhurnal. Khimiya, no. 22, 1961, 36, abstract
22B248 (Tr. Tashkentsk. konferentsii po mirn. ispol'zovaniyu
atomn. energii. Tashkent, AN UzSSR, v. 2, 1960, 325-326)

TEXT: Electrophoretic separation of rare-earth fission products is
preceded by the extraction of their sum. Recipe: dissolve 1 g of
irradiated U_3O_8 in 2 ml of concentrated HNO_3 , add $Pb(NO_3)_2$ (20 mg with
respect to Pb) and $Ce(NO_3)_3$ (15 mg with respect to Ce) as carriers to
15 ml HNO_3 (spec. wt. 1.5), and twice precipitate $Pb(NO_3)_2$ to remove the
Ba and Sr isotopes. Isolate the precipitates, boil down the solution to
2 ml, dilute with water to 15 ml and precipitate CeF_3 after adding $Zr(NO_3)_4$

Card 1/3 *Leningrad Technological Inst. im Leningrad.*

Extraction of the rare-earth ...

S/081/61/000/022/003/076

B102/B108

carrier (20 mg with respect to Zr) and a mixture of HF and NH_4F . The precipitates are rinsed with water and dissolved in a mixture of H_3BO_3 and HNO_3 . Then Ce^{3+} is oxidized to Ce^{4+} by bromate, 3 mg of Fe^{3+} are introduced into the solution, and $\text{Ce}(\text{IO}_3)_4$ is precipitated by means of 15-17 ml of an 0.35N HIO_3 solution. The solution containing Fe^{3+} , K, IO_3^- , BrO_3^- , and rare-earth elements (REE) is heated, and $\text{Fe}(\text{OH})_3$ is precipitated by a solution of concentrated NH_4OH . The $\text{Fe}(\text{OH})_3$ precipitates with the REE are rinsed with hot water and dissolved in 4 ml of concentrated HCl. After cooling the obtained solution, Fe^{3+} is removed by fourfold extraction with amyl acetate. The aqueous phase is evaporated, the dry remainder is calcined and treated with HNO_3 and 30% H_2O_2 . After having removed the acids have been extracted by heating, dissolve the remainder in 0.7 ml of 0.01% Trilon B solution, Ce^{3+} (0.001 mg/ml) carrier introduced, and subject the obtained solution to electrophoresis in an 0.01% Trilon B solution (pH 1.94) as an electrolyte. Separation is to take place at a potential gradient of ~ 10 v/cm. The flow rate into the Card 2/3

Extraction of the rare-earth ...

S/081/61/000/022/003/076
B102/B108

cell of the mixture to be separated is 1.5 ml/hr. By this method
La^{141, 140}, Pr¹⁴⁵, Nd^{149, 147}, Pm^{140, 150}, and Y^{91, 93} have been
extracted. The separation time of the total of REE was ~2.5 hr, the
time of electrophoresis was 2 hr 26 min. [Abstracter's note: Complete
translation.]

✓

Card 3/3

5.2300

1087, 1228 1273

S/186/60/002/001/010/022
AC57/A129

AUTHORS: Shvedov, V.P.; Stepanov, A.V.

TITLE: Separation of rare earth elements by the method of continuous electrophoresis. II. Separation by means of ethylenediaminetetraacetic acid

PERIODICAL: Radiokhimiya, v. 2, no. 1, 1960. 65 - 67

TEXT: Using trilon B (Na salt of ethylenediaminetetraacetic acid) as complex-forming agent, a separation method for rare earths (La, Ce, Fm, Eu and Y) by continuous electrophoresis was developed. This is a continuation of previous investigations concerning lanthanide separation by means of complex-forming agents. The principle of separation is based on the different stability of rare earth complexes. In the previous work citric acid was used as complex-forming agent. However, the instability constants of the $K_M \text{Cit}_3^-$ citrate complexes of rare earths are less different than those of EDTA $^{4-}$ complexes (see Table). Thus trilon B is more efficient in separation by electrophoresis. The present experiments were carried out in an apparatus for continuous electrophoresis described in a previous paper [Ref. 1: Radiokhimiya, 1, 1, 112 (1959)]. Because of the low

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22459

3/186/60/002/001/010/022

A057/A129

Separation of rare earth elements by the method of....

solubility, 0.01% trilon B solutions were used. pH was measured by a quinhydrone electrode, the temperature was kept at 20°C and the ionic strength of the solutions at 0.017. Curves representing the shift of equilibrium of the reversible reaction $H^+ + [M\text{enta}]^- \rightleftharpoons M^{3+} + H\text{enta}^{3-}$ (1) are given in Figure 1. The mobilities of the $[M\text{enta}]^-$ and M^{3+} ions of the investigated rare earths are very similar, therefore, the observed effect of zone separation of the rare earths can be explained only by the difference in the instability constants of each rare earth element. Hence the correlation between the separation effect and the instability constant is evident. The most efficient separation is limited to a narrow pH range. From Figure 1 the optimum separation conditions for any combination of the cerium group of rare earths can be determined. As a typical example conditions for the separation of Nd^{147} - Fm^{147} - $Eu^{152-154}$ with the following specific data are given: 0.01% trilon B, ionic strength 0.017, temperature 20°C, pH 1.88, potential gradient 9.2 v/cm, rate of supply into the cell 2.5 ml/h, separation time 86 min. Nd^{147} and $Eu^{152-154}$ were not free of the carrier. The authors remark that with citric acid, even at considerably higher potential gradients, this mixture of rare earths could not be separated. There are 2 figures, 1 table and 3 Soviet references. X

SUBMITTED: May 8, 1959

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22159

S/186/60/002/001/010/022

Separation of rare earth elements by the method of.... A057/A129

element	$K_M \text{ Cit}_2^{3-}$	$K_M \text{ enta}^-$
La	$3.6 \cdot 10^{-10}$	$1.0 \cdot 10^{-18}$
Ce	$2.2 \cdot 10^{-10}$	$2.5 \cdot 10^{-19}$
Nd	$2.0 \cdot 10^{-10}$	—
Pm	$1.8 \cdot 10^{-10}$	$5.0 \cdot 10^{-20}$
Eu	$1.6 \cdot 10^{-10}$	$1.6 \cdot 10^{-20}$
Y	—	$8.0 \cdot 10^{-21}$

X

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22459

S/186/60/002/001/010/022

Separation of rare earth elements by the method of.... A057/A129

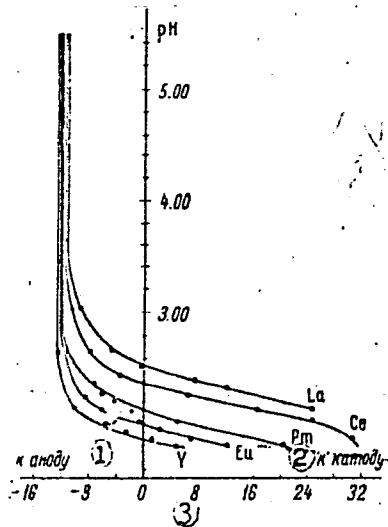


Figure 1: Change in the traveling rate of the zone of La, Ce, Pm, Eu and Y in dependence on the acidity of 0.01% trilon B solution. ① - to the anode; ② - to the cathode; ③ - traveling rate of the zone in $\text{cm}^2/\text{v} \cdot \text{sec} \cdot 10^5$.

X

Card 4/4

SHVEDOV, V.P.; STEPANOV, A.V.

More accurate values of the instability constants of certain complex
compounds formed between lanthanides and the ethylenediaminetetraacetate
ion. Radiokhimiia 2 no.6:261-262 '60. (MIRA 14:4)
(Rare earth compounds)
(Acetic acid)

21089

S/186/60/002/006/014/026
A051/A129

21,4200

AUTHORS: Shvedov, V. P.; Patrzhak, K. A., Sedletskiy, R. V., Stepanov, A.V.

TITLE: The application of continuous electrophoresis for the separation of the rare earth group U^{238} photo-separation fragments

PERIODICAL: Radiokhimiya, v. 2, no. 6, 1960, 711 - 714

TEXT: The authors have investigated the possibility of applying the electrophoresis method to the separation and subsequent determination of the yields of the U^{238} separation fragments having masses in the region of the rare earth elements. A description is given of the method of the radiochemical separation of a sum of rare earth fragments without a carrier from the products of the photo-separation of U^{238} . It is possible to use continuous electrophoresis for separating short-lived rare earth fragments. The radiochemical separation of the sum of the rare earth group without a carrier was developed for measuring the beta-activities of the obtained samples on a β -counter. The procedure is as follows: About 1 gram of irradiated uranic oxide is dissolved in 2 ml of concentrated HNO_3 while being heated. 20 mg of Pb^{2+} carrier is added to the solution and 15 mg of Ce(III) in the form of nitrates. The solution is cooled. $Pb(NO_3)_2$

X

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24089

S/185/60/002/006/014/026
A051/A129

The application of continuous

(Sr*, Ba*) is precipitated by adding 15 ml of fuming HNO_3 (98 %) while cooled on ice for 15 minutes and mixing. The $\text{Pb}(\text{NO}_3)_2$ solution is dissolved in 1 ml of H_2O and a second precipitation of $\text{Pb}(\text{NO}_3)_2$ is performed. The combined solutions containing the sum of the rare earth fragments UX_1 , other separation fragments and $\text{UO}_2(\text{NO}_3)_2$ are evaporated to 2 ml. After mixing with water up to 15 ml, 20 mg of Zr-carrier are introduced into the solution and the precipitation of CeF_3 is carried out with a mixture of $\text{HF-NH}_4\text{F}$. After washing the fluorides with water they are dissolved in a mixture of H_3BO_3 and 6 ml of HNO_3 . 2 gr of KBrO_3 is added to the obtained solution for acidifying $\text{Ce}(\text{III})$ to $\text{Ce}(\text{IV})$, 3 mg $\text{Fe}(\text{III})$ -carrier is added and precipitation of $\text{Ce}(\text{IO}_3)_4(\text{UX}_1)$ is carried out with 15 - 17 ml of 0.35 n HIO_3 , while cooling on ice and mixing for 10 minutes. The solution containing $\text{Fe}(\text{III})$, the sum of the rare earth fragments, K^+ , IO_3^- , BrO_3^- is heated and a careful precipitation of $\text{Fe}(\text{OH})_3$ is carried out with concentrated NH_4OH . The $\text{Fe}(\text{OH})_3$ residue containing the rare earth elements is washed twice with hot water and dissolved in 4 ml of concentrated HCl , after which $\text{Fe}(\text{III})$ is removed with a four-fold extraction of the iron-chloride complex in amylacetate. The experimentally

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21089
S/186/60/002/006/014/026
A051/A129

The application of continuous

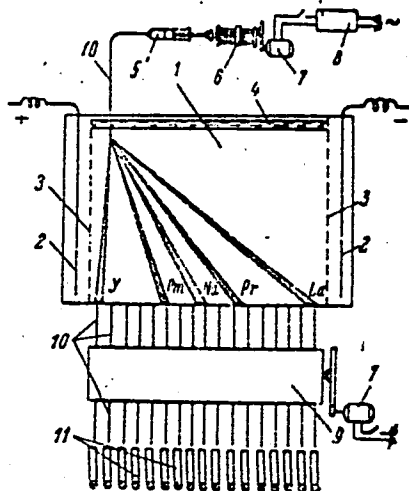
determined yield of the rare earth fragments was found to be 60 %. The time required for the radiochemical separation of the rare earth fragments without a carrier was 2.5 hours. The addition of Fe^(III) before the precipitation of Ce(IO₃) reduced the losses. The possibility of using the extraction of iron diethylcarbamate into ether from 0.1 n HCl for removal of the iron in the last stages was investigated and was found to be unsuitable, since products of the thermal decomposition of diethyldithiocarbamate remained behind. The electrophoretic separation of the rare earth sum fragments and the apparatus used for the procedure shown in Figure 1 are described. The apparatus is being reconstructed at present in order to decrease the time of the separation of the sum of the rare earth fragments. The final yield of the rare earth fragments without a carrier in radiochemical and subsequent electrophoretic separation was determined by means of Y⁹⁰ (T = 64.3 hours), Pm¹⁴⁷ (T = 2.65 years) and Eu^{152,154} (T = 16 years), and was found to be about 45 - 50 %. There are 3 figures and 8 references: 7 Soviet-bloc and 1 non-Soviet-bloc. The reference to the English language publication reads as follows: K. E. Ballou, Radiochemical Studies: The Fission Product, 9, 3, 306, 1951.

SUBMITTED: July 6, 1959.

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The application of continuous

Figure 1: Diagram of the apparatus for conducting continuous electrophoresis. 1 - electrophoretic chamber, 2,- platinum electrodes, 3 - semipermeable membranes, 4 - electrolyte, 5 - syringe, 6 - device for pushing out the syringe, 7 - synchronous motors, 8 - RC-generator for feeding the synchronous motor, 9 - pump of peristaltic action, 10 - polyethylene tubes, 11 - test tubes for collecting the fractions.



Card 4/4

5.5700

77741

SOV/75-15-1-3/29

AUTHORS: Shvedov, V. P., Ten Ten, Stepanov, A. V.

TITLE: Separation of Some Isotopes by Focusing Ion-Exchange

PERIODICAL: Zhurnal analiticheskoy khimii, 1960, Vol 15, Nr 1, pp 16-19 (USSR)

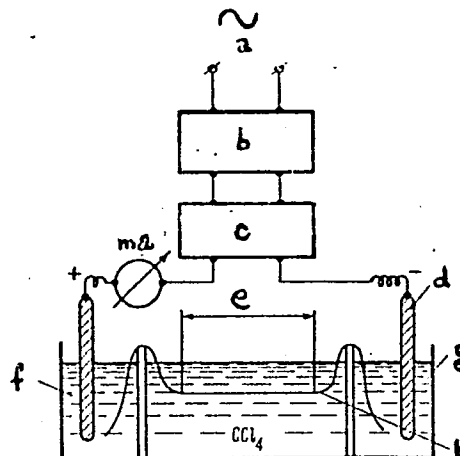
ABSTRACT: Application of focusing ion-exchange method to the separation of fission products, such as $Sr^{90}-Y^{90}$; $Sr^{90}-Y^{90}-Ce^{144}$; $Ce^{144}-La^{140}$, without carriers, as well as of the mixture Ce-Pr, was studied. Description of the method is given in a series of articles published previously (Kolin, A., Proc. Nat. Acad. Sci. USA, 41, 101, 1955, and others). A diagram of the installation is shown in Fig. 3. A few drops of the radioactive solution containing the isotopes to be separated are placed on a strip of filter paper (with pencil lines 2-3 mm apart); the ends of the strip are dipped into the electrode vessels

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Separation of Some Isotopes by Focusing
Ion-Exchange

77741
SOV/75-15-1-3/29

Fig. 3. Scheme of separating installations:
(a) line, (b) rectifier,
(c) electronic stabilizer,
(d) carbon electrode, (e)
ion separation zone,
(f) anodic solution (HCl),
(g) cathodic solution
(complex forming compound),
(h) paper strip.



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Separation of Some Isotopes by Focusing
Ion-Exchange

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and the central part of the paper is immersed into CCl_4 in the central container. Now the current (260-280 v (20-30 v/cm) is switched on. After 2-5 minutes the concentration gradient is established, and after 2-3 minutes the elements are separated and concentrated. Position of the zones is found by direct measurement of radioactivity of the paper strip or by autoradiographic method (autoradiographs are given). Identification of the elements is done by measuring the maximum β -radiation or according to the half life periods. Conditions of the experiments and the results are shown in Tables 1 and 2. The following conclusions were made: mixtures $Sr^{90} + Y^{90}$; $Sr^{90} + Y^{90} + Ce^{144}$; and $Ce^{144} + La^{140}$ can be separated by the above method, using complexon III or citric acid, in 5 minutes. The complete separation of a mixture of Ce and Pr in concentrations up to 0.5 mg/ml cannot be reached when complexon III is used. Better results are obtained by the use of a mixture of

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Separation of Some Isotopes by Focusing
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complexon III and citric acid. There are 2
tables; 7 figures; and 9 references, 5 U.S.,
3 Swiss, 1 Soviet. The 5 U.S. references are:
Sato, T. R., Diamond, H., Norris, W. P., J. Am.
Chem. Soc., 74, 6154 (1952); Sato, T. R., Norris,
W. P., Strain, H. H.; Analyt. Chem., 26, 267 (1954);
Sato, T. R., Norris, W. P., Strain, H. H., Analyt.
Chem., 27, 521 (1955); Kolin, A., Proc. Nat. Acad.
Sci. USA 41, 101 (1955); Hoch, H, Barr, G. H.,
Science, 122, 243 (1955).

ASSOCIATION: Lensovet Institute of Technology, Leningrad
(Leningradskiy tekhnologicheskij institut imeni
Lensoveta)

SUBMITTED: July 29, 1958

Card 4/7

Separation of Some Isotopes by Focusing
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Table 1.

(1) Experiment nr; (2) cathodic solution; (3) anodic solution (HCl); (4) complex forming compound; (5) concentration of complex forming compound, M; (6) concentration, M; (7) complexon III; (8) the same; (9) citric acid.

(1)	(2)		(3)	
	(4)	(5)	pH	(6)
1a	(7)	0,1	11	0,5
1b	(8)	0,01	11	0,5
2a	" "	0,1	11	0,5
2b	" "	0,1	11	0,1
2c	" "	0,1	11	0,02
3a	" "	0,1	11	0,5
3b	" "	0,1	7	0,5
3c	" "	0,1	4	0,5
4a	" "	0,1	7	0,5
4b	(9)	0,03	12	0,5

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Separation of Some Isotopes by Focusing
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Table 2.

(1) Cathodic solution; (2) anodic solution; (3) distance between the zones (mm); (4) complex forming compound; (5) concentration of the complex forming compound, mole; (6) concentration of NaOH (mole); (7) concentration of HCl (mole); (8) citric acid; (9) the same; (10) complexon III; (11) the same; (*) infocusable; (**) inseparable; (***) NaOH concentration constant.

(See Card 7/7)

Card 6/7

Separation of Some Isotopes by Focusing
Ion-Exchange

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Table 2

(1)			(2)	(3)		
(4)	(5)	(6)	pH	(7)	st and Ce	and Y
(8)	0.01	•••	12	0.5	30	45
(9)	0.03	—	12	0.5	15	27
•	0.05	—	12	0.5	8	20
•	0.1	—	12	0.5	8	10
•	0.5	—	12	0.5	0	4
•	0.1*	0	—	0.5	—	—
•	0.1	0.1	—	0.5	15	25
•	0.1	0.3	—	0.5	10	20
•	0.1	0.5	—	0.5	10	15
•	0.1	0.8	—	0.5	8	10
•	0.1**	1.0	—	0.5	0	0
•	0.1	•••	12	0.1	8	30
•	0.1	—	12	0.3	8	18
•	0.1	—	12	0.5	8	10
(10)	0.1	•••	9	0.03	12	4
(11)	0.04	—	9	0.03	15	4
•	0.02	—	9	0.03	30	6

Card 7/7

SHVEDOV, V.P. (Leningrad); STEPANOV, A.V. (Leningrad)

Instrument for continuous electrophoresis. Zhur. fiz. khim. 35
no.1:217-219 Ja '61. (MIRA 14:2)
(Electrophoresis)

STEPANOV, A.V.; SEVEROV, E.A.

Gagarinite, a new rare earth mineral. Dokl. AN SSSR 141 no.4:
954-957 D '61. (MIRA 14:11)

1. Kazakhskiy nauchno-issledovatel'skiy institut mineral'nogo
syr'ya i Institut mineralogii, geokhimii i kristalloghimii
redkikh elementov AN SSSR. Predstavleno akademikom D.I.
Shcherbakovym.

(Rare earth fluorides)
(Minerals)

STEPANOV, A. V.; KLYAVIN, O. V.

"Mechanical properties of crystalline bodies at liquid helium temperatures."

paper submitted for Intl Conf on Fracture, Sendai, Japan, 13-16 Sep 65.

Leningrad Physico-Tech Inst.

STEPANOV, A. V.; KLYAVIN, O. V.

"Mechanical properties of crystalline bodies at liquid helium temperatures.

report submitted for Intl Conf on fracture, Sendai, Japan, 12-17 Sep 65.

Phys-Tech Inst, AS USSR

STEPANOV, A.V. SHVEDOV, V.P..

Electromigration method for studying hydrolysis of cerium (III)
in nitric acid solutions. Zhur.neorg.khim. 10 no.4:1000-1002
Ap '65. (MIRA 18:6)

SHVEDOV, V.P.; STEPANOV, A.V.; GORSKIY, N.I.

Study of the separation of strontium from the prevailing amounts of calcium by the method of continuous electrophoresis. Radiokhimiia 5 no. 6:690-694 '63.
(MIRA 17:7)

STEPANOV, A.V.; STEPANOVA, A.A.

I-T diagram of the pyrolysis of ethane and propane. Khim i tekhn.
topl. i massl 9 no.6:10-14 Je'64 (MIRA 17:7)

1. Institut ispol'zovaniya gaza AN UkrSSR.

S/775/62/002/000/001/011

AUTHOR: Stepanov, A. V.

TITLE: Novel method for the making of parts (sheets, rods, tubes of various profiles) directly from a melt.

SOURCE: Avtomatizatsiya protsessov mashinostroyeniya. t. 2: Goryachaya obrabotka metallov. Moscow, Izd-vo AN SSSR, 1962, 26-29.

TEXT: The paper provides details on a fundamentally novel method for the making of parts out of metals, alloys, intermetallic compounds, semiconductors, salts, organic compounds, plastics, etc., which the author and his associates had initiated in 1938 and first disclosed in ZhTF, v. 229, 1959, 381 and 394; Vestnik mashinostroyeniya, no. 11, 1959; and Akad. n. SSSR, Izv., Otd. tekhn. nauk. Metallur-giya i toplivo, no. 5, 1959. The participation of V. N. Dyn'kov, A. L. Shakh-Bydagov, B. M. Gol'tsman, and A. V. Donskoy, in various stages of this work is acknowledged. The novel principle of shaping material consists in establishing the required form, or its basic element, in the liquid state by capillary, kinetic, or other effects. "Freezing" of the shape thus established creates the desired solid object in speci-fied conditions of crystallization. The shaping device consists of a "float" that is set up on the horizontal surface of the molten metal. The float is a horizontal plate noninteracting material with a suitably shaped vertical slot, surmounted by a

S/775/62/002/000/001/011

Novel method for the making of parts ...

cooling installation. A "primer" or "catcher" is lowered through the slot into the liquid metal and is then lifted, drawing liquid metal with it through capillary and metallostatic-pressure action. The metal reaches a zone of low temperatures and congeals into the given shape (sheet, rod, tube) established by the shape of the slot, the rate of pulling, the cooling history, etc. Thicknesses from tenths of mm to tens of cm can be drawn, with preference for thinner shapes; thicker shapes require lower pulling rates. NOTE: The slot shape alone does not determine the final dimensions of the shape of the product; the slot is not a die! The crystallization takes place at the top of a shallow liquid column that is held together by capillary forces and, hence, is thinner than the slot. Parts with a longitudinally varying section and curvilinear parts can be made. The crystalline structure is controllable. The rate of pulling is essentially a function of the heat-transfer process. Equipment required: (1) Continuous smelting furnace; (2) continuous drawing mechanism; (3) shaping equipment, consisting of float, cooler, and moving equipment; (4) product-removing mechanism; and (5) inspection and control instruments. The last-cited reference describes the author's and B. M. Gol'tsman's lab setup (at the Leningrad State Pedagogic Institute - LGPI) for the making of "endless" strip of Al and Al alloys, up to 120 mm wide and 0.5 to 3 mm thick. The pulling rate with air cooling attained 25 m/sec. The strip has a high-grade surface, and its mechanical properties are equivalent to those of rolled and annealed Al strip. A cross-section shows the graphite-crucible smelting furnace, the slotted "float" plate, and the

Card 2/3

MOGIL'NIY, V.I.; STEPANOV, A.V.

Investigation of a diethylene glycol-gasoline emulsion,
and methods for designing horizontal flow separators of
emulsions. Trudy Inst.isp.gaza AN USSR 9:90-96 '61.

(MIRA 15:9)

(Gasoline) (Diethylene glycol) (Separators (Machines))

KLIMENKO, A.P.; STEPANOV, A.V.; VEKSHTEYN, L.M.

Using the pressure drop of natural gas. Trudy Inst.isp.gaza
AN USSR 9:97-102 '61. (MIRA 15:9)
(Gas, Natural) (Steam turbines)

STEPANOV, A.V.

Means of controlling an asynchronous drive with a phase-wound
rotor on a pendulum-type cableway. Trudy Inst.gor.dela AN Gruz.
SSR 2:165-172 '60. (MIRA 14:10)
(Cableways--Electric driving) (Automatic control)

BARAMIDZE, G.K., prof., doktor tekhn. nauk, red.; ASATIANI, L.R., red.;
KALANDADZE, V.A., red.; PESVIANIDZE, A.V., red.; STEPANOV, A.V.,
red.; SULABERIDZE, Sh., red.izd-va; DZOTSENIDZE, Sh., tekhn. red.

[Ropeways] Kanatnye dorogi; sbornik statei. Tbilisi, Gos.izd-vo
"Sabchota Sakartvelo," 1961. 286 p. (MIRA 15;6)
(Cableways)

STEPANOV, A.V., arkhitektor.

~~Using silicon organic compounds in waterproofing roofing materials.~~
Gor. khoz. Mosk. 32 no.11:20-22 N '58. (MIRA 11:11)
(Silica) (Waterproofing) (Roofing, Concrete)

STEPANOV, A.V., inzh.

~~SECRET~~
Device for removing a cone from the shaft of the MP-75 preliminary
screw press. Masl.-zhir.prom. 24 no.5:34-35 '58.
(MIRA 12:1)

1. Bayram-Aliyskiy maslozhirovoy kombinat.
(Oil industries--Equipment and supplies)

STEPANOV, A.V.

SHNGEROV, F.I., inzh.; STEPANOV, A.V., inzh.

Automatizing the control mechanism for lifting the thickener rake
with central drive. Sbor. inform. po obog. i brik. ugl. no.1:64-
69 '57. (MIRA 11:4)

(Coal preparation—Equipment and supplies)
(Automatic control)

STEPANOV, ANDREY VASII 'YEVICH.

STEPANOV, ANDREY VASIL'YEVICH.

OPYT YALTINSKIKH PORTOVIKOV (EXPERIENCE OF YALTA HARBOR) MOSKVA, MORSKOY TRANSPORT,
1952. 76 P. ILLUS., DIAGRS.

N/5
756.53
.58

TEPLOV, Georgiy Vasil'yevich, doktor ekon. nauk, prof.;
STEPANOV, A.Y.; EYDEL'MAN, B.I., red.

[Planning in an industrial enterprise; theory and
practice] Planirovanie na promyshlennom predpriatii;
teoriia i praktika. Moskva, Ekonomika, 1964. 478 p.
(MIRA 17:12)

STEPANOV, A.Ya.; SOKOLOV, A.A., redaktor.

[Financial planning in a machine-building plant] Planirovanie finansov mashinostroitel'nogo zavoda. Pod red. A.A.Sokolova. Moskva, Gos. nauchno-tekhn. izd-vo mashinostroit. lit-ry, 1953. 175 p. (MLRA 6:8)
(Machinery industry)

MITEL'MAN, Ye.L.; SOLODOVNIKOV, V.Ya.; STEPANOV, A.Ya., retsenzent;
BROUN, M.L., retsenzent; ETCHIN, G.A., redaktor; MATVEYEVA, Ye.N.,
tekhnicheskii redaktor; TIKHONOV, A.Ya., tekhnicheskii redaktor.

[Financial operations in machine construction plants] Finansovaia deiatel'nost' mashinostroitel'nogo zavoda. Moskva, Gos. nauchno-tekhn. izd-vo mashinostroit. i sudostroit. lit-ry, 1954. 219 p.
[Microfilm] (MLRA 8:1)

(Machinery industry--Finance)

SOKOLOV, Aleksandr Aleksandrovich (1885-) ; STEPANOV, A.Ya.

[Finance and credit of the machinery industry] Finansovanie i
kreditovanie mashinostroitel'noi promyshlennosti. Moskva,
Mashgiz, 1960. 247 p. (MIRA 14:12)
(Machinery industry--Finance)

TEPLOV, G.V., prof., doktor ekon.nauk; Prinsipal uchastiye STEPANOV, A.Ya..
PANTER, B.Ya., inzh., retsenzent; BOGINSKIY, M.N., Inzh.-ekon..
red.; SALYANSKIY, A.A., red.izd-va; EL'KIND, V.D., tekhn.red.

[Planning at machinery plants] Planirovanie na mashinostroitel'-
nykh zavodakh. Izd.3, perer. Moskva, Gos.nauchno-tekhn.izd-vo
mashinostroit.lit-ry, 1960. 480 p. (MIRA 13:4)
(Machinery industry)

BEKAI, L.Ya., doktor ekon. nauk, prof.; MAKSIMOV, I.S.; BRAGINSKIY, B.I., kand. ekon. nauk, dots.; GERASHCHENKO, B.S., kand. ekon. nauk; GRIGOR'YEV, A.Ye., doktor ekon. nauk, prof.; ITIN, L.I., doktor ekon. nauk, prof.; LOKSHIN, E.Yu., doktor ekon. nauk, prof.; KAMENITSER, S.Ye., doktor ekon. nauk, prof.; OBLONSKIY, Ya.A., kand. ekon. nauk, dots.; SOKOLOV, B.M., doktor ekon.nauk, prof.; SHASS, M.Ye., doktor ekon.nauk; STEPANOV, A.Ya.; ULITSKIY, L.I., doktor ekon. nauk, prof.; PODGORNOVA, V., red.; TROYANOVSKAYA, N., tekhn. red.

[Economics of socialist industry; textbook] Ekonomika sotsialisticheskoi promyshlennosti; uchebnik. Pod red. L.I.Itina, E.S.Gerashchenko. 2., dop. i perer. izd. Moskva, Gospolitizdat, 1961. 775 p. (MIRA 15:10)

1. Moscow. Gosudarstvennyy ekonomicheskiy institut. 2. Zaveduyushchiy kafedroy ekonomiki promyshlennosti Moskovskogo gosudarstvennogo ekonomicheskogo instituta (for Itin). (Russia--Industries)

BERRI, L.Ya., doktor ekon. nauk, prof.; MAKSIMOV, I.S.; BRAGINSKIY, B.I., doktor ekon. nauk; GRIGOR'YEV, A.Ye., doktor ekon. nauk, prof.; ITIN, L.I., doktor ekon. nauk, prof.; LOKSHIN, E.Yu., prof.; KAMENITSER, S.Ye., doktor ekon. nauk, prof.; CBLOMSKIY, Ya.A., kand. ekon. nauk, dots.; SHASS, M.Ye., doktor ekon.nauk, prof.; STEPANOV, A.Ya.; ULITSKIY, L.I., prof., doktor ekon. nauk; PODGORNOVA, V., red.; TROYANOVSKAYA, N., tekhn. red.

[Economics of socialist industry] Ekonomika sotsialisticheskoi promyshlennosti; uchebnik. 3., dop. i perer. izd. Pod red.L.I. Itina. Moskva, Gospolitizdat, 1963. 646 p. (MIRA 16:8)

1. Moscow. Gosudarstvennyy ekonomicheskiy institut. 2. Zaveduyushchiy kafedroy ekonomiki promyshlennosti Moskovskogo instituta narodnogo khozyaystva im.G.V.Plekhanova (for Itin).
(Russia--Industry)

STEPANOV, A.Ya.

Atmospheric circulation over Ukrainian Transcarpathia in the
contemporary development of nature. Uch. zap. Ped. inst. Gerts.
244:39-70 '63. (MIRA 18:3)

BORISOV, A.A.; STEPANOV, A.Ya.

Aleksandr Mikhailovich Arkhangel'skii; on his 60th birthday.
Izv. Vses. geog. ob-va 96 no.3:255-256 '64 (MIRA 17:8)

ALPAT'YEV, Anatoliy Mikhaylovich, prof.; ARKHANGEL'SKIY, Aleksandr
Mikhaylovich, prof.; PODOPIELOV, Nikolay Yakovlevich, dots.;
STEPANOV, Anatoliy Yakovlevich, dots.; SHAGIROVA, I.M., red.

[Physical geography of the U.S.S.R.] Fizicheskaia geografiia
SSSR. [By] A.M.Alpat'ev i dr. Moskva, Vysshaya shkola.
Pt.2. 1965. 557 p. (MIRA 18:6)

Alpat'ev

cx

113

A method for the determination of colloidal-osmotic pressure. A. E. Stepanov, *Lab. Prakt.* (U. S. S. R.) 15, No. 5, 21-8 (1947).—Colloidal-osmotic pressure is determined from the sum of the readings (in mm.) of the manometer and the height of the liquid in the capillary. Correction for the capillarity is made by immersing the capillary vertically in the liquid and measuring the height of the liquid. The value (usually approx. 10–18 mm.) is deducted from the previous sum. In the absence of sharp changes of the temp. no special thermoregulation (at room temp.) is required. The shell made from a soln. of colloidal must be impermeable to proteins and not too dense. The d. of the shell is checked with a normal blood serum (contg. 7.5–8% of proteins). Such a serum produces a colloidal-osmotic pressure of approx. 300–400 mm. of H₂O. A low colloidal-osmotic pressure of blood serum (below 150 mm. of H₂O) and of ascitic fluid (below 50 mm. of H₂O) signify a marked hypoproteinemia; a normal colloidal-osmotic pressure of blood serum (approx. 350 mm. of H₂O) and a high pressure of transudate (approx. 150 mm. of H₂O) signify a stagnant dropsy; and a moderate decrease of the colloidal-osmotic pressure of blood (approx. 250 mm. of H₂O), a comparatively high pressure of the transudate (approx. 100 mm. of H₂O) and the presence of other phenomena which point to an affection of the capillaries (proteins in urine, etc.) signify a capillary or nephritic dropsy. Measurements of the colloidal-osmotic pressure in the differentiation of the inflammatory exudate from the anasarcal fluid showed that a high pressure (approx. 200 mm. of H₂O) of the punctate signifies either an inflammatory exudate or a stagnant ascites. The exudate produces a sepn. of fibrin (on standing for several hrs.) which is not observed in the case of a transudate. The detn. of the colloidal-osmotic pressure is a necessary method for the study of water-salt metabolism. Three references.

W. R. Henn

COMMON ELEMENTS

CHEMICAL SYMBOLS INDEX

ASB-SLA METALLURGICAL LITE

1ST AND 2ND LETTERS

3RD AND 4TH LETTERS

5TH AND 6TH LETTERS

7TH AND 8TH LETTERS

9TH AND 10TH LETTERS

11TH AND 12TH LETTERS

13TH AND 14TH LETTERS

15TH AND 16TH LETTERS

17TH AND 18TH LETTERS

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89TH AND 90TH LETTERS

91ST AND 92ND LETTERS

93RD AND 94TH LETTERS

95TH AND 96TH LETTERS

97TH AND 98TH LETTERS

99TH AND 100TH LETTERS

SOV/21-59-10-7/26

(167300

AUTHOR: Stepanov, A.Ye.

TITLE: Calculation of Uncut Beams at the Elastic-Plastic Stage by the Method of Consecutive Approximations

PERIODICAL: Dopovidi Akademiya nauk Ukrayins'koyi RSR, 1959, Nr 10, pp 1077-1082 (USSR)

ABSTRACT: In this article, the author discusses the calculation of uncut beams in an elastic-plastic stage with a constant load. The aim of the calculation is the obtaining of an elastic-plastic epure of the bending moments. The solution is obtained by the method of consecutive approximation with the aid of the grapho-analytic method [Ref. 1] by which the compiling and the solution of the system of equations becomes superfluous. It is to be noted, that the solution of this problem according to a method of strain equalization leads to cumbersome transcendental equations. The determination of the criterion of correctness of the

Card 1/2

SOV/21-59-10-7/26

Calculation of Uncut Beams at the Elastic-Plastic Stage by the Method of Consecutive Approximations

elastic-plastic epure permits control of the degree of approximation, as well as the use of various methods of speeding up the convergence and the intuition of the calculator. The presented formulae make the process of integration during the computation unnecessary in all possible instances. The method described may be extended to the calculation of uncut beams in the case of material with reinforcement as well as in the case of a movable loading. There are 4 diagrams (epures), and 3 Soviet references.

ASSOCIATION: Kyivskyy inzhenerno-budivel'nyy instytut (Kiev Construction Engineering Institute).

PRESENTED: By F.P. Byelyankin, Member of the AS UkrSSR.

SUBMITTED: March 6, 1959
Card 2/2

S/021/60/000/002/005/010
A158/A029

16.7300

AUTHOR:
TITLE:

Stepanov, A.Ye.

On the Calculation of High Beams ²⁰

PERIODICAL:

Dopovidi Akademiya nauk Ukrayins'koyi Radians'koyi Sotsialistichnoyi Respubliki, 1960, No. 2, pp. 168 - 172

TEXT:

In this purely mathematical work the author gives approximate formulas, arrived at by using the variation method, for the calculation of high beams on a normal load distributed along the upper and lower edges with the lateral edges being free from load. These formulas (1, 2, 3) are said to be adequate for calculating isotropic high beams having a rectangular cross section. They do not allow for volumetric forces. They are based on equations of the theory of elasticity for plane problems. Coefficients are calculated by formulas (4, 5, 6, 7). Two examples of how to use the formulas are given. The solutions satisfy the equations of equilibrium and the boundary exactly, and the condition of jointness of strains approximately. The solution indicates the relative minimum of the potential energy of the beam's deformation. The formulas are said to be convenient for practical application, and the solutions obtained with their

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Card 1/2

On the Calculation of High Beams

S/021/60/000/002/005/010
A158/A029

help are very close to those obtained by other means (Table 1). There are 4 figures, 1 table and 2 Soviet references. ✓

ASSOCIATION: Kyyivs'kyi inzhenerno-budiveln'nyy instytut (Kiyev Institute of Construction Engineering)

PRESENTED: by F.P. Byelyankin, Academician, AS UkrSSR

SUBMITTED: April 24, 1959

Card 2/2

STEPANOV, A.Ye. [Stepanov, A.IE.]

Solution of a plane problem in the theory of elasticity by the
use of electric model studies. Dop. AN URSR no.12:1575-1578 '61.
(MIRA 16:11)

1. Vychislitel'nyy tsentr AN UkrSSR. Predstavleno akademikom
AN UkrSSR F.P. Belyankinym [Bieliankin, F.P.].

S/144/62/000/003/002/002
D234/D303

16-8800 (1050/1327, 1329)

AUTHOR: Stepanov, A.Ye., Chief Engineer
TITLE: Electric simulation of the biharmonic equation
PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy. Elektromekhanika,
no. 3, 1962, 262-268

TEXT: To solve the equation, a quadratic lattice is drawn in the domain to which the equation refers, and algebraic equations (equivalent to the biharmonic equation written in finite differences) are formulated for all internal knots of the lattice. These equations are transformed and simulated by lattices of active resistances, for every knot. Investigations are stated to show that the process will be convergent for any number of knots. Method of simulating boundary conditions is described. The simulating lattice has been tested at the Computer Center of AS UkrSSR. It is stated to possess the following advantages in comparison with those previously known: Absence of error due to the simulation method, easy setting of boundary conditions, simplicity of choice of controlled potentials. There are 9 figures and 10 Soviet-bloc references.
Card 1/2

Electric simulation of the ...

S/144/62/000/003/002/002
D234/D303

ASSOCIATION: Vychislitel'nyy tsentr An USSR (Computer Center AS UkrSSR)

SUBMITTED: October 27, 1961

X

Card 2/2

PUKHOV, Georgiy Yevgen'yevich; VASIL'YEV, Vsevolod Viktorovich;
STEPANOV, Arkadiy Yevgen'yevich; TOKAREVA, Ol'ga Nikolayevna;
IMAS, R.L., red.izd-va; RAKHLINA, N.P., tekhn. red.; REKES,
M.A., tekhn. red.

[Electric modeling of problems in structural mechanics] Elek-
tricheskoe modelirovanie zadach stroitel'noi mekhaniki. [By]
G.E.Fukhov i dr. Kiev, Izd-vo AN USSR, 1963. 285 p.
(MIRA 17:3)

1. Chlen-korrespondent AN Ukr.SSR (for Pukhov).

L 16358-65 EWT(d)/EWT(m)/EWP(w)/EWA(d)/EWP(v)/EWP(k)/EWA(h) Pf-4/Feb
ASD(f)-2 EM

ACCESSION NR: AT4045645

S/2943/64/000/002/0140/0150

AUTHOR: Stepanov, A. Ye.

TITLE: On electromodeling of slanting shells and plates ²⁶ ₂₆

SOURCE: Seminar po metodam matematicheskogo modelirovaniya i teorii elektricheskikh tsepey. Matematicheskoye modelirovaniye i elektricheskiye tsepi (Mathematical modeling and electrical circuits); trudy* seminara, no. 2 Kiev, Izd-vo Naukova dumka 1964, 140-150

TOPIC TAGS: electromodeling, slanting shell, plate, deformation, finite differences approximation, interlacing net method, computer, cybernetics

ABSTRACT: V. Z. Vlasov (Obshchaya teoriya obolochek-general theory of shells-GITTL-Moscow-Leningrad, 1949) described the stress deformed slanting shells by a system of differential equations relating the displacements, main curvatures

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L 16358-65

ACCESSION NR: AT4045645

differences approximation. By expressing the partial differential equations through the values of the functions at the points of the net region, one obtains for the three unknown components of the displacements a system of $3n$ equations for n net points. The author shows that it is possible to construct the finite difference equations in such a way that the system of $3n$ simultaneous equations resolves into independent systems with smaller number of unknowns in each. The approximation can be constructed with the method of interlacing nets (D. C.

10 figures and 30 equations

ASSOCIATION: None

SUBMITTED: 22Feb63

ENCL: 00

SUB CODE: AS, DP, MA

NO REF SOV: 003

OTHER: 001

Card 2/2

PUKOV, G.Ye. [Pukhov, H.I.E.]; BOROKOVSKIY, B.A. [Borkovs'kyi, B.A.]; STEPANOV,
A.Ye. [Stepanov, A.I.E.]

Method of continuous operator modeling. Dop. AN URSR no.3:325-331
'63. (MIRA 17:10)

1. Institute kibernetiki AN UkrSSR. 2. Chlen-korrespondent AN UkrSSR
(for Pukhov);

L 23616-65 EWT(m)/EWP(t)/EWP(b) JD/MLK/RM

ACCESSION NR: AT5002499

S/0000/64/000/000/0122/0127

AUTHOR: Stepanov, A. Ye.

TITLE: Modelling a plane problem in the theory of elasticity on a quasi-analog grid

SOURCE: Analogovyye metody i sredstva resheniya krayevykh zadach (Analog methods and means of solving boundary value problems); trudy Vsesoyuznogo soveshchaniya, Moskva, 1962 g. Kiev, Naukova dumka, 1964, 122-127

TOPIC TAGS: elasticity theory, plane stress, electromodel, analog computer, simulation, finite difference, quasianalog grid, Hooke law, boundary value problem

ABSTRACT: The author proposes the use of grid electrointegrators for the solution of plane problems in the theory of elasticity. The fundamental equations of the theory of elasticity consist of the equilibrium laws:

Card 1/2

$$\sigma_y = (\lambda + 2\nu) \frac{\partial v}{\partial y} + \lambda \frac{\partial u}{\partial x}$$

L 23616-65

ACCESSION NR: AT5002499

$$\tau_{xy} = \tau_{yx} = \nu \left(\frac{\partial v}{\partial x} + \frac{\partial u}{\partial y} \right)$$

The author breaks the plane region under consideration in the theory of elasticity down into small squares, and writes the fundamental equations in finite difference form. He then shows how to construct an electromodel for the solution of these equations. These electromodels permit the solution of problems involving the determination of forces and deformations for plane stressed states and for plane deformations for singly-and

ASSOCIATION: none

SUBMITTED: 05Sep64

ENCL: 00

SUB CODE: DP, ME

NO. REF SOV: 005

OTHER: 000

Card 2/2

SEMENYUTA, N. (g. Khot'kovo, Moskovskoy obl.); STEPANOV, B.

Simple generators for studying the Morse code. Radio no.6:21
Je '61. (MIRA 14:10)
(Oscillators, Electric) (Morse code)

STEPANOV, B.

(On our way to the atom)

Praha, Czechoslovakia, Osveta, 1951, 163 p.

Monthly list of EAST EUROPEAN ACCESSIONS (EEAI), IC, Vol. 8, No. 7, July 1959, Unclas.

STEPANOV, B.

Age of the atomic engineering. Znan. sila 31 no.8:6-12
Ag '56.

(MLRA 9:10)

(Nuclear engineering)

STEPANOV, B. (Eng. Maj.) and ALEKSEYEV, N. (Eng. Lt. Col.)

"Fundamentals of Radiolocation," (Osnovy Radiolokatsii) published in the Air Fleet Herald (Vestnik Vozdushnogo Flota), No. 11, Nov. 52.

Summary D-136806, 14 Dec 54

STEPANOV, B., inzhener.

Airplane turbine-propeller engines. Kryl. rod. 8 no.5:17-19 My '57.
(Airplanes--Turbine-propeller engines) (MIRA 10:6)

STEPANOV, B

85-58-3-15/26

AUTHOR: Bogdanov, V. and Stepanov, B.

TITLE: Tu-114 (Tu-114)

PERIODICAL: Kryl'ya rodiny, 1958, Nr 3, pp 16-17 (USSR)

ABSTRACT: The authors describe in detail the new Tu-114 four-turboprop passenger monoplane constructed under the supervision of Academician Andrey Nikolayevich Tupolev. The Tu-114 represents the result of a prolonged effort to design and construct a plane capable of carrying 170-180 passengers almost as economically as a railroad train. A mock-up was discussed and revised by specialists from many fields, including doctors. Each of the 4 turboprop engines has almost twice the power of any non-Soviet turboprop engine. They were built by a group led by N.D. Kuznetsov, Hero of Socialist Labor. The Tu-114 is manned by a crew of five. The test flight was made by Aleksey Petrovich Yakimov, his assistant Yuriy Timofeyevich Alasheyev; flight engineer Leonid Alekseyevich Zaboluyev, air navigator Konstantin Ivanovich Malkhasyan, and Nikolay Fedorovich Mayorov. There are 21 photographs on an insert between pp. 16 and 17, showing the

Card 1/2

Tu-114

85-58-3-15/26

Tu-114, its interior, and its designers. On page following p. 16, upper photo from left to right, D.S. Markov, Hero of Socialist Labor; A.M. Cheremukhin; A.N. Tupolev, twice Hero of Socialist Labor; A.A. Arkhangel'skiy, Hero of Socialist Labor; and S.M. Yeger, all Lenin laureates. Center photo shows: B.M. Kondorskiy, Lenin laureate; I.B. Babin, engineer designer; and V.V. Yeregin, shop foreman. Three photographs on page preceding page 17, show - top: Captain A.P. Yakimov, test pilot 1st class, at the controls; center: navigator 1st class K.I. Malkhasyan, seated at the navigator's panel; bottom - stewardess at the lighting panel. Photographs by M. Red'kin, V. Yegorov (TASS) and N. Men'shov.

AVAILABLE: Library of Congress

Card 2/2

Stepanov, B.

S/025/60/000/07/05/008

AUTHOR: Stepanov, B., Engineer

TITLE: On the "Border" of the Atmospheric Ocean

PERIODICAL: Nauka i zhizn', 1960, No 7, pp 68 - 69

TEXT: ✓ The fluctuations observed in the braking of the Soviet satellites by the upper layers of the earth's atmosphere have led scientists to conclude that this braking depends directly on the solar activity. The density of the atmosphere was found to vary from day to day and month to month by 1.5 times at a height of 200-250 km and by 3 times at 700 km. In addition to these irregularities, the atmosphere undergoes a periodic change in atmospheric density (28-day cycle). This is attributed to a solar origin, since the sun rotates roughly every 28 days. Streams of charged particles issue from the sun, and the earth passes through these at intervals of 27-28 days. Collision with the corpuscles affects the thermodynamic parameters of the earth's atmospheric envelope. ✓

Card 1/1

Mikhailov, A. A., ed.
 PHASE I BOOK EXPLOITATION
 SOV/4946

Stantsii v kosmose; sbornik statey (Space Stations; Collection of Articles) Moscow, Izd-vo AN SSSR, 1960. 444 p. 25,000 copies printed. (Series: Akademiya nauk SSSR. Nauchno-populyarnaya Seriya)

Resp. Ed.: A. A. Mikhailov; Compiler: V. V. Fedorov; Ed. of Publishing House: Ye. M. Klyaus; Tech. Ed.: I. D. Novichkova.
 PURPOSE: This book is intended both for the space specialist and the average reader interested in space problems.

COVERAGE: The book contains 73 short articles by various Soviet authors on problems connected with space travel, and the launching of artificial earth satellites and space rockets. Some possibilities of future developments are also discussed. Some articles were published in the period of 1957-1960. No personalities are mentioned. There are no references.

IV. UNPRELUDED FEAT OF SOVIET SCIENCE

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STEPANOV, B.

S/085/60/000/009/002/003
A153/A029

AUTHOR: Stepanov, B., Engineer

TITLE: A Turbo-Ventilator Engine

PERIODICAL: Kryl'ya rodiny, 1960, No. 9, p. 17

TEXT: This is a reply to a reader on the difference between a turboventilatornyy dvigatel' (turboprop engine), such as used on Ty -114 (Tu-114), Il -18 (Il-18), An -10 (An-10) airplanes and the M_h -6 (Mi-6) helicopter. The turboventilator engine is a turbo-air feed jet engine, also often referred to as a dvukhkonturnyy dvigatel' (double-contour engine). Thus far, it has not been possible to design an air-screw of normal type whose efficiency would not drop at flight speeds of 800 km/h and more, because of the appearance of the wave drag on the air-screw tips. Conversely, it was found that an engine incorporating a gas turbine, a compressor and a small multiblade air-screw (called ventilator) encased in a jacket, is much more efficient at the above-mentioned speeds. The ventilator is driven by a part of the turbine power, compresses the air within a sealed jacket around the engine and throws it out through an annular gap between the nozzle and the jacket, thus producing a forward thrust. This engine is

Card 1/2

Z/006/60/000/024/001/004
D005/D102

AUTHOR: Stěpanov, B.

TITLE: On the way to the stars

PERIODICAL: Technické noviny, no. 24, 1960, 2

TEXT: The article deals with engineering, biological and psychological problems which must be solved to secure safety in manned space flights. First of all, scientists will have to create conditions during the launching of a space vehicle which would keep the g-load and its duration within tolerable limits. It has been experimentally proved that man can best withstand g-loads when placed flat (face upward or downward) and perpendicularly to the g-forces in order to effect the least strain on the entire circulatory system. When the required velocity is attained, the effect of the g-forces is discontinued and replaced by complete weightlessness. The astronaut can easily learn to move inside the cabin by using grips fitted to the cabin walls or other devices. Also, artificial gravity can be

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Z/006/60/000/024/001/004
D005/D102

On the way to the stars

produced by using boots with magnetic soles, or by rotating the cabin or the entire vehicle around its longitudinal axis. The composition of the atmosphere inside the cabin can be maintained constant by highly active chemical compounds releasing oxygen and absorbing carbon dioxide and excess vapors. An effective protection of the astronaut against cosmic radiation is one of the most important problems to be solved. While this radiation can be avoided on comparatively short space flights, such as to the moon, it will inevitably be encountered during journeys to other planets. Another complicated and not yet satisfactorily solved problem is that of reentry. The task is to gradually decelerate the space vehicle by retroengines, or a series of short "dips" into the atmosphere, or by some other methods. Prolonged weightlessness, unusual environs without the accustomed night-and-day cycle, increase not only the physical but also the psychological strain on man. The opinion was voiced abroad that man may lose his mind under such conditions. However, the example of four Soviet soldiers who spent 49 days on the Pacific ocean under extreme nervous strain without any con-

Card 2/3

On the way to the stars

Z/006/60/000/024/001/004
D005/D102

sequences to their mental condition shows that there are many individuals in the USSR who will qualify for space travel. A prospective astronaut must be an energetic individual with well-developed physical and mental capabilities, able to operate the complex board controls and instruments, and capable of quick reactions even in the most unexpected situations which may occur during space travel. There is 1 figure.

Card 3/3



STEPANOV, B., inzh.

Ramjet engine. Kryl.rod. 12 no.6:30-31 Je '61.
(Airplanes--Ramjet engines)

(MIRA 14:6)

STEPANOV, B. I. inzh.

Limit of flying ranges. Grazhd.av. 18 no.7:30 J1 '61.(MIRA 14:8)
(Airplanes--Handling characteristics)

KAZANSKIY, I. (UA3FT); STEPANOV, B. (UV3AX)

Radio amateurs continue their conversation. Radio no.4:14-15
Ap '64. (MIRA 17:9)

1. Chleny obshchestvennogo soveta zhurnala "Radio" po radiosportu.

Stepanov, B. A.

The solubility of anhydrous metatantalates of the alkali metals. A. V. Lapitskii, B. A. Stepanov, and M. A. Pchelkina. *J. Gen. Chem. U.S.S.R.* 25, 1811-14(1955)(Engl. translation).—See *C.A.* 50, 3847f. B. M. R.

3

LAPITSKIY, A.V.; SHISHKINA, L.N.; PCHELKINA, M.A.; STEPANOV, B.A.

Tracer study of the solubility of anhydrous metaniobates of
alkali metals. Zhur. ob. khim. 25 no.10:1862-1866 S '55.

(MIRA 9:2)

1. Moskovskiy gosudarstvennyy universitet.

(Solubility) (Alkali metal metaniobates) (Radioactive tracers)

STEPANOV, B.A.

Description of some split radioisotopes from bottom sediments. Gig.
i san. 22 no.11:3-7 N '57. (MIRA 11:1)

(ISOTOPES

description from bottom sediments of water, value in
assessment of secondary pollution of water (Rus))

(WATER POLLUTION,

secondary pollution of surface water by isotopes from
bottom sediments (Rus))

Shornik radioaktivnykh i dozimetricheskikh metodik (Collection of Radiochemical and Dosimetric Methods) Moscow, Mezgit, 1959. 459 p. Errata ally inserted. 9,000 copies printed.

Eds. (Title Page): I.G. Gusev, G.Ye. Margulis, A.M. Masov, N.Yu. Tarasenko, Yu.M. Otkritskiy; Ed. (Inside book): V.I. Lasharov; Tech. Ed.: A.I. Zharov.

PURPOSE: This collection of articles is intended for physicists, sanitation and public health doctors, chemists and other specialists working in radioactive dosimetry.

CONTENTS: This work discusses the following subjects: (1) principles of organizing sanitation and dosimetric control in institutions where work is carried on with radioactive substances; (2) radio-chemical and chemical methods for determining certain radioactive substances in samples of air, water, soil and foodstuffs; (3) physical methods of measuring contamination of the air by radioactive gases and aerosols, and methods for determining the level of contamination of working surfaces, clothes and leather coverings; (4) methods of measuring external streams of x- and gamma-radiation, and methods of individual dosimetric monitoring; (5) Absolute and relative methods of measuring activity of solid and liquid radioactive sources. There are four appendices dealing with: (1) methods of measuring activity of samples of air, water, soil, radiation, units of activity, and dose; (2) methods of measuring radioactivity in the calcium of foodstuffs; (3) sanitary regulations observed during transportation, storage, and handling of radioactive substances are discussed, as well as the permissible level of ionizing radiation. The editors thank Yu.V. Sivintsev and D.P. Shurshov. References appear at the end of each chapter.

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Recommended Literature

Stepanov B.A.

5(3), 5(4)

SOV/156-59-2-14/48

AUTHORS: Stepanov, B. A., Kakovskiy, I. A., Serebryakova, N. V.

TITLE: The Redox Potentials of Xanthogenates (Okislitel'no-vosstanovitel'nyye potentsialy ksantogenatov)

PERIODICAL: Nauchnyye doklady vysshey shkoly. Khimiya i khimicheskaya tekhnologiya, 1959, Nr 2, pp 277-279 (USSR)

ABSTRACT: In the present investigation the same method was used that the authors employed for determining the redox potentials of dithiophosphates (Ref 1). The calculation of the potentials of the reaction $(1) 2 \text{ ROCSS}' - 2e = (\text{ROCSS})_2$ was carried out according to the graphical method described in reference 1. The redox potentials of methyl-, ethyl-, n-propyl-, n-butyl-, n-amyl-, n-hexyl-, n-heptyl-, n-octyl-, n-nonyl- and n-decyl xanthogenate are shown by figure 1 and listed in table 1. The potential increases as a result of the decreasing solubility of dixanthogenide with growing carbon chain. The second author found in an earlier investigation (Ref 10) that the solubility of the members of a homologous chain is reduced by $1/4.25$ in the case of an elongation of the chain by a CH_2 -member. This corresponds to $1/(4.25)^2 = 1/18$ in the case

Card 1/2

The Redox Potentials of Xanthogenates

SOV/156-59-2-14/48

of the disulphide with 2 radicals. This is in agreement with the increase of the potentials for the higher xanthogenates (over C_8), while in the case of the low ones the values of measurement are too low by 5 - 15 mv as compared to calculation. This may be explained by the partial irreversibility of the reaction (1) with low xanthogenates on the platinum electrode. The reversibility of reaction (1) is to be investigated in a later paper. There are 1 figure, 1 table, and 10 references, 5 of which are Soviet, and 1 Rumanian.

PRESENTED BY: Kafedra metallurgii blagorodnykh metallov Ural'skogo politekhnicheskogo instituta
(Chair of Metallurgy of Precious Metals, Ural Polytechnic Institute)

SUBMITTED: December 15, 1958

Card 2/2

5(4)

AUTHORS:

Kakovskiy, I. A., Stepanov, B. A., Ryazantseva, O. F.,
Serebryakova, N. V. (Sverdlovsk)

SOV/76-33-8-27/39

TITLE:

Redox Potentials of Dithiophosphates

PERIODICAL:

Zhurnal fizicheskoy khimii, 1959, Vol 33, Nr 8, pp 1830-1839
(USSR)

ABSTRACT:

Organic sulph-hydryl reagents, such as xanthogenates, dithiophosphates, mercaptanes, dithiocarbamates, etc., are used to an ever-increasing extent in industry for flotations, in hydrometallurgy, in analytical chemistry, etc. For thermodynamic balance calculations in connection with the above reagents, it is necessary to know the redox potential (RP) of these compounds, but the publications hardly contain any of the desired data. The present paper is, for this reason, devoted to the study of the (RP) of the ions of dialkyldithiophosphates. The firmness of the chemical bond between the two disulphide molecules is determined by the density of the electron cloud between them, i.e. the character of the central core of the group and the structure of the apolar part. The synthesis of dithiophosphoric acids was carried out by means of the reaction of alcohols with phosphorus

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