VAYNSHTEYN, B.Z., inzh.

Membrane actuators of traction devices for the rolling stock of electric railroads. Vest. TSNII MPS 25 no.1:9-13 '66. (MIRA 19:2)

KHEYFEITS, Ye.B., inzh.; VAYNSHTEYN, B.Z., inzh.; GUDAVADZE, G.G., inzh.; ZHITKOV, N.Ya., inzh.

New design of a reversing switch for electric rolling stock and diesel locomotives. Elektrotekhnika 35 no.11:11-12 N '64. (MIRA 18:6)

VAYNSHTEYN, B.Z. (Tbilisi); VOL'F, A.M., kand. tekhn. nauk

Experimental study of the heating and cooling of the traction motors of main line electric locomotives. Elektrichestvo no.10:85-86 O '64. (MIRA 17:12)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut zheleznodorozhnogo transporta, Ural'skoye otdeleniye (for Vol'f).

VAYNSHTEYN, B.Z., inzh.

"Electric traction apparatus" by N.M. Balalov and B.P. Petrov. Reviewed by B.Z. Vainshtein. Elektrotekhnika 35 no.1:60-62 Ja '64. (MIRA 17:2)

CHUMBURIDZE, I.P. (Tbilisi); VAYNSHTEYN, B.Z. (Tbilisi)

Voltage unification in the circuit control of the rolling stock. Zhel.-dor.transp. 45 no.12:53-54 D '63. (MIRA 17:2)

1. Direktor Tbilisskogo nauchno-issledovatel'skogo elektrotekhnicheskogo instituta (for Chumburidze). 2. Rukovoditel' laboratorii Tbilisskogo nauchno-issledovatel'skogo elektrotekhnicheskogo instituta (for Vaynshteyn).

AMIRAGOV, E.M.; VAYNSHTEYN, B.Z.

Diaphragm drives for the apparatus of the series VL8 electric locomotive. Elek. i tepl. tiaga 7 no.9:9-10 S '63. (MIRA 16:10)

1. Glavnyy konstruktor Tbilisskogo elektrovozostroitel'nogo zavoda im. V.I.Lenina (for Amiragov). 2. Rukovoditel' laboratorii Nauchno-issledovatel'skogo elektrotekhnicheskogo instituta Soveta narodnogo khozyaystva Gruzinskoy SSR (for Vaynshteyn).

MKHEIDZE, V.N., inzh.; VAYNSHTEYN, B.Z., inzh.

Means for increasing the operational reliability of electrical equipment. Vest. elektroprom. 34 no.3:50-51 Mr '63. (MIRA 16:8)

(Electric industries--Quality control)
(Electric machinery)

BERDZENISHVILI, B.G.; VAYNSHTEYN, B.Z.; ZHITKOV, N.Ya.; KUCHAVA, V.A.

Lightened pantograph for high-speed rolling stock. Elek. i tepl. tiaga 7 no.3:6-7 Mr '63. (MIRA 16:6)

1. Sotrudniki otdela elektricheskoy tyagi Nauchno-issledovatel'skogo elektrotekhnicheskogo instituta Soveta narodnogo khozyaystva Gruzinskoy SSR.
(Electric railroads—Wires and wiring)

BELYAYEV, Igor' Aleksandrovich; VAYNSHTEYN, Boris Zinov'yevich; VETROV, N.I., inzh., retsenzent; KALININ, V.K., kand. tekhn. nauk, red.; KHITROVA, N.A., tekhn. red.

[Mechanization of work and automation of systems in contac-network maintenance] Mekhanizatsiia rabot i avtomatizatsiia ustroistv na distantsiiakh kontaktnoi seti. Moskva, Transzheldorizdat, 1963. 84 p. (MIRA 16:5)
(Electric railroads--Wires and wiring)

VAYNSHTEYN, B.Z., inzh.

"High-voltage switch drives" by I.G.Koroviakovskii. Reviewed by B.Z.Vainshtenin. Elek.sta. 34 no.2:92 F '63. (MIRA 16:4)
(Electric switchgear) (Koroviakovskii, I.G.)

VAYNSHTEYN, B.Z., inzh.; GUDAVADZE, G.G., inzh.; KHEYFITS, Ye.B., inzh.

Use of diaphragm drives in electric traction machinery. Vest. elektroprom. 33 no.9:37-39 S '62. (MIRA 15:10)
(Electric railway motors—Equipment and supplies)

VAYNSHTEYN, B.Z.

Thirtieth anniversary of the electrification of railroad transportation in the Suram Pass. Elektrichestvo no.8:83-87 Ag '62. (MIRA 15:7)

(Suram Range--Electric railroads)

VAYNSHTEYN, B.Z., inzh.; GUDAVADZE, G.G., inzh.; KHEYFITS, Ye.B., inzh.

Design and calculation of the group controllers of the rolling stock. Vest. TSNII MPS 21 no.1:15-19 '62. (MIRA 15:2)

1. Nauchno-issledovatel'skiy elektrotekhnicheskiy institut, g. Tbilisi.

(Electric controllers)

BEZHANOV, V.G., inzh.; VINNIKOV, I.L., inzh.; VAYNSHTEYN, B.Z., inzh.

Study of the commutation of an electric traction machine with a laminated yoke operating with a pulsating potential. Vest. elektroprom. 31 no.10:13-15 O '60. (MIRA 15:1)
(Electric railway motors) (Electric locomotives)

VAYNSHTEYN, B.Z., inzh.

Concerning the types of relay equipment used in signaling and automatic control systems. Energetik 9 no.11:10-11 N '61.
(MIRA 14:12)

(Automatic control)
(Electric relays)

VAYNSHTEYN, B.Z., inzh.

In regard to V.G. Vasil'ev's article "Decreasing the number of elements in lead-acid storage batteries at electric power plants." Elek. sta. 32 no. 5:93 My '61. (MIRA 14:5)

(Storage batteries)
(Electric power plants—Equipment and supplies)
(Vasil'ev, V.G.)

VAYNSHTEYN, B.Z., inzh.

Concerning the magnitude of the voltage in control circuits of rolling stock. Vest. elektroprom. 31 no.11:31-32 N '60. (MIRA 13:12)

(Locomotives)

VAYNSHTEYN, B.Z.

How to prevent damages to frequency triplers. Elek.i tepl.tiaga 4 no.2:26 F '60. (MIRA 13:6)

1. Rukovoditel' laboratorii Nauchno-issledovatel'skogo elektrotekhnicheskogo instituta sovnarkhoza Gruzinskoy SSR, g. Tbilisi.
(Frequency changers)

VAYNSHTEYN, B.Z.

Valuable textbook pertaining to the safety of working conditions.
Prom.energ. 15 no.3:61-62 Mr '60. (MIRA 13:6)

1. Nauchno-issledovatel'skiy elektrotekhnicheskiy institut Soveta narodnogo khozyaystva GSSR.
(Electric engineering--Safety measures)

VAYNSHTEYN, B.Z., inzh.

Measures for improving the operation of the UM frequency tripler. Prom.energ. 15 no.2:27 F '60. (MIRA 13:5)
(Electric railroads--Equipment and supplies)
(Frequency changers)

VAYNSHTEYN, B.Z., inzh.

Remote control of pole switches. Elek.i tepl. tiaga 5 no.10:22-23 O '61. (MIRA 14:10)

(Remote control)
(Electric railroads--Switches)

A L 9657-66

ACC NR: AP6000279 SOURCE CODE: UR/0232/65/000/010/0058/0061

24
B

AUTHOR: Vaynshteyn, B. Z. (Engineer)

ORG: None

TITLE: Repair and quality of electric equipment of electric locomotives

SOURCE: Zheleznodorozhnyy transport, no. 10, 1965, 58-61

TOPIC TAGS: locomotive, electric equipment, reliability engineering

ABSTRACT: The author reports that in 1963 there was an incidence of equipment failure at the rate of 2.29 per one million kilometers of d-c electric locomotive runs, and 8.45 per one million km of a-c locomotive runs. The economic factors of the unreliability of equipment are discussed, the need for taking the repairability of equipment into consideration is stressed, and it is pointed out that the design of equipment which is not only reliable, but simple to install and to repair, yields considerable savings since increased repairability more than compensates for the extra costs involved in the initial outlay. A comparison is made between a-c locomotive and d-c locomotive equipment, and the components most likely to fail are discussed, as well as some of the causes of their failure. It is noted in conclusion that an analysis of the statistical data of accidents due to the electrical equipment of a-c and d-c locomotives, together with the development of a methodology of full-scale tests and speeded up studies of models of new equipment under difficult operating conditions will make it possible to develop equipment with the necessary degree of reliability and repairability. It is suggested that this

Card 1/2 UDC: 621.335.2.04.019.3.001.2

2

L 9657-66

ACC NR: AP6000279 O

work be performed as quickly as possible. Orig. art. has: 2 figures and 4 tables.

SUB CODE: 09, 13 / SUBM DATE: None

Card 2/2

VAYNSHTEYN, D.M., inzh.; DVOROKOVSKIY, G.I., inzh.; MAKIN, N.P., inzh.

Using polyethylene pipes for atuomatic control systems. Mont.i spets.rab. v stroi. 24 no.12:11-12 D '62. (MIRA 15:12)
(Pipe, Plastic) (Automatic control)

VAYNSHTEYN, Daniil Maksovich; ARKHIPOV, V.G., inzh., retsenzent; PESOSHNOV, M.N., inzh., retsenzent; DUGINA, N.A., tekhn. red.

[Installation of regulatory and automatic control devices] Montazh priborov kontrolia i avtomaticheskogo regulirovaniia; spravochnik. Moskva, Mashgiz, 1962. 302 p. (MIRA 15:12)
(Automatic control)

BANIT, F.G., inzhener; VAYNSHTEYN, D.M.; GOL'DFARB, Yu.M., inzhener.

Radioactive slurry gauge for rotary kilns. TSement 22 no.5:13-15 S-O '56. (MLRA 10:1)
(Gamma rays--Industrial applications) (Kilns, Rotary)

VAYNSHTEYN, D. Ya.

115

PHASE I BOOK EXPLOITATION SOV/5411

Konferentsiya po fiziko-khimicheskim osnovam proizvodstva stali. 5th, Moscow, 1959.

Fiziko-khimicheskiye osnovy proizvodstva stali; trudy konferentsii (Physicochemical Bases of Steel Making; Transactions of the Fifth Conference on the Physicochemical Bases of Steelmaking) Moscow, Metallurgizdat, 1961. 512 p. Errata slip inserted. 3,700 copies printed.

Sponsoring Agency: Akademiya nauk SSSR. Institut metallurgii imeni A. A. Baykova.

Responsible Ed.: A. M. Samarin, Corresponding Member, Academy of Sciences USSR; Ed. of Publishing House: Ya. D. Rozentsveyg. Tech. Ed.: V. V. Mikhaylova.

Card 1/16

Physicochemical Bases of (Cont.) SOV/5411

PURPOSE: This collection of articles is intended for engineers and technicians of metallurgical and machine-building plants, senior students of schools of higher education, staff members of design bureaus and planning institutes, and scientific research workers.

COVERAGE: The collection contains reports presented at the fifth annual convention devoted to the review of the physicochemical bases of the steelmaking process. These reports deal with problems of the mechanism and kinetics of reactions taking place in the molten metal in steelmaking furnaces. The following are also discussed: problems involved in the production of alloyed steel, the structure of the ingot, the mechanism of solidification, and the converter steelmaking process. The articles contain conclusions drawn from the results of experimental studies, and are accompanied by references of which most are Soviet.

Card 2/16

VAYNSHTEYN, E.

Payment by means of remittances. Den. i kred. 14 no.11:43-44 N '56. (MLRA 9:12)

(Bills of exchange)

VAYNSHTEYN, E.

Improve the disbursement operation of local budgets. Fin.SSSR 18 no.1:51-55 Ja '57. (MLRA 10:2)

(Finance)

VAYNSHTEYN, E.

"Collection of accounting and operational exercises in the State Bank" by V. Shchelokov. Reviewed by E. Vainshtein. Den. i kred. 16 no.5:93-95 My '58. (MIRA 11:6)
(Banks and banking—Accounting)
(Shchelokov, V.)

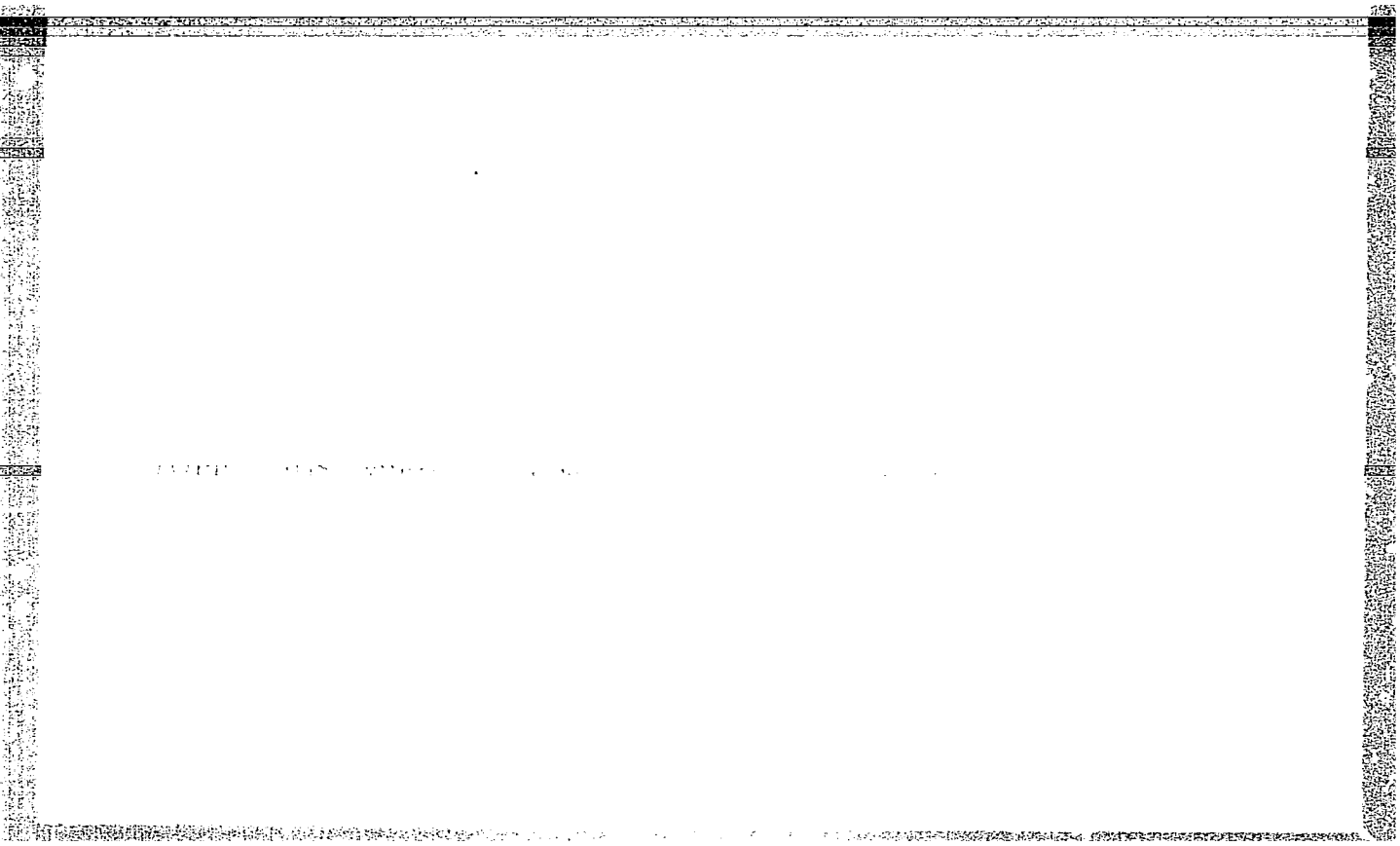
VAYNSHTEYN, E.

Fulfillment of receipts and disbursements in the Soviet state budget. Den. i kred. 16 no.11:36-39 N '58. (MIRA 11:12)
(Budget)

VAYNSHTEYN, E.

A question that deserves attention. Fin. SSSR 19 no.10:42-47 O '58. (MIRA 11:11)

(Odessa Province--Finance)



APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001859120002-3"

nd- shells. The width of the forbidden zone E was determined by measuring the energy gap between the short wave edge of the emission and the start of the absorption of the rare earth element in the compounds, which in this case coincided with the inflection point of the absorption curve at half the height of the main maximum. E for the oxide was about 1 ev, and in the hexaboride it was near 0

and never exceeded 0.1 ev. Orig. art. has: 1 figure

L 04603-67 EWT(1)/EWP(e)/EWT(m)/T/EWP(t)/ETI IJP(c) JD/GG/AT/WH

ACC NR: AP6033819 (N) SOURCE CODE: UR/0289/66/000/002/0051/0058

AUTHOR: Tsukerman, V. G.; Lyubin, V. M.; Vaynshteyn, E. Ye.; Fedorova, G. A.

ORG: Institute of Inorganic Chemistry, Siberian Department, AN SSSR, Novosibirsk (Institut neorganicheskoy khimii Sibirskogo otdeleniya AN SSSR)

TITLE: Photoelectric property of the selenium-arsenic-thallium semiconductor films in the x-ray spectral region

SOURCE: AN SSSR. Sibirskoye otdeleniye. Izvestiya. Seriya khimicheskikh nauk, no. 2, 1966, 51-58

TOPIC TAGS: semiconductor film, arsenic selenide, thallium, arsenic, photoconductive film, x ray photography, TV tube, PHOTOELECTRIC PROPERTY, X RAY SPECTRUM, SELENIUM

ABSTRACT: The effect of thallium addition on the photoconductivity of amorphous selenium-arsenic semiconductor films, 0.3—7 μ thick, has been studied extensively in view of the expected improvement in photoelectric property of Se—As films. The first experimental data of the authors on the Se—As—Tl films were published elsewhere [FTT, 1965]. The films of $Tl_2Se \cdot 10As_2Se_3$; $Tl_2Se \cdot 2As_2Se_3$; $Tl_2Se \cdot As_2Se_3$; $2Tl_2Se \cdot As_2Se_3$; and $3Tl_2Se \cdot As_2Se_3$ were deposited on various substrates by vacuum vaporization. The $Tl_2Se \cdot As_2Se_3$ films were found to be the most promising in application in the x-ray spectral region and displayed greater photoeffect than the best thallium-free films in the visible spectral region. Radiosensitivity of the

UDC: 541.123.3+546.23'19'683

Card 1/2

L 04603-67

ACC NR: AP6033819

$Tl_2Se \cdot As_2Se_3$ films versus thickness and preparation technique, x-ray dosimetric and volt-ampere characteristics, kinetics and spectral distribution in the 0.5—1.5 A range of x-ray conductivity of the films were determined, as well as the quantum yield of the photoconductive effect and the energy of formation of a single electron-hole pair. A vidicon-type camera tube, photoconductive in the visible and x-ray spectral regions, was constructed with a $Tl_2Se \cdot As_2Se_3$ film deposited on a beryllium face plate as a target. The first experiments with such a vidicon tube showed a short rise time (of the order of tenths of a second) of the system and the feasibility of visualization of the x-ray pictures and of measurement of the radiation intensity in different areas of the target. Orig. art. has: 8 figures and 2 tables.

SUB CODE: 11/ SUBM DATE: 30Jul65/ ORIG REF: 017/ ATD PRESS: 5100

Card 2/2

VAYNSHTEYN, E.

Surplus stock of materials in public institutions. Fin. SSSR 22 no. 4:39-41 Ap '61. (MIRA 14:4)
(Public institutions--Equipment and supplies)
(Banks and banking)

VAYNSHTEYN, E.; KHATS'KO, Ye.

Practical training of students in State Bank branches. Den. i kred. 18 no.10:57-63 O '60. (MIRA 13:10)
(Finance--Study and teaching)
(Banks and banking)

BERLIN, A.A.; VAYNSHTEYN, E.F.; CHERKASHIN, M.I.; MOSHKOVSKIY, Yu.Sh.

Polymers with a conjugate bond system in macromolecular chains. Part 32: Preparation and properties of 1-polyhexyne. Vysokom.soed. 5 no.9: 1354-1359 S '63. (MIRA 17:1)

1. Institut khimicheskoy fiziki AN SSSR.

Voyn.Tekh.E.G.

24(7) PHASE I BOOK EXPLOITATION SOV/1700

Irov. Universitet

Materialy X Vsesoyuznogo soveshchaniya po spektroskopii, 1956.
t. II: Atomnaya spektroskopiya. (Materials of the 10th All-Union Conference on Spectroscopy, 1956. Vol 2: Atomic Spectroscopy) (Trudy) Izd-vo L'vovskogo univ., 1958. 568 p. (Series: Its: Pirishskiy sbornik, vyp.4(9)) 3,000 copies printed.

Additional Sponsoring Agency: Akademiya nauk SSSR. Komissiya po spektroskopii.

Editorial Board: G.S. Landsberg, Academician, (Resp. Ed.); B.E. Nepomnyashchiy, Doctor of Physical and Mathematical Sciences; I.I. Shabalinskiy, Doctor of Physical and Mathematical Sciences; V.A. Fabrikant, Doctor of Physical and Mathematical Sciences; S.M. Raykhbaum, Candidate of Technical Sciences; V.G. Koritskiy, Candidate of Technical Sciences; L.K. Klimovskaya, Candidate of Physical and Technical Sciences; V.S. Klimenchuk (Deceased), Doctor of Physical and Mathematical Sciences; A.Ye. Glauberman, Doctor of Physical and Mathematical Sciences; Ed.: S.L. Gaserj Tech. Ed.: Z.V. Saranyuk.

PURPOSE: This book is intended for scientists and researchers in the field of spectroscopy, as well as for technical personnel using spectrum analysis in various industries.

COVERAGE: This volume contains 177 scientific and technical studies of atomic spectrography presented at the 10th All-Union Conference on Spectroscopy in 1956. The studies were carried out by members of scientific and technical institutes and include extensive bibliographies of Soviet and other sources. The studies cover many phases of spectroscopy: spectra of rare earths, electromagnetic radiation, physicochemical methods for controlling uranium production, physics and technology of gas discharge, optics and spectroscopy, abnormal dispersion in metal vapors, spectroscopy and the combustion theory, spectrum analysis of ores and minerals, photographic methods for quantitative spectrum analysis of metals and alloys, spectral determination of the hydrogen content of metals by means of isotopes, tables and atlases of spectral lines, spark spectrographic analysis, statistical study of variation in the parameters of calibration curves, determination of traces of metals, spectrum analysis in metallurgy, thermochemistry in metallurgy, and principles and practice of spectrochemical analysis.

Card 2/31

Materials of the 10th All-Union Conference (Cont.) SOV/1700

Reyzenkam, E.G., and L.I. Pavlenko. Studying the Effect of Total Rock Composition on the Results of Quantitative Spectral Determination of the Mo Content of Granitoids 120

Kopystyanskiy, A.A. The Vertical Sun Telescope and the Small-Size Diffraction Spectrograph of High Resolving Power at the L'vovskaya astronomicheskaya observatoriya (L'vov Observatory) 123

Kogtev, B.P. The FEOU-17 and FEOU-18 Photoelectric Optical Amplifiers for Recording Extremely Small Infrared Radiations 125

Malyarkin, L.P., A.N. Moglievskiy, and I.S. Abramson. Improving the Stability of Photomultipliers for the Photoelectric Recording of Spectra 129

Pyatakhson, I.V. Effective Spectral Slit Width of a Monochromator When Aberrations Are Present 133

Card 9/31

VAYNSHTEYN, Eduard Grigor'yevich; YAMPOL'SKIY, Moisey Markovich; KORNEYEVA, R., red.; LEBEDEV, A., tekhn.red.

[Issuing credit for fixed assets] Kreditovanie zatrat v osnovnye fondy. Moskva, Gosfinizdat, 1960. 78 p. (Credit) (MIRA 13:7)

VAYNSHTEYN, Eduard Grigor'yevich; KRAMAROVSKIY, D.

[Collection of problems in banking calculations] Sbornik zadach po bankovskim vychisleniiam. Moskva, Gosizdat, 1958. 79 p. (MIRA 13:3)

(Banks and banking--Accounting)

VAYNSHTEYN, B.K., doktor fiz.-mat.nauk

Problem of atomic structure of biological molecules. Vest.AN SSSR 30 no.12:20-26 D '60. (MIRA 13:12)
(Biochemistry) (Atoms)

VAYNSHTEYN, E. O.

USSR/ Analytical Chemistry. Analysis of Inorganic Substances. G-2

Abs Jour: Referat. Zhur.-Khimiya, No. 8, 1957, 27141.

Author : E.O. Vaynshteyn, V.V. Korolev.

Title : Spectral Determination of Sodium and Potassium in Silicate Rocks.

Orig Pub: Zh. analit. khimii, 1956, 11, No. 5, 627 - 633.

Abstract: The sample is mixed with Li_2CO_3, CuO and charcoal powder in the ratio of 1 : 0.5 : 1 : 1.5 and packed in the carbon electrode. The spectra are excited in an alternating current arc at 5 a and photographed with the spectrograph ISP-51 on "Infrachrom-840" plates. The analytical lines are: Na - 8194, 8183; K - 7664, 7696, and Li - 8126 A. The graphs are plotted on co-ordinates ΔS and log C; in case of concentration greater

Card 1/2

Abs Jour: Referat. Zhur.-Khimiya, No. 8, 1957, 27141.

than 8%, they are plotted on co-ordinates line width and logC. The width of a line is determined as the difference between two readings on the barrel of the micrometric screw of the photometer corresponding to two points of the line, the blackening of which is equal to the blackening of the comparison line. The error of the analysis does not depend on the gross composition of samples and is 4 to 5%.

VAYNSHTEYN, E.S.; CHERNOSVITOV, Yu.L., nauchnyy red.; NEMANOVA, G.F., red. izd-va; BYKOVA, V.V., tekhn. red.

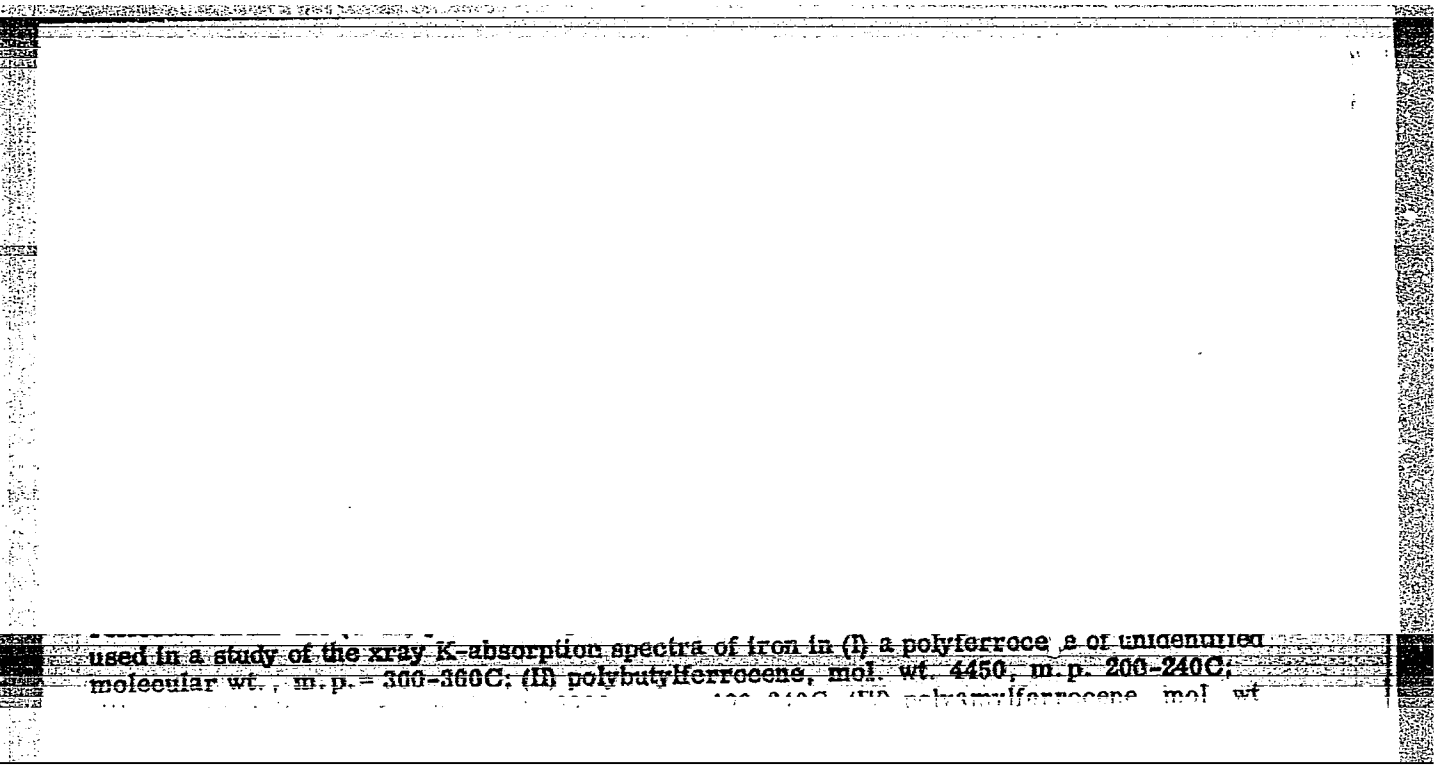
[Industry's requirements as to quality of mineral raw materials] Trebovaniia promyshlennosti k kachestvu mineral'nogo syr'ia; spravochnik dlia geologov. Izd.2., perer. Moskva, Gos. nauchno-tekhn. izd-vo litry po geol. i okhrane nedr. No.48. [Natural colors (mineral pigments)] Prirodnoe krasochnoe syr'e (Zemlianye pigmenty). Nauchn. red. IU.L. Chernosvitov. 1961. 30 p. (MIRA 14:11)

1. Moscow. Vsesoyuznyy nauchno-issledovatel'skiy institut mineral'nogo syr'ya.

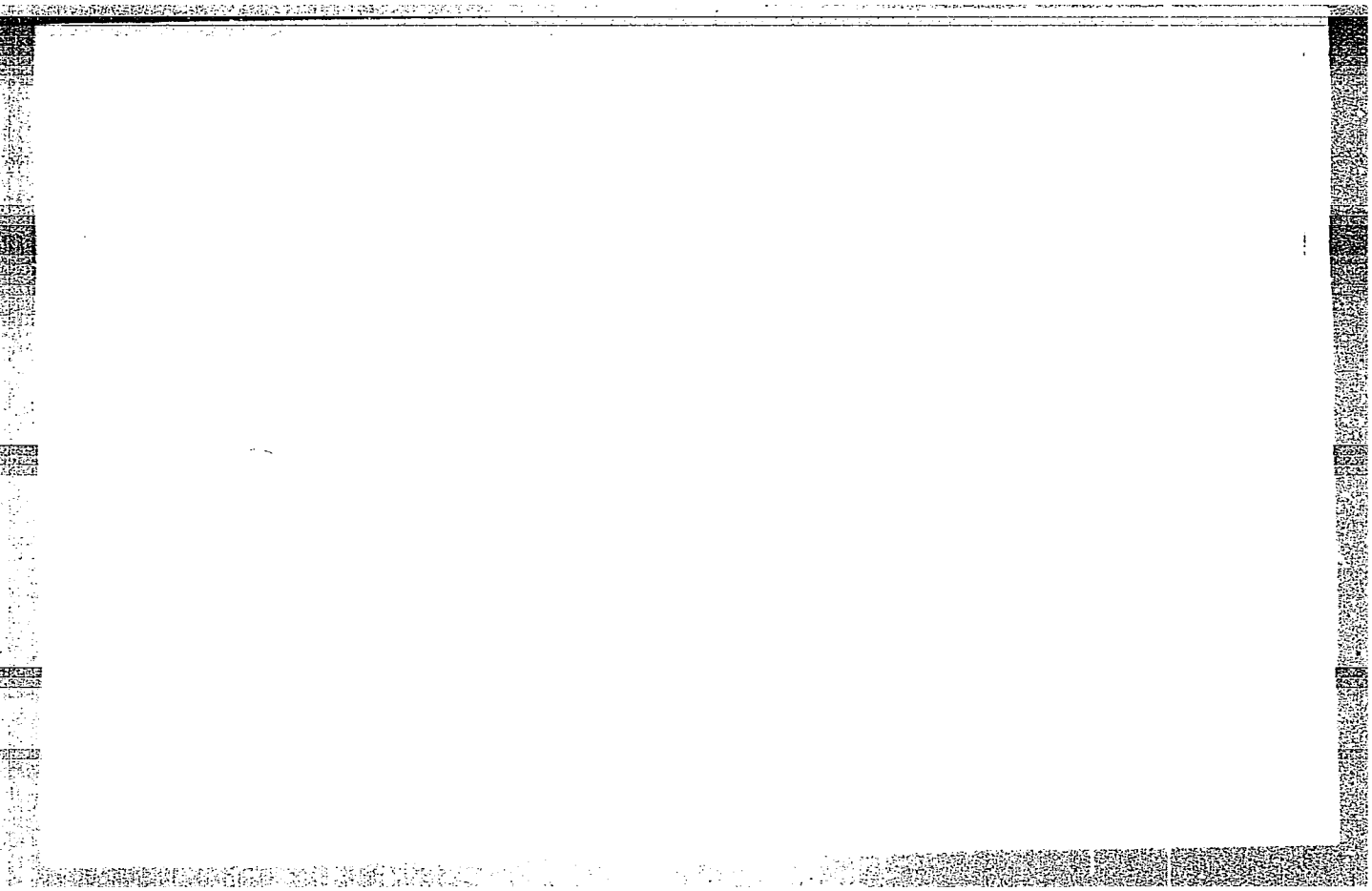
(Pigments)

VAYNSHTEYN, Emmanuil Solomonovich; KENINA, L.P., red. izd-va; SHMAKOVA, T.M., tekhn. red.

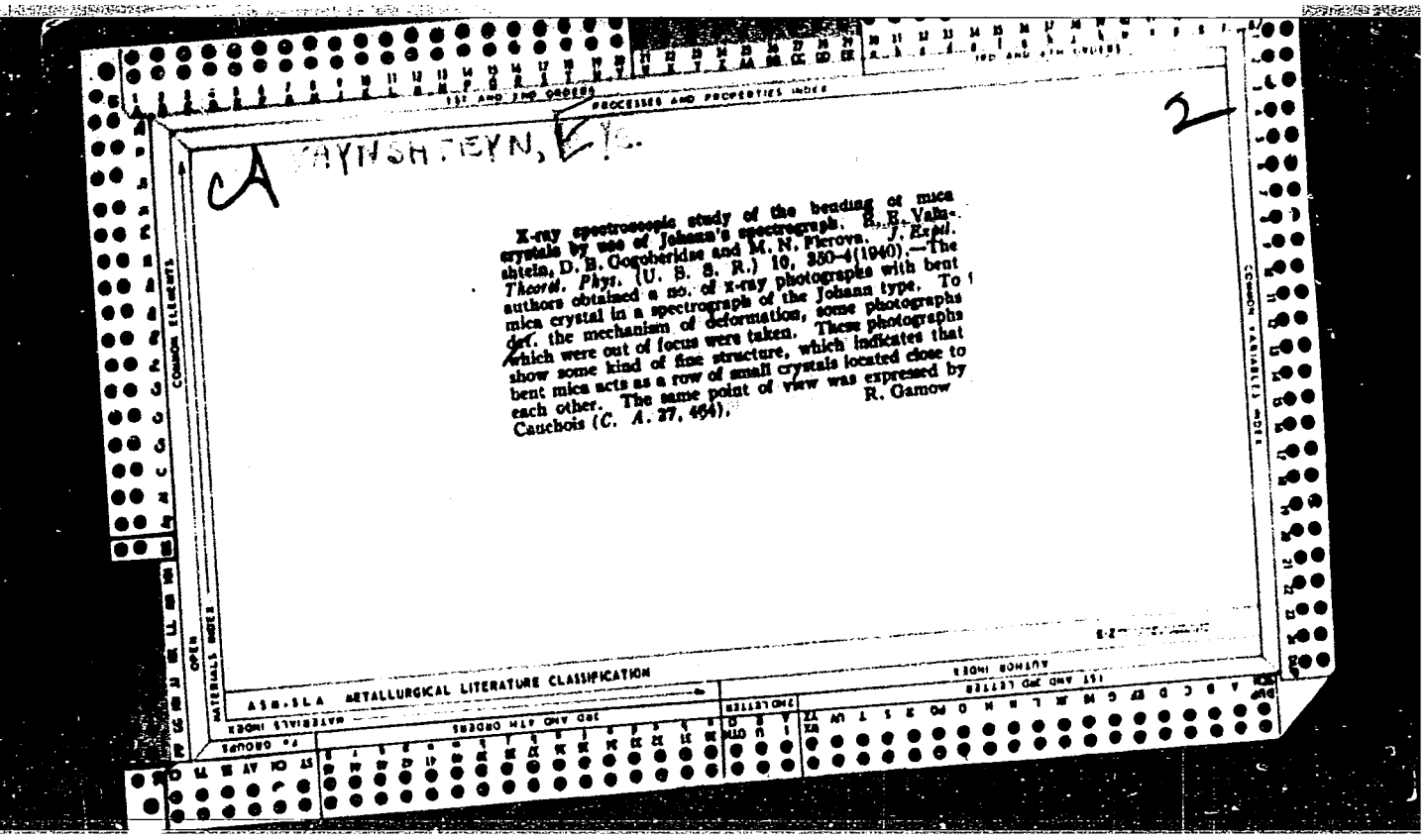
[Natural pigments] Prirodnye pigmenty. Moskva, Gosgeoltekh-izdat, 1962. 20 p. (MIRA 16:6)
(Pigments)



used in a study of the xray K-absorption spectra of iron in (I) a polyferrocene of undetermined molecular wt., m.p. = 300-360C; (II) polybutylferrocene, mol. wt. 4450, m.p. 200-240C;



APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001859120002-3"



CA

MAYNSHTEYN, E. Ye.

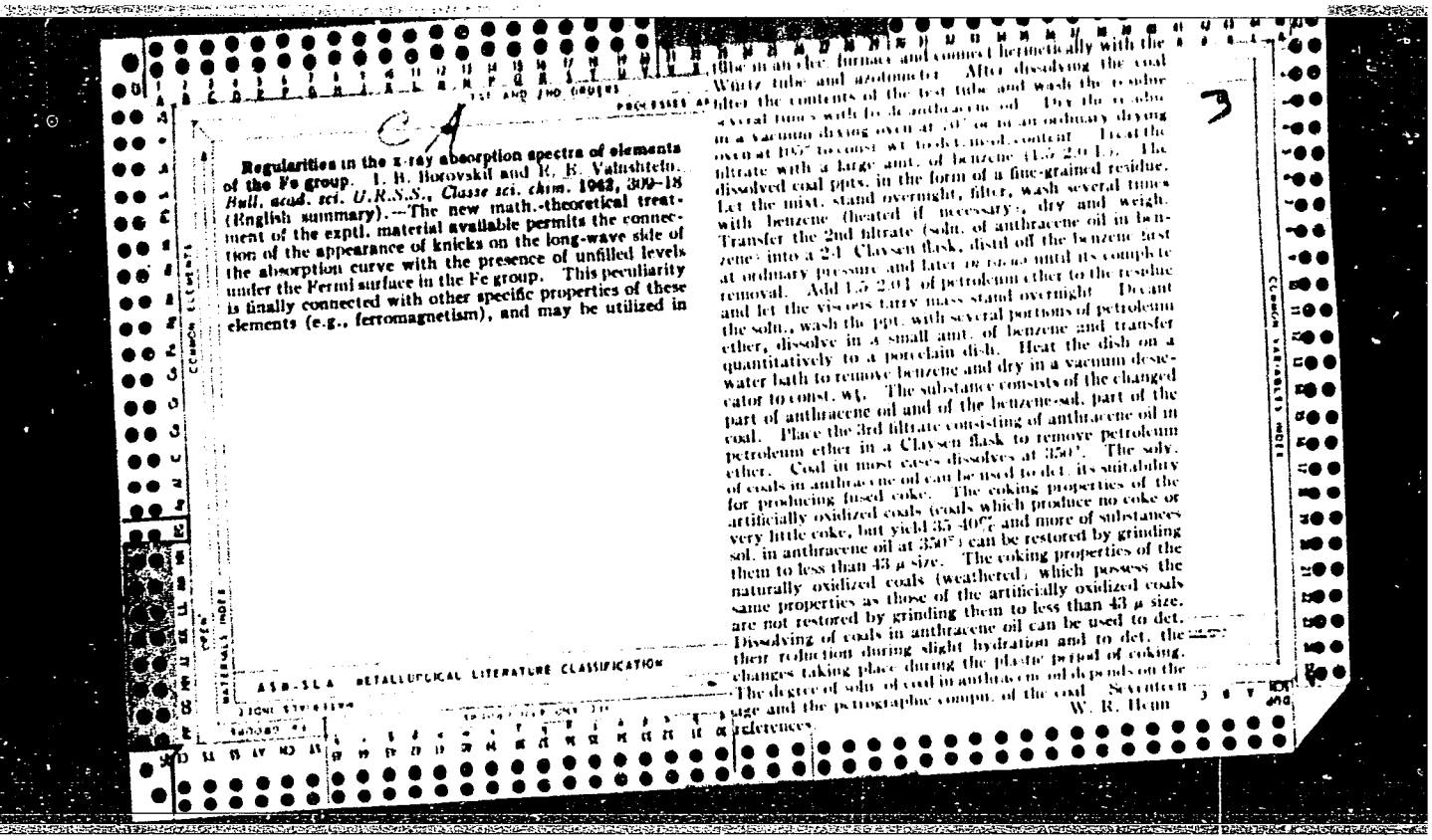
2

X-ray spectroscopic study of the bending of mica crystals by use of Johann's spectrograph. E. E. Vaishtein, D. B. Gogoberidze and M. N. Pierova. *J. Exptl. Theoret. Phys.* (U. S. S. R.) 10, 350-4(1940).—The authors obtained a no. of x-ray photographs with bent mica crystal in a spectrograph of the Johann type. To det. the mechanism of deformation, some photographs which were out of focus were taken. These photographs show some kind of fine structure, which indicates that bent mica acts as a row of small crystals located close to each other. The same point of view was expressed by Cauchois (*C. A.* 27, 464). R. Gamow

Study of bent quartz crystals by means of a Cauchois spectrograph. F. Vainshtein (*Compt. rend. Acad. Sci. U.R.S.S.*, 1943, **34**, 107–109).—The general picture of deformation observed in mica is reproduced in its main features in crystals of quartz. The phenomenon described by Watson (A., 1938, I, 99) should be accounted for by the breaking of the crystal into separate pieces. I. S. F.

Dr. Abs.

X-Ray spectrographic investigation of bent mica crystals with the aid of a Johann spectrograph. B. Vainshtein (Compt. rend. Acad. Sci. U. R. S. S., 1941, 35, 233-235).--Spectrographic examination of bent mica crystals shows that in the action of bending the crystals are split into smaller crystals, the latter changing their orientation one to another without being individually distorted to any appreciable extent. C. H. H.



Regularities in the x-ray absorption spectra of elements of the Fe group. I. B. Borovskiĭ and R. E. Valnshteĭn. *Izvest. akad. nauk. U.R.S.S., Classe sci. chim.* **1942**, 309–18 (English summary).—The new math.-theoretical treatment of the exptl. material available permits the connection of the appearance of knicks on the long-wave side of the absorption curve with the presence of unfilled levels under the Fermi surface in the Fe group. This peculiarity is finally connected with other specific properties of these elements (e.g., ferromagnetism), and may be utilized in

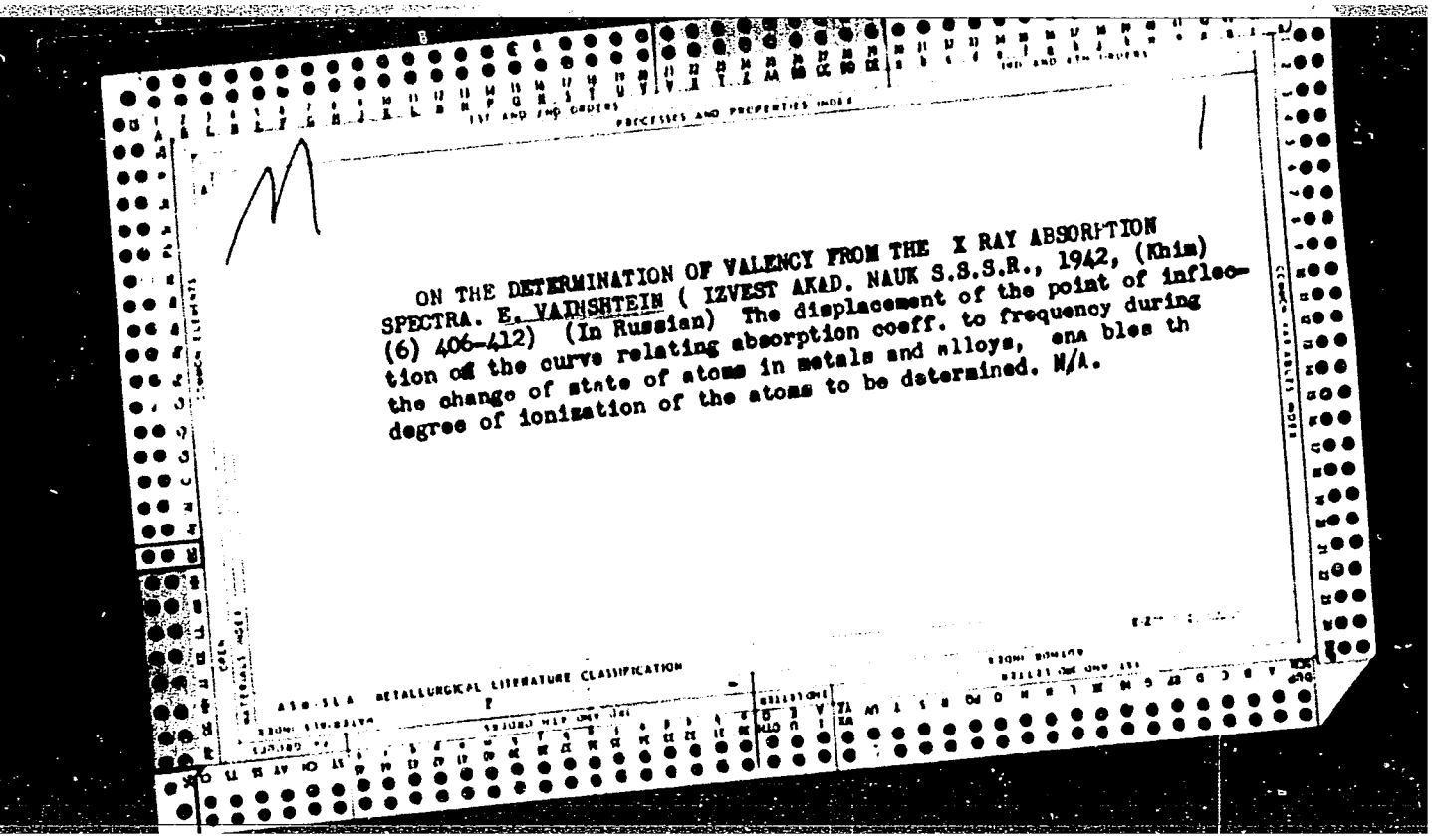
(tube in an elec. furnace and connect hermetically with the Wirtz tube and azotometer. After dissolving the coal filter the contents of the test tube and wash the residue several times with hot anthracene oil. Dry the residue in a vacuum drying oven at 50° or in an ordinary drying oven at 105° to const. wt. to det. moist. content. Treat the filtrate with a large amt. of benzene (1.5–2.0 l.). The dissolved coal ppts. in the form of a fine-grained residue. Let the mixt. stand overnight, filter, wash several times with benzene (heated if necessary), dry and weigh. Transfer the 2nd filtrate (soln. of anthracene oil in benzene) into a 2-l. Claysen flask, distil off the benzene first at ordinary pressure and later in vacuo until its complete removal. Add 1.5–2.0 l. of petroleum ether to the residue and let the viscous tarry mass stand overnight. Decant the soln., wash the ppt. with several portions of petroleum ether, dissolve in a small amt. of benzene and transfer quantitatively to a porcelain dish. Heat the dish on a water bath to remove benzene and dry in a vacuum desiccator to const. wt. The substance consists of the changed part of anthracene oil and of the benzene-sol. part of the coal. Place the 3rd filtrate consisting of anthracene oil in petroleum ether in a Claysen flask to remove petroleum ether. Coal in most cases dissolves at 350°. The solv. of coals in anthracene oil can be used to det. its suitability for producing fused coke. The coking properties of the artificially oxidized coals (coals which produce no coke or very little coke, but yield 35–40% and more of substances sol. in anthracene oil at 350°) can be restored by grinding them to less than 43 μ size. The coking properties of the naturally oxidized coals (weathered) which possess the same properties as those of the artificially oxidized coals are not restored by grinding them to less than 43 μ size. Dissolving of coals in anthracene oil can be used to det. their reduction during slight hydration and to det. the changes taking place during the plastic period of coking. The degree of soln. of coal in anthracene oil depends on the stage and the petrographic compn. of the coal. Seventeen references.

W. R. Horn

Determination of valency from X-ray absorption spectra. E. Weinstein (*Acta Physicochim. U.R.S.S.*, 1942, **16**, 321—330).—The modification of the electron configuration of an atom entering a chemical compound can be determined from an examination of the X-ray absorption curve, as the frequency of the Fermi limit and the selective max. are altered. The electrovalent link is discussed. The rule that the solubility of one metal in another, if a face-centred cubic lattice is formed, is limited by the fact that the electron concn. of the alloy connot be >1·36 does not hold for certain cases, which are discussed. A. J. M.

Absorption spectra of the iron group. I. B. Borovski and E. F. Vainshtein (*Compt. rend. Acad. Sci. U.R.S.S.*, 1942, **36**, 130—133).—Special attention is called to the influence of symmetry of the wave function of the initial state of transition ψ_1 ($KL_1 - 1s$; $2s$; $L_{II,III} - 2p$) on the intensity of distribution in the fundamental edge and at a distance of 50 e.v. from it. Thus for W-L_I the edge has knicks on the long-wave regions without white lines on the short-wave side. For W-L_{II}, W-L_{III}; Cu-L_{II}, Cu-L_{III}; Ni-L_{III} simple fundamental edges with bright white lines on the short-wave side exist, which are lacking in ^{30}Zn and ^{79}Au. A new method of analysis leads to an identification of the short-wave max. $(\nu/R)L_{II}L_{III}$ with the line $(\nu/R)L_I$ of the L_I edges, and the inflexion lines are hence found to shift 6—8 e.v. For ionic compounds the max. of the absorption lines on the frequency scale is shifted only 1·5 to 1·2 e.v., but the shift of the (ν_0/R) term reaches 7 e.v. for ions of max. valency.

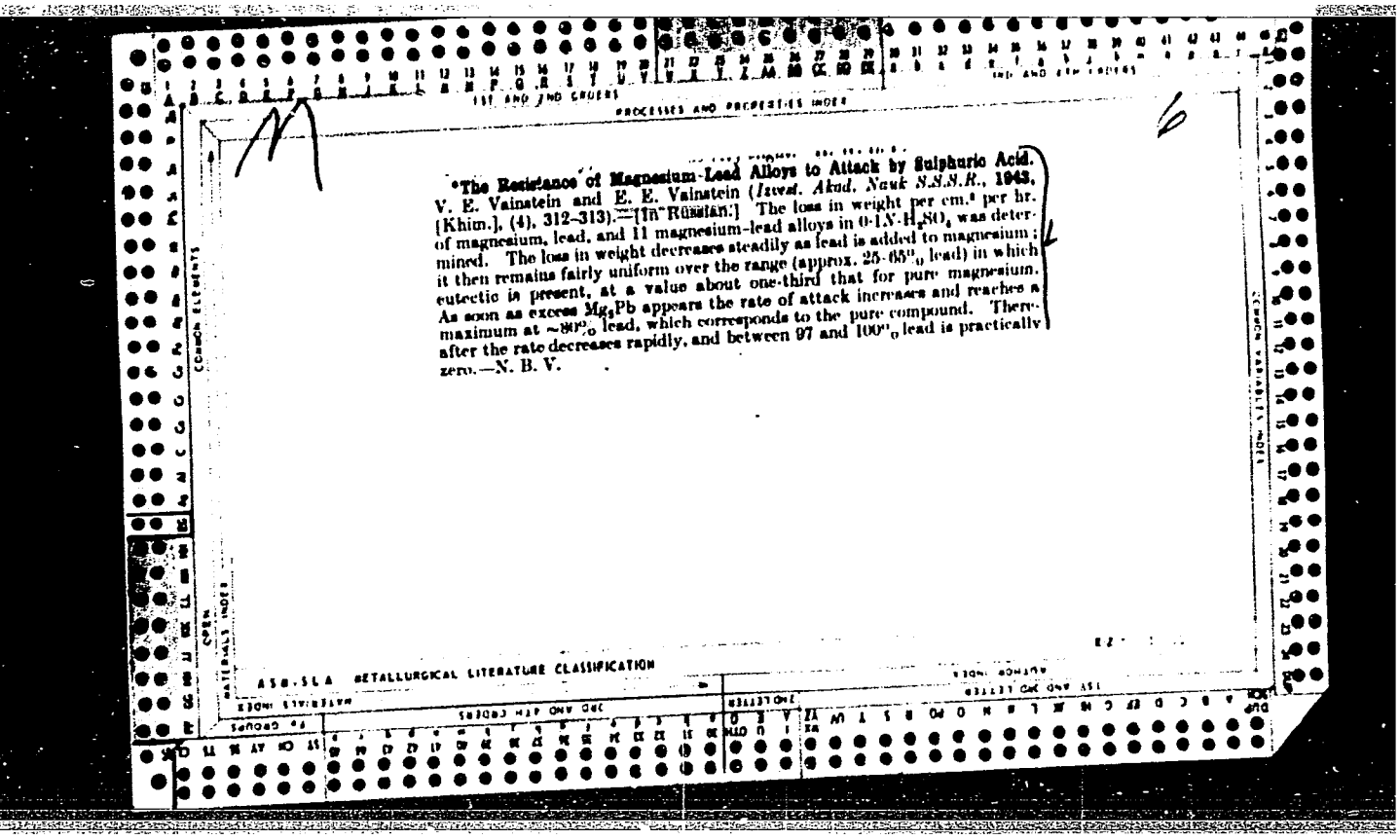
J. O'M.-B.



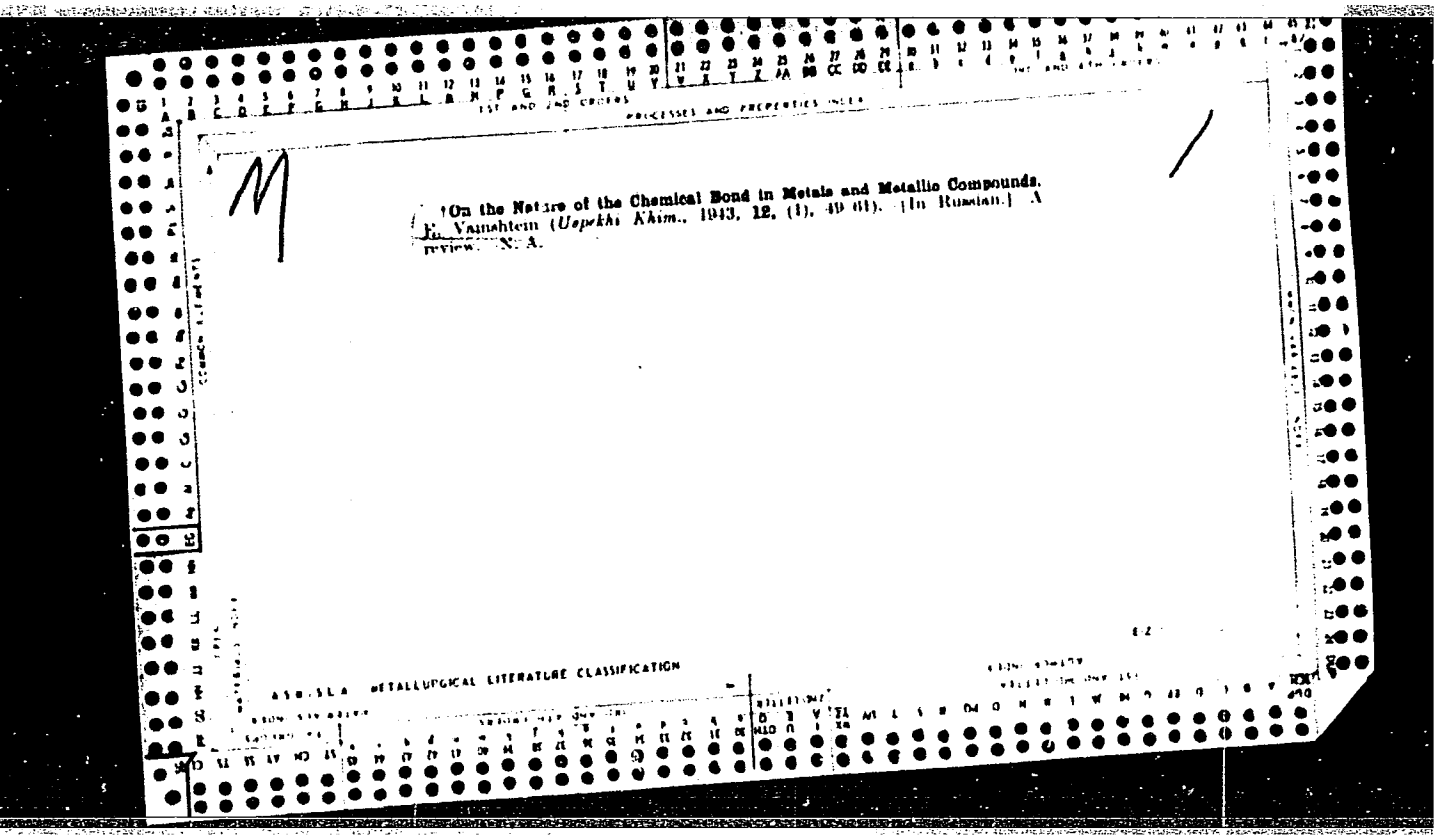
ON THE DETERMINATION OF VALENCY FROM THE X RAY ABSORPTION SPECTRA. E. VAINSHTEIN (IZVEST AKAD. NAUK S.S.S.R., 1942, (Khim) (6) 406-412) (In Russian) The displacement of the point of inflection of the curve relating absorption coeff. to frequency during the change of state of atoms in metals and alloys, ena bles th degree of ionization of the atoms to be determined. M/A.

Crystal chemistry of the Laves phases. G. B. Bokii and E. E. Vainshtein (*Compt. rend Acad. Sci. U.R.S.S.*, 1943, **40**, 232—232, and *Bull. Acad. Sci. U.R.S.S., Cl. Sci. Chim.*, 1943, 241—247).—The intermetallic compounds which do not fit into the scope of the classical ideas of valency (Laves phases) have the formula AB_2 or $AB_2B'_{2-x}$. The structures of Laves phases are characterised by co-ordination nos. (12, 6), but each B atom has six B atoms as its closest neighbours; this accounts for the fact that similar structures are not observed in ionic compounds. These structures permit no variation in the ratio between the radii of the components; contact of uninomial spheres occurs with $R_A : R_B = 1{\cdot}225$ and the A—B distance $(a/8)\sqrt{11}$. The experimental vals. for $R_A : R_B$ lie between 1·11 and 1·33 (calc. vals. 1·09—1·34). Contrary to the views of Schulze, polarisation plays an important rôle, although mutual polarisation may sometimes be disguised by the influence of individual characters of the electronic structures of constituent atoms of the Laves phase. Elements participating in Laves phase formation are classed as (*a*) elements acting as A component only (Na, K, Ca, Tl, Ag, Pb, V, Cr, Mo, Re), (*b*) elements acting as B components only (Zn, Be, Co, Ni, Al), and (*c*) those capable of acting as either A or B (Mn, Fe, Cu, Au, Bi, Mg). Laves phases should not be regarded as an independent group of intermetallic compounds, and the term should be applied only to a definite type of cryst. structure.

W. R. A.

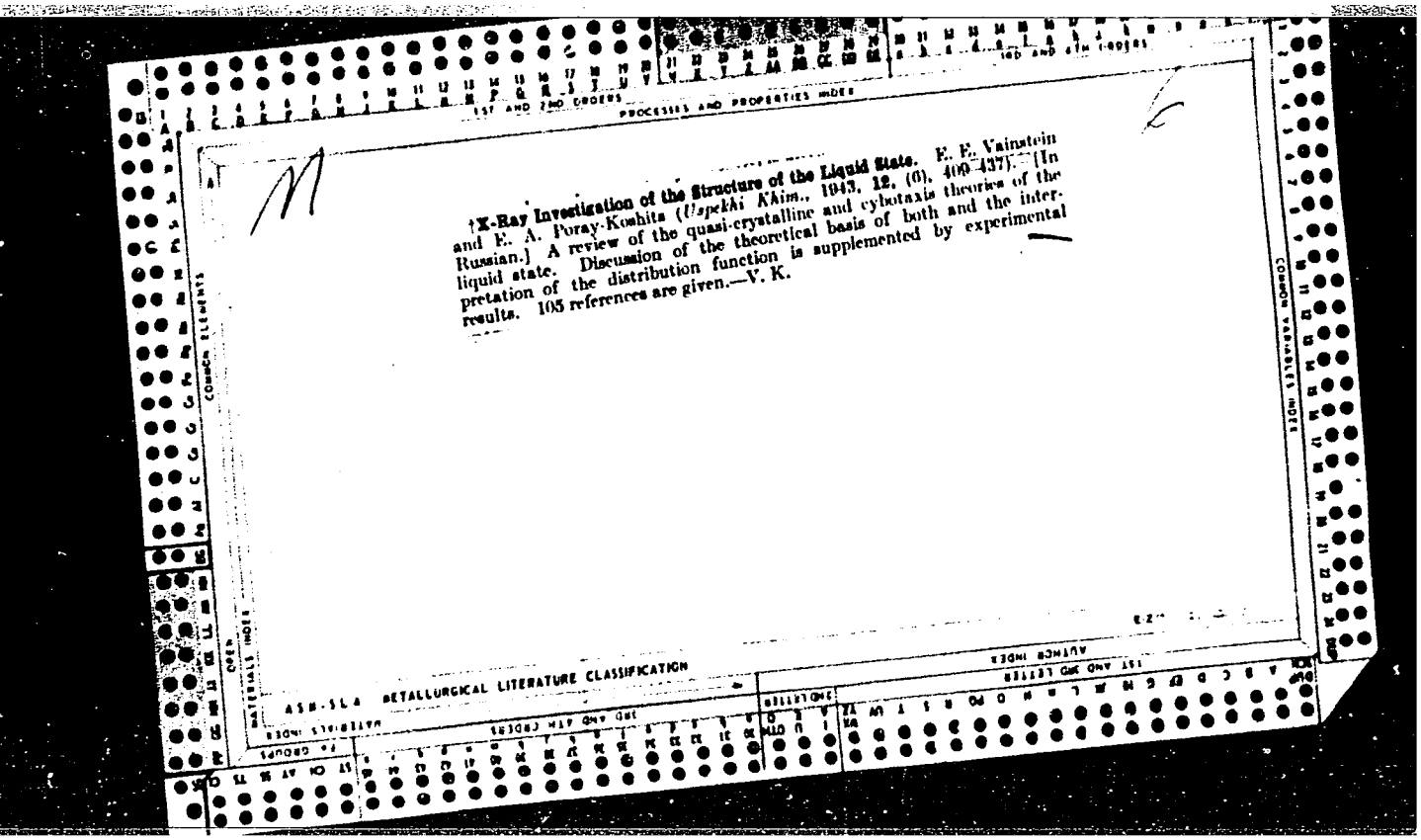


***The Resistance of Magnesium-Lead Alloys to Attack by Sulphuric Acid.** V. E. Vainstein and E. E. Vainstein (*Izvest. Akad. Nauk S.S.S.R.*, **1943**, [Khim.], (4), 312–313).—[In Russian.] The loss in weight per cm.^{2} per hr. of magnesium, lead, and 11 magnesium–lead alloys in 0·1*N*-H_2SO_4 was determined. The loss in weight decreases steadily as lead is added to magnesium; it then remains fairly uniform over the range (approx. 25–65% lead) in which eutectic is present, at a value about one-third that for pure magnesium. As soon as excess Mg_2Pb appears the rate of attack increases and reaches a maximum at ~80% lead, which corresponds to the pure compound. Thereafter the rate decreases rapidly, and between 97 and 100% lead is practically zero.—N. B. V.

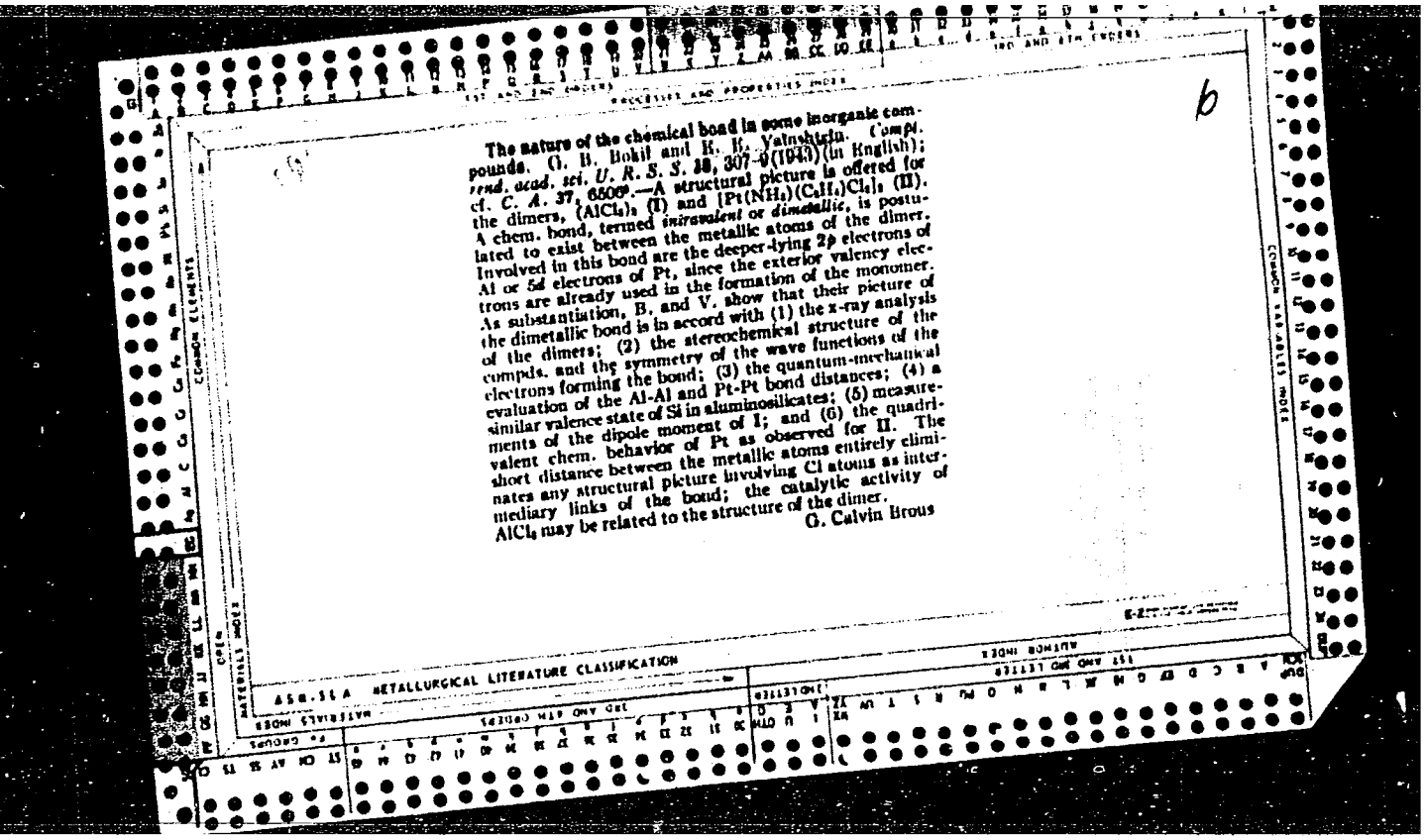


On the Nature of the Chemical Bond in Metals and Metallic Compounds.
E. Vannshtein (*Uspekhi Khim.*, 1943, 12, (1), 49-61). [In Russian.] A
review. N. A.

ASM/SLA METALLURGICAL LITERATURE CLASSIFICATION

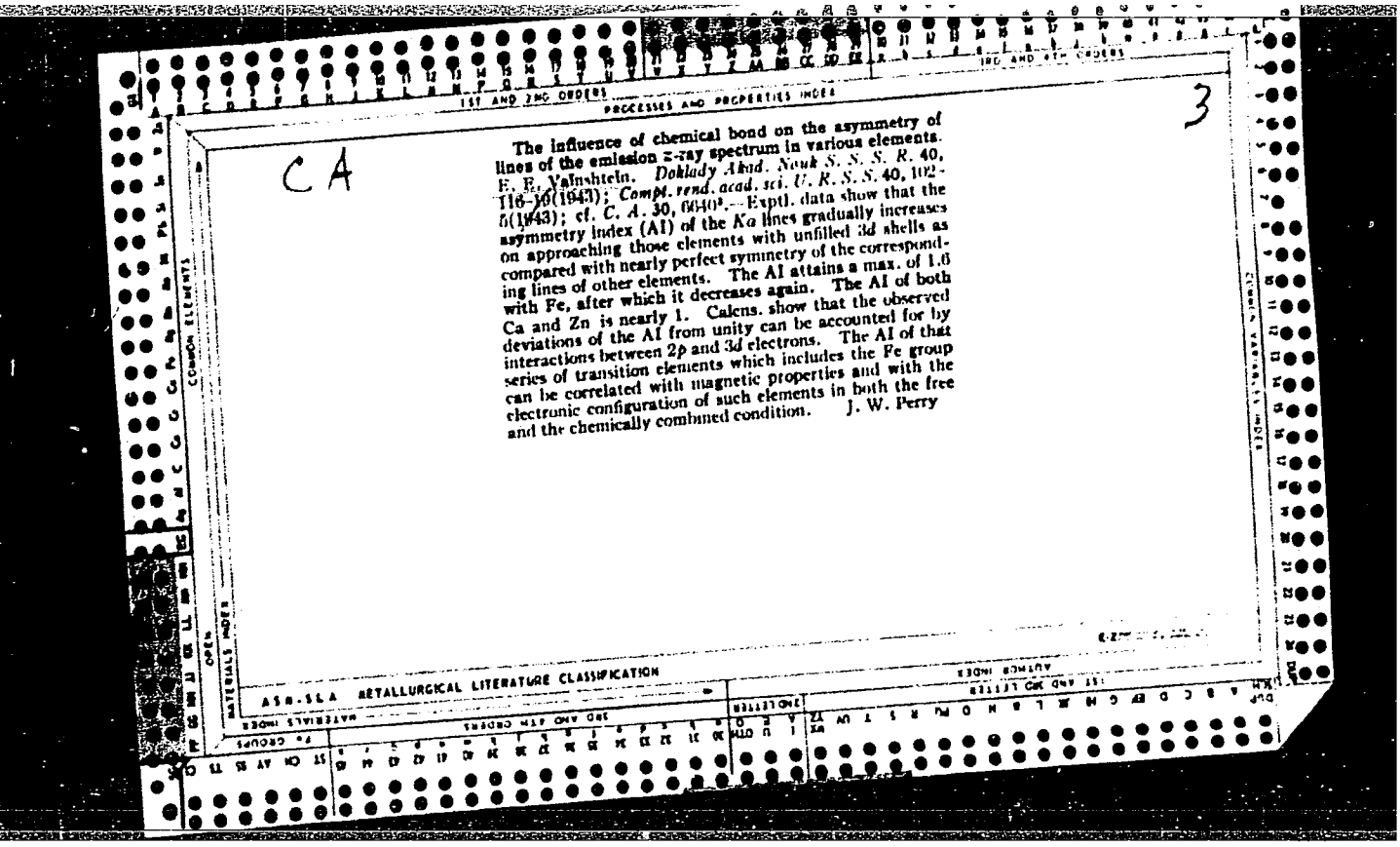


†**X-Ray Investigation of the Structure of the Liquid State.** E. F. Vainstein and E. A. Poray-Koshits (*Uspekhi Khim.*, 1943, **12**, (6), 400–437). [In Russian.] A review of the quasi-crystalline and cybotaxis theories of the liquid state. Discussion of the theoretical basis of both and the interpretation of the distribution function is supplemented by experimental results. 105 references are given.—V. K.



The nature of the chemical bond in some inorganic compounds. G. B. Bokii and K. B. Yatsimirskii. *Compt. rend. acad. sci. U. R. S. S.* **38**, 307–9 (1943) (in English); cf. *C. A.* **37**, 6509⁹.—A structural picture is offered for the dimers, $(AlCl_3)_2$ (I) and $[Pt(NH_3)(C_2H_4)Cl_2]_2$ (II). A chem. bond, termed *intravalent* or *dimetallic*, is postulated to exist between the metallic atoms of the dimer. Involved in this bond are the deeper-lying 2*p* electrons of Al or 5*d* electrons of Pt, since the exterior valency electrons are already used in the formation of the monomer. As substantiation, B. and V. show that their picture of the dimetallic bond is in accord with (1) the x-ray analysis of the dimers; (2) the stereochemical structure of the compds. and the symmetry of the wave functions of the electrons forming the bond; (3) the quantum-mechanical evaluation of the Al-Al and Pt-Pt bond distances; (4) a similar valence state of Si in aluminosilicates; (5) measurements of the dipole moment of I; and (6) the quadrivalent chem. behavior of Pt as observed for II. The short distance between the metallic atoms entirely eliminates any structural picture involving Cl atoms as intermediary links of the bond; the catalytic activity of $AlCl_4$ may be related to the structure of the dimer.

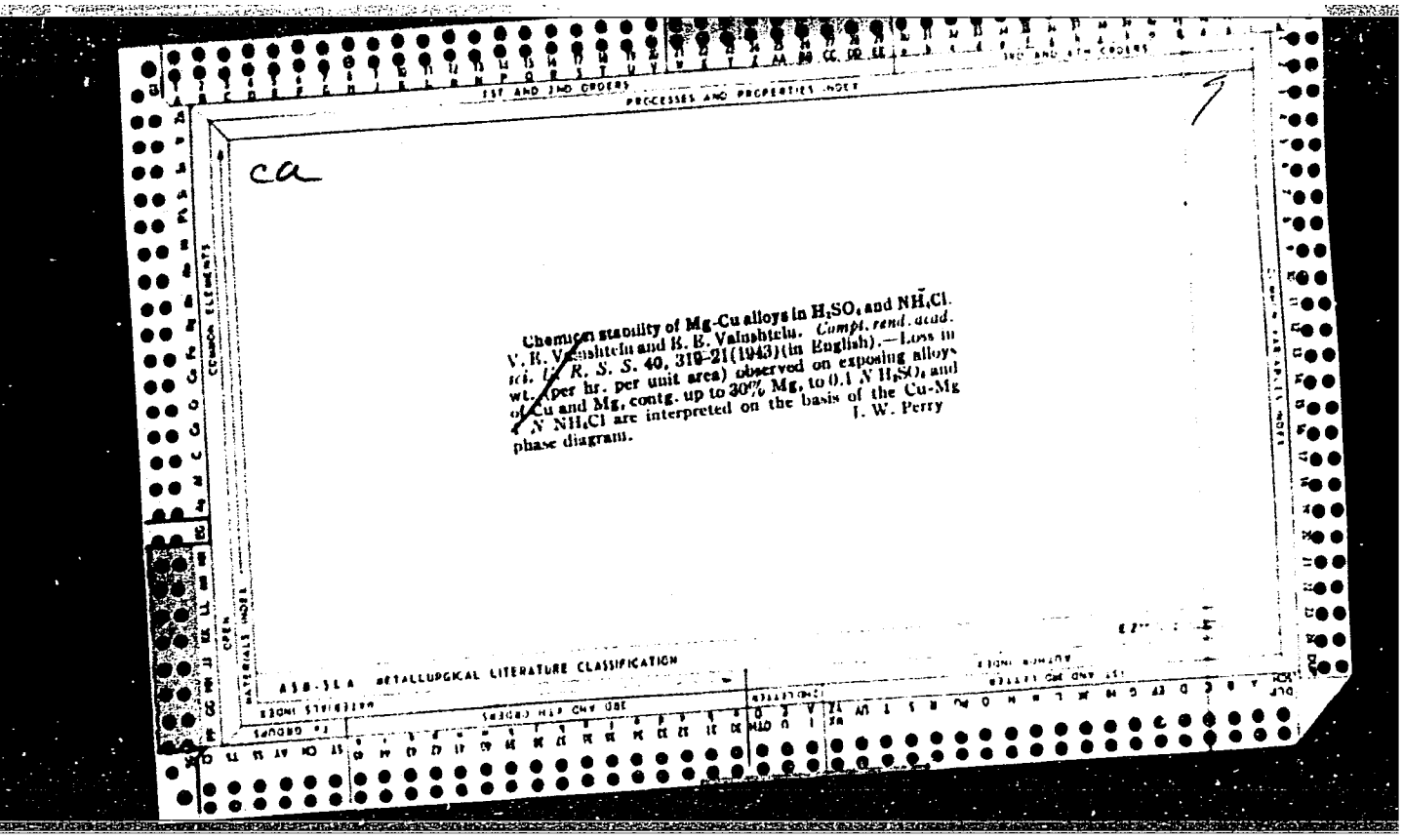
G. Calvin Brous



CA

3

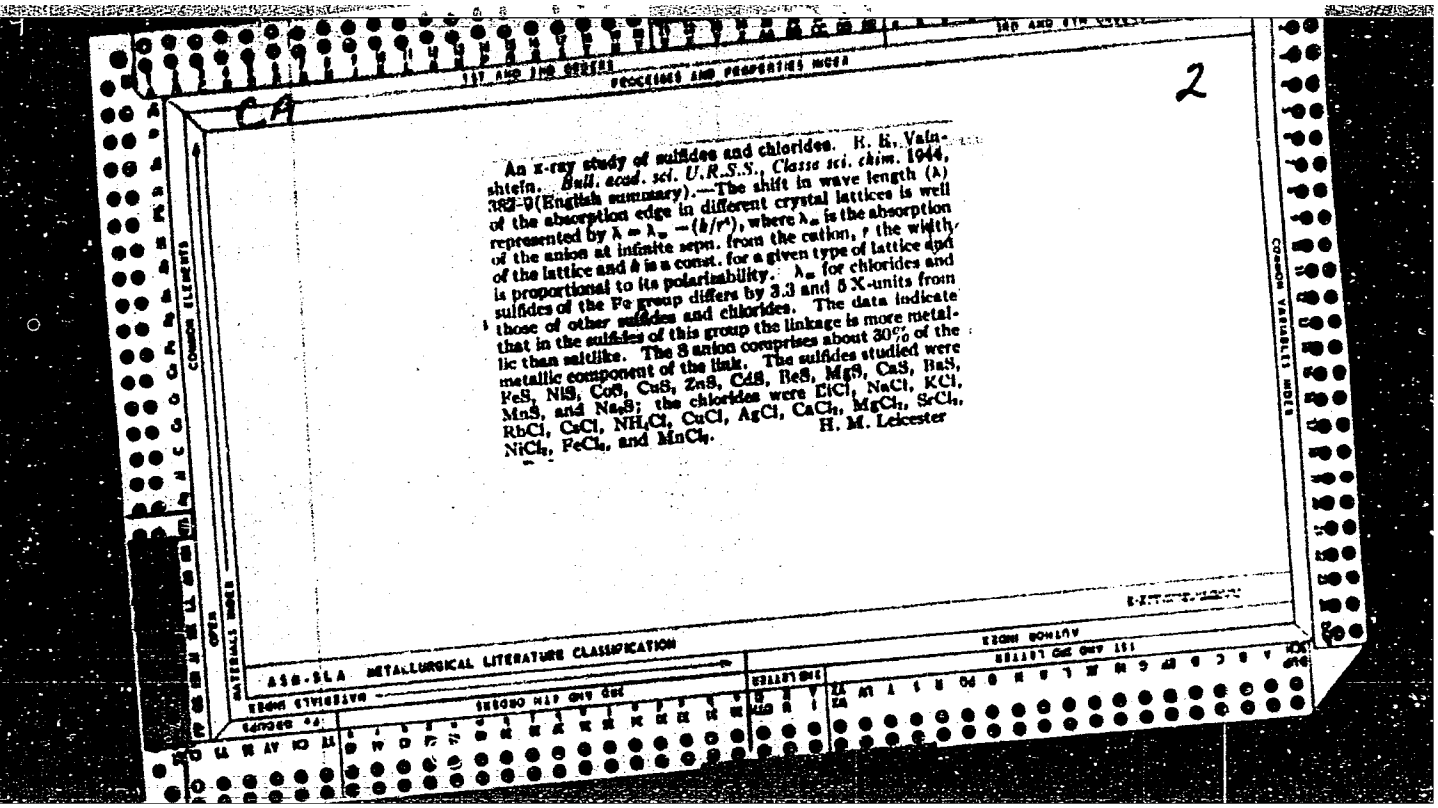
The influence of chemical bond on the asymmetry of lines of the emission x-ray spectrum in various elements. F. E. Valnshtein. *Doklady Akad. Nauk S. S. S. R.* 40, 116–19(1943); *Compt. rend. acad. sci. U. R. S. S.* 40, 102–5(1943); cf. *C. A.* 30, 6040⁹.—Expt'l. data show that the asymmetry index (AI) of the *Kα* lines gradually increases on approaching those elements with unfilled 3*d* shells as compared with nearly perfect symmetry of the corresponding lines of other elements. The AI attains a max. of 1.6 with Fe, after which it decreases again. The AI of both Ca and Zn is nearly 1. Calcns. show that the observed deviations of the AI from unity can be accounted for by interactions between 2*p* and 3*d* electrons. The AI of that series of transition elements which includes the Fe group can be correlated with magnetic properties and with the electronic configuration of such elements in both the free and the chemically combined condition. J. W. Perry



ca

Chemical stability of Mg-Cu alloys in H_2SO_4 and NH_4Cl. V. B. Vasilchi and B. B. Valushtchi. *Compt. rend. acad. sci. U. R. S. S.* 40, 319–21(1943)(in English).—Loss in wt. (per hr. per unit area) observed on exposing alloys of Cu and Mg, contg. up to 30% Mg, to 0.1 *N* H_2SO_4 and *N* NH_4Cl are interpreted on the basis of the Cu-Mg phase diagram. J. W. Perry

ASB-SLA METALLURGICAL LITERATURE CLASSIFICATION

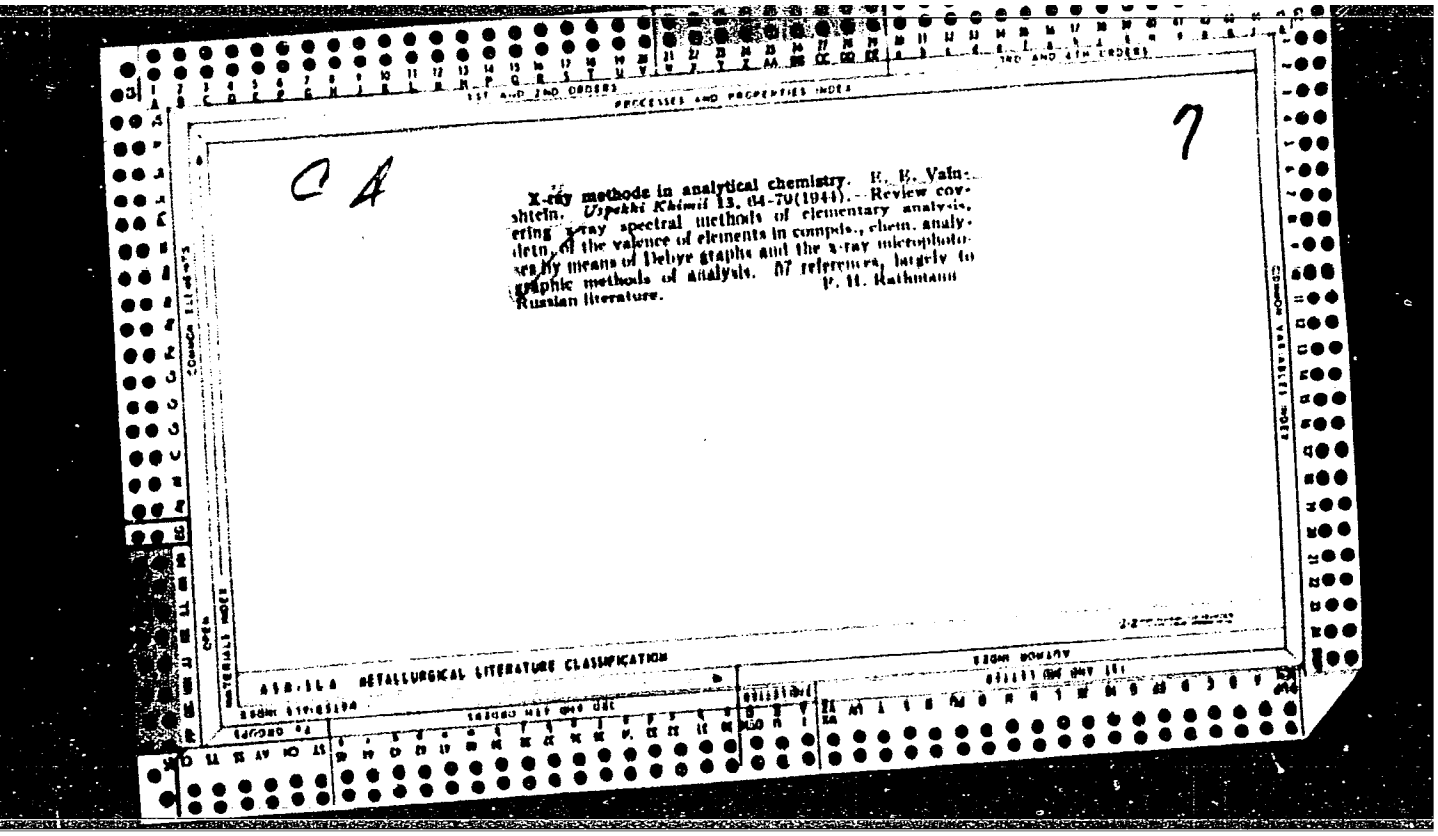


CA

2

An x-ray study of sulfides and chlorides. B. K. Vainshtein. *Bull. acad. sci. U.R.S.S., Classe sci. chim.* 1944, 382-9(English summary).—The shift in wave length (A) of the absorption edge in different crystal lattices is well represented by $\lambda = \lambda_\infty - (h/r^4)$, where λ_∞ is the absorption of the anion at infinite sepn. from the cation, r the width of the lattice and h is a const. for a given type of lattice and is proportional to its polarizability. λ_∞ for chlorides and sulfides of the Fe group differs by 3.3 and 5 X-units from those of other sulfides and chlorides. The data indicate that in the sulfides of this group the linkage is more metallic than saltlike. The S anion comprises about 30% of the metallic component of the link. The sulfides studied were FeS, NiS, CoS, CuS, ZnS, CdS, BeS, MgS, CaS, BaS, MnS, and Na_2S; the chlorides were LiCl, NaCl, KCl, RbCl, CsCl, NH_4Cl, CuCl, AgCl, $CaCl_2$, $MgCl_2$, $SrCl_2$, $NiCl_2$, $FeCl_2$, and $MnCl_2$.

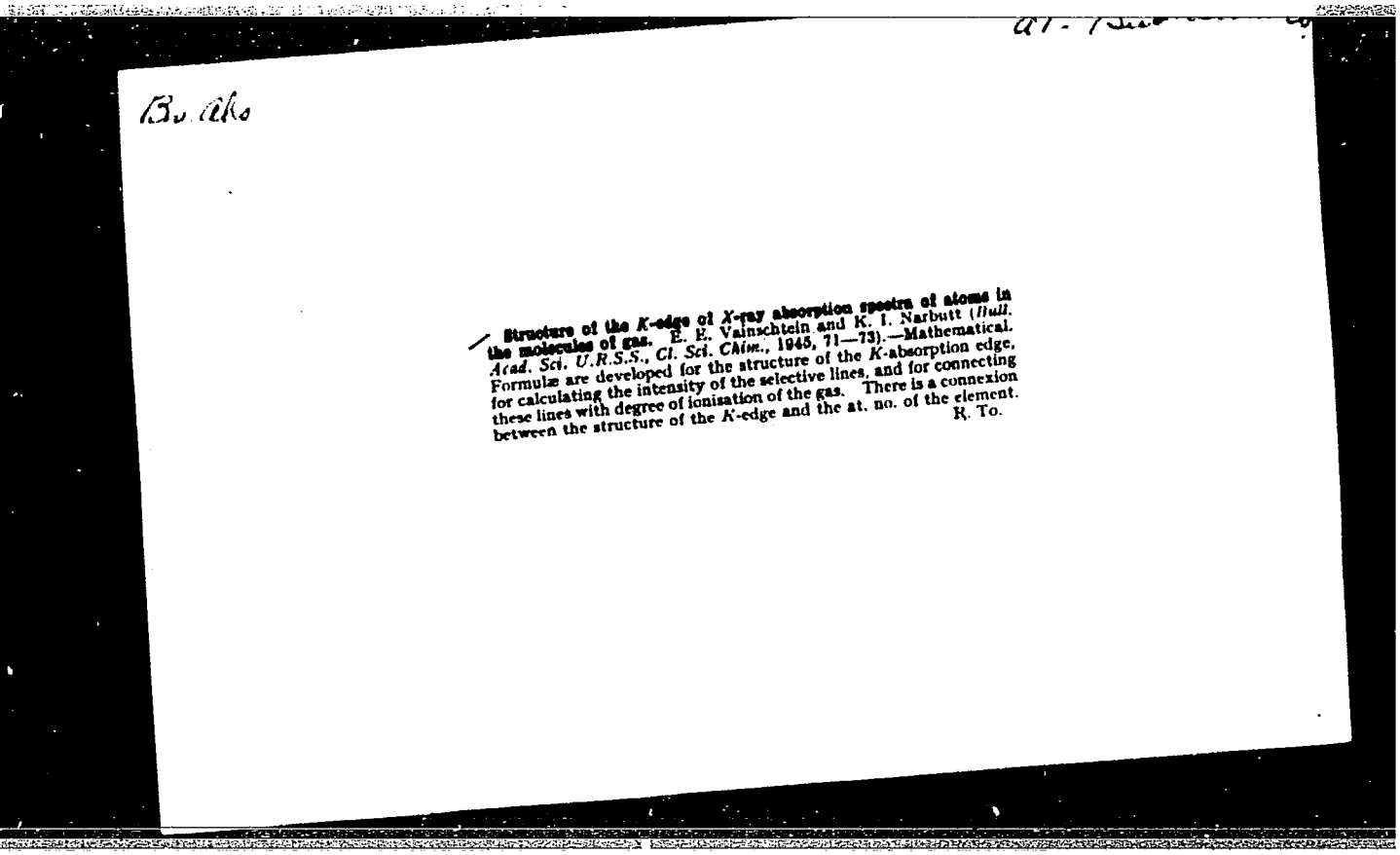
H. M. Leicester



CA

7

X-ray methods in analytical chemistry. E. E. Vain-shtein. *Uspekhi Khimii* 13, 64-70(1944).--Review covering x-ray spectral methods of elementary analysis, detn. of the valence of elements in compds., chem. analyses by means of Debye graphs and the x-ray microphotographic methods of analysis. 57 references, largely to Russian literature. P. H. Rathmann



Structure of the *K*-edge of *X*-ray absorption spectra of atoms in the molecules of gas. E. E. Vainschtein and K. I. Narbutt (*Bull. Acad. Sci. U.R.S.S., Cl. Sci. Chim.*, 1945, 71—73).—Mathematical. Formulæ are developed for the structure of the *K*-absorption edge, for calculating the intensity of the selective lines, and for connecting these lines with degree of ionisation of the gas. There is a connexion between the structure of the *K*-edge and the at. no. of the element. R. To.

WEINSTEIN, E. E.

1945

USSR/Physics
X-ray spectra
Iron group

"Influence Exerted by the Chemical Bond on the Symmetry of the K-alpha 1,2 Lines in the X-ray Spectrum of the Elements of the Iron Group," E. E. Weinstein and I. B. Borovsky, 4 pp

"CR Acad Sci" Vol XLIX, No 5

Studies on K-alpha 1,2 lines due to 2 p-1s transitions in the atom, with a bent-crystal spectrograph.

4T93

PA 34T65

USSR/Nuclear Physics - Neutrons, Thermal Jul 1946
Nuclear Physics - Neutrons - Diffusion

"Dispersion of Thermal Neutrons in Metals," E. Ye. Vaynshteyn, 1½ pp

"Priroda" No 7

Author gives a brief summary of the work which was undertaken by various American scientists after Whitaker and Beyer disclosed the fact that there is a relationship between permeation of slow neutrons in matter and the physical dimensions of the solid bodies. He gives a brief description of the results of X-ray and electronographic observations which were conducted on the dispersion of neutrons in metals.

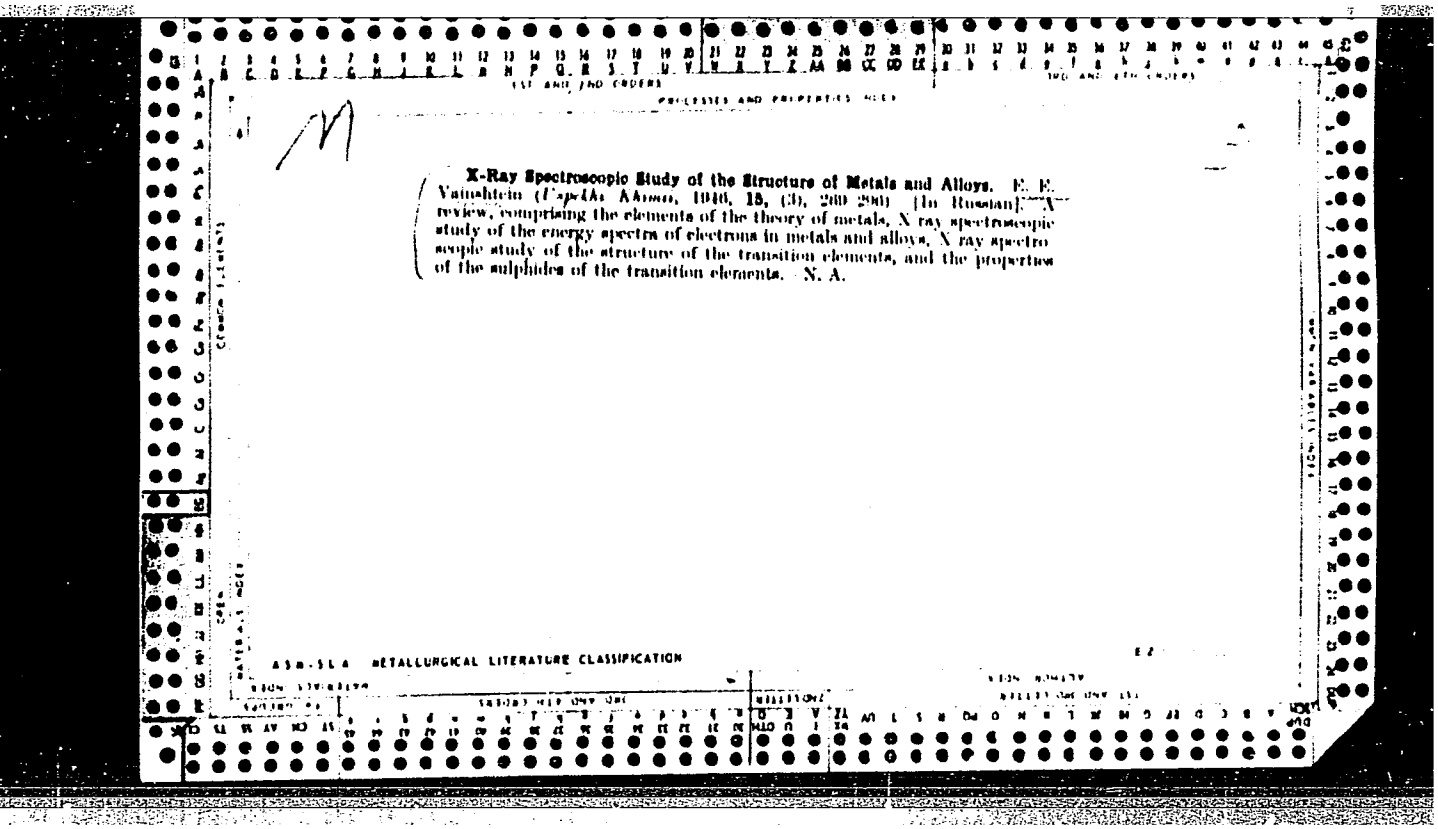
ID 34T65

USSR/Nuclear Physics - Neutrons, Thermal (Contd) Jul 1946

Among the scientists mentioned are Nix, Dunning, and Clement.

ID 34T65

VAYNSHTEYN, E. YE.



X-Ray Spectroscopic Study of the Structure of Metals and Alloys. E. E. Vainshtein (*Uspekhi Khimii*, 1946, **15**, (3), 289–290) [In Russian]. A review, comprising the elements of the theory of metals, X ray spectroscopic study of the energy spectra of electrons in metals and alloys, X ray spectroscopic study of the structure of the transition elements, and the properties of the sulphides of the transition elements. — N. A.

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

VEYNSHTEYN, E. F.
VAYNSHTEYN, Ye. Ye.

PA 21T113

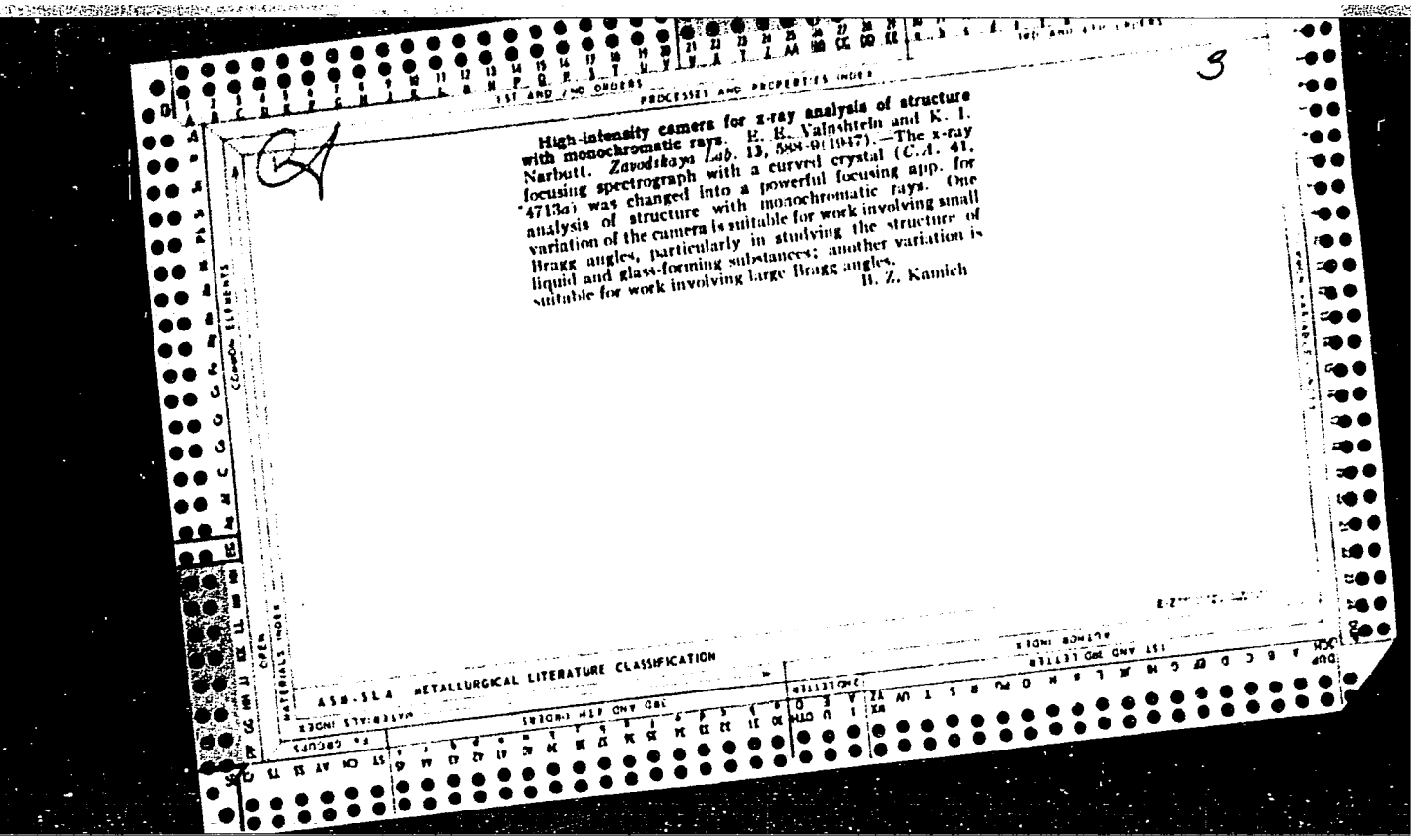
USSR/Physics Sep 1946
Spectographs
X-rays - Application

"A New Type of X-ray Focusing Spectrograph with a Curved Crystal," E.F.Veynshteyn, K.I.Narbutt, Laboratory of Geochemical Problems and X-ray Chemical Laboratory, imeni V. I.Vernadskiy, Institute of Geological Sciences, Academy of Sciences of the USSR, 4 pp

"Comptes Rendus (Doklady)" Vol LIII, No 8

A description is given of an improved type of spectrograph obeying more closely the equation for the resulting intensity of the scattered wave in an arbitrary point of observation.

21T113



High-intensity camera for x-ray analysis of structure with monochromatic rays. E. R. Vainshtein and K. I. Narbutt. *Zavodskaya Lab.* 13, 588-90(1947).—The x-ray focusing spectrograph with a curved crystal (*C.A.* 41, 4713a) was changed into a powerful focusing app. for analysis of structure with monochromatic rays. One variation of the camera is suitable for work involving small Bragg angles, particularly in studying the structure of liquid and glass-forming substances; another variation is suitable for work involving large Bragg angles.
H. Z. Kanich

PA 2/49T13

VAYNSHTEYN, E. YE.

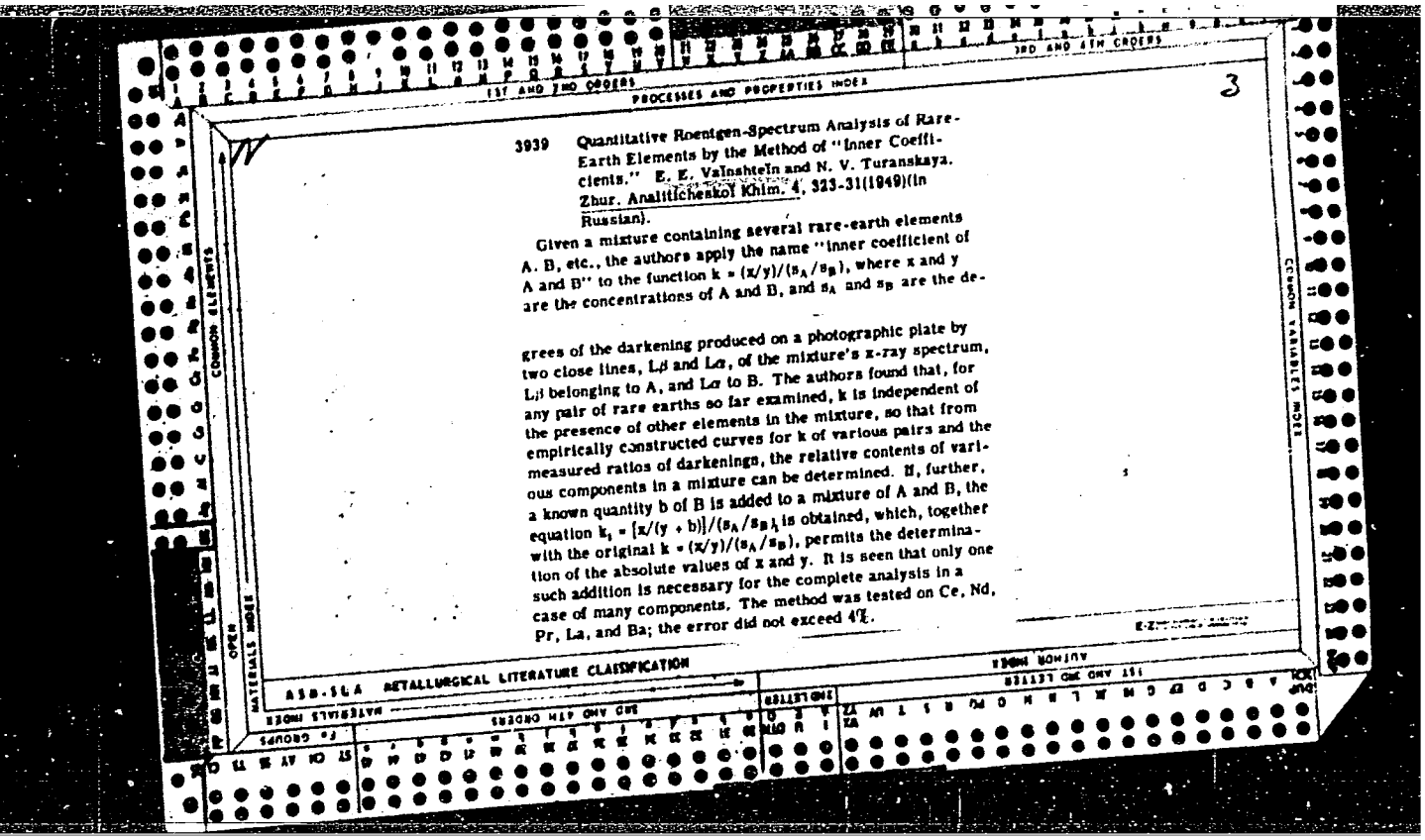
USSR/Chemistry - Rare Earths Jun 48
Chemistry - Periodic System

"Rare Earths and Their Position in the Natural System of Chemical Elements," E. Ye. Vaynshteyn, 15 pp

"Priroda" No 6

Presents characteristics and properties of rare earths and their classificat on in the periodic system.

2/49T13



1ST AND 2ND ORDERS

PROCESSES AND PROPERTIES INDEX

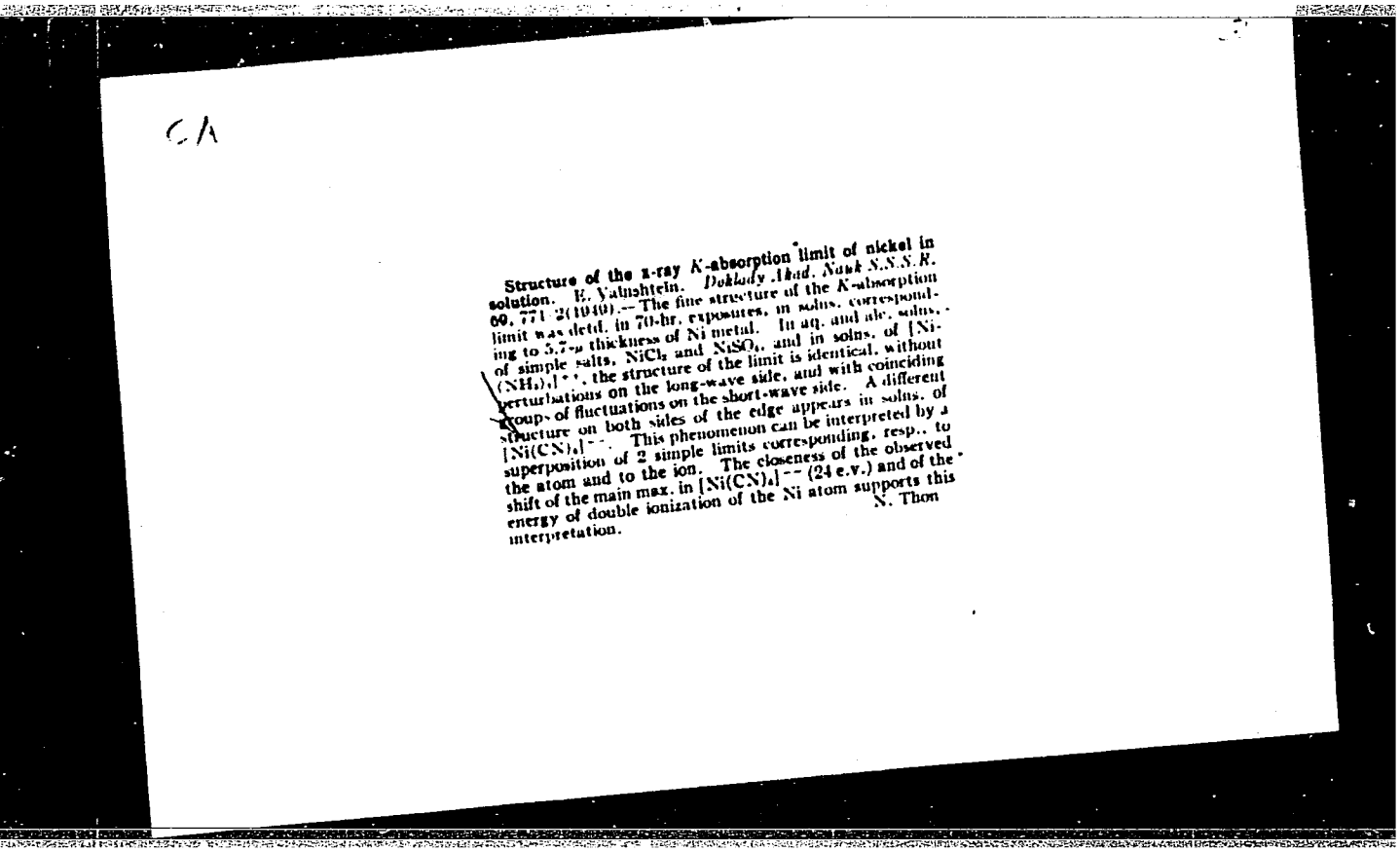
3RD AND 4TH ORDERS

3

3939 Quantitative Roentgen-Spectrum Analysis of Rare-Earth Elements by the Method of "Inner Coefficients." E. E. Vainshtein and N. V. Turanskaya. Zhur. Analiticheskoi Khim. 4, 323-31(1949)(in Russian).

Given a mixture containing several rare-earth elements A, B, etc., the authors apply the name "inner coefficient of A and B" to the function $k = (x/y)/(s_A/s_B)$, where x and y are the concentrations of A and B, and s_A and s_B are the degrees of the darkening produced on a photographic plate by two close lines, $L\beta$ and $L\alpha$, of the mixture's x-ray spectrum, $L\beta$ belonging to A, and $L\alpha$ to B. The authors found that, for any pair of rare earths so far examined, k is independent of the presence of other elements in the mixture, so that from empirically constructed curves for k of various pairs and the measured ratios of darkenings, the relative contents of various components in a mixture can be determined. If, further, a known quantity b of B is added to a mixture of A and B, the equation $k_1 = [x/(y + b)]/(s_A/s_{B_1})$ is obtained, which, together with the original $k = (x/y)/(s_A/s_B)$, permits the determination of the absolute values of x and y. It is seen that only one such addition is necessary for the complete analysis in a case of many components. The method was tested on Ce, Nd, Pr, La, and Ba; the error did not exceed 4%.

ASB-SLA METALLURGICAL LITERATURE CLASSIFICATION



CA

Structure of the x-ray K-absorption limit of nickel in solution. E. Valushtein. *Doklady Akad. Nauk S.S.S.R.* 69, 771-2(1949).—The fine structure of the K-absorption limit was detd. in 70-hr. exposures, in solns. corresponding to 5.7-μ thickness of Ni metal. In aq. and alc. solns. of simple salts, $NiCl_2$ and $NiSO_4$, and in solns. of $[Ni(NH_3)_4]^{++}$, the structure of the limit is identical, without perturbations on the long-wave side, and with coinciding groups of fluctuations on the short-wave side. A different structure on both sides of the edge appears in solns. of $[Ni(CN)_4]^{--}$. This phenomenon can be interpreted by a superposition of 2 simple limits corresponding, resp., to the atom and to the ion. The closeness of the observed shift of the main max. in $[Ni(CN)_4]^{--}$ (24 e.v.) and of the energy of double ionization of the Ni atom supports this interpretation.

N. Thon

VAYNSHTEYN, E. YE.

24(8) PHASE I BOOK EXPLOITATION SOV/2809

Akademiya nauk SSSR. Otdeleniye khimicheskikh nauk

Termodinamika i stroyeniye rastvorov; trudy soveshchaniya... (Thermodynamics and Structure of Solutions; Transactions of the Conference Held January 27-30, 1958) Moscow, Izd-vo AN SSSR, 1959. 295 p. 3,000 copies printed.

Ed.: M. I. Shakhparonov, Doctor of Chemical Sciences; Ed. of Publishing House: N. G. Yegorova; Tech. Ed.: F. V. Polyakova.

PURPOSE: This book is intended for physicists, chemists, and chemical engineers.

COVERAGE: This collection of papers was originally presented at the Conference on Thermodynamics and Structure of Solutions sponsored by the Section of Chemical Sciences of the Academy of Sciences, USSR, and the Department of Chemistry of Moscow State University, and held in Moscow on January 27-30, 1958. Officers of the conference are listed in the Foreword. A list of other reports also read at the conference, but not included in this book, are given. Among the problems treated in this work are: electrolytic solutions, ultrasonic measurement, dielectric and thermodynamic properties of various mixtures, spectroscopic analysis, etc. References accompany individual articles.

VAYNSHTEYN, E. YE.

SOV/75-14-4-2/30

5(2)
AUTHORS: Shevaleyevskiy, I. D., Nalimov, V. V., Vaynshteyn, E. Ye.

TITLE: Investigation of the Errors in X-ray Spectroscopic Analysis

PERIODICAL: Zhurnal analiticheskoy khimii, 1959, Vol 14, Nr 4, pp 396-403 (USSR)

ABSTRACT: The errors of X-ray spectroscopic analysis were investigated by quantitative X-ray spectrographic determination of zirconium and hafnium in minerals and ores. The authors ascertained the relations between the parameters of the calibration curve on the side, and changes of the working conditions during the analysis and the development of the spectrogram on the other side. Contrary to optical spectroscopic analysis where generally both parameters of the calibration curve change in the course of time, only a reciprocal parallel displacement of the calibration curve occurs in X-ray spectroscopic analysis. This fact permits the determinations on the basis of a single constant calibration curve, the position of which is controlled with the help of a standard with not too small a content of the respective element. The straying of the results can be split up into three components: σ_R - error due to lack of reproducibility, characterized by the straying of the results in relation to an arithmetic mean which was cal-

Card 1/4 3

culated for a short period; σ_{E1} - error caused by the instability of the process of rubbing the sample into the anode; σ_T, - error caused by other uncontrollable factors which change in the course of time. The most important of these factors is the lack of constancy during the development of the film. At known values of σ_R, σ_{E1} and σ_T, , the constant calibration curve must be displaced parallelly only if the point which corresponds to the control standard sample, is further away than

$$\pm 2\sqrt{\frac{\sigma_R^2}{nm} + \frac{\sigma_{E1}^2}{m}}$$

(m - number of parallel rubbings, n - number of parallel determinations of each rubbing). If this parallel displacement of the curve surmounts the limits

$$\pm 2\sqrt{\frac{\sigma_R^2}{nm} + \frac{\sigma_{K1}^2}{m} + \sigma_t^2}$$

, the results are uncertain and the

Card 2/4

VAYNSHTEYN, E. YE.

AUTHOR: Bilimovich, G. N. SOV/75-14-4-30/30

TITLE: Section of Analytical Chemistry of the VIII Mendeleyev Congress on General and Applied Chemistry

PERIODICAL: Zhurnal analiticheskoy khimii, 1959, Vol 14, Nr 4, pp 511-512 (USSR)

ABSTRACT: Approximately 300 persons participated in the work of the Department of Analytical Chemistry, among them representatives of various scientific research institutes, higher schools and industrial enterprises in Russia, scientists from China, Bulgaria, the CSR, Poland, Hungary, and Italy. Approximately 70 reports were heard. In his opening speech I. P. Alimarin reported on the achieved results and on modern problems of analytical chemistry. I. V. Tananayev reported on the application of physicochemical analysis in heterogeneous systems for the solution of a series of problems of analytical chemistry. V. I. Kuznetsov reported on modern aims in the use of organic reagents; A. K. Babko showed at the example of halide and thiocyanate complexes the correlation between the stability of complexes and the position of the corresponding central atoms in the periodic system. V. M. Peshkova and V. M. Bochkova lectured on the stability of oximates of Cu, Co, and Ni as depending on the structure of the oxime molecule. V. V. Toropova lectured on the double character of reaction of some compounds in the formation of complexes. The problem of the application of heteropolyacids in analytical chemistry was dealt with in the lectures of Z. F. Shakhova and co-workers, and A. I. Kokorin and N. A. Polotebnova. A large number of lectures dealt with the use of new organic reagents in analysis: A. I. Busev and M. I. Ivanyutin reported on the application of dialkyl and diaryl dithiophosphoric acid for the separation of elements. A. I. Portnov used aryl arsonic acid and aryl phosphinic acid. N. P. Lastovskiy and his co-workers treated some properties of new complexons. The lectures of V. A. Nazarenko, G. G. Shitareva and A. I. Kononenko dealt with the photometric determination of a series of elements using fluorine derivates. A. I. Cherkesov lectured on the use of halochromation in analytical chemistry. D. M. Dobkina and T. M. Malyutina lectured on the determination of tantalum using differential spectrophotometry. Yu. V. Morachevskiy and L. A. Stolyarova reported on new highly sensitive analysis methods using an ultraviolet microscope. Several lectures dealt with methodical and theoretical problems of spectrum analysis (N. P. Zakhariy and G. A. Shevnin; E. Ye. Vaynshteyn and co-workers). N. S. Poluektov and K. K. Nikonova treated the perfection of flame photometry. Several lectures dealt with the determination of elements by polarography (S. I. Sinyakova; E. B. Rozhdestvenskaya and I. A. Yarovoy; Ya. P. Gokhshteyn). New results in using fixed electrodes were reported by I. D. Panchenko and Yu. S. Lyalikov and co-workers. The lecture of N. I. Udal'tsova and P. N. Paley treated the use of amperometric titration with two electrodes in the chemistry of uranium and thorium. N. M. Senyavin showed possibilities of predicting the conditions of chromatographic separation of elements based on their position in the periodic system. T. A. Belyavskaya reported on the use of ion exchange in the investigation of the state of substances in solutions. A. S. Vernidub and V. I. Petrashen' lectured on the chromatographic separation of a series of elements, N. G. Polyanskiy reported on adapting the properties of ion exchanger resins. P. M. Shemyakin and associates reported on the chromatographic proof of sulfanilamide preparations in liquids of the organism. G. L. Starobinets and associates treated the application of high polymers in chromatographic analysis. The lecture of A. A. Zhukhovitskiy and N. M. Turkel'taub, G. Shay dealt with gas chromatography. Several lectures treated the use of radioactive isotopes for the chromatographic investigation of complex formation (D. I. Ryabchikov and associates), for the investigation of the co-precipitation mechanism of ions of rare metals with sulfides (M. A. Rudnev) and for determining rare elements by means of isotope dilution (I. P. Alimarin, G. N. Bilimovich). In the field of elementary organic microanalysis the lectures of M. O. Korshun, N. E. Gel'man and V. A. Klimova with associates have to be mentioned, who treated the elaboration of several rapid micromethods for the simultaneous determination of several elements from one weighed portion of boron, fluorine and silicium-organic compounds.

Card 1/4

Card 2/4

Card 3/4

24(7),24(3)

AUTHORS: Vaynshteyn, E. Ye., Kotlyar, B. I., Shapiro, G. A.

30V/20-125-1-13/67

TITLE: Investigation of the Fine Structure of X-ray Absorption Spectra of Iron in Some Antiferromagnetics and Ferrites (Issledovaniye tonkoy struktury rentgenovskikh spektrov pogloshcheniya zheleza v nekotorykh antiferromagnetikakh i ferritakh)

PERIODICAL: Doklady Akademii nauk SSSR, 1959, Vol 125, Nr 1, pp 55-58 (USSR)

ABSTRACT: In the authors' opinion this is the first experimental investigation into the subject given in the title. The purpose is to clarify the direction and the magnitude of the variations in the fine structure of X-ray-K-absorption spectra of iron in antiferromagnetics and ferrites. These variations are related to those occurring in the magnetic state of the said substances. A further aim is that of finding ways for the most suitable development of these investigations. The antiferromagnetic modification of iron oxide (α-Fe_2O_3) and the group of ferrites Ni,Co,Mn,Sr and Zn were selected for the experiment. The authors used a focusing X-ray spectrograph

Investigation of the Fine Structure of X-ray Absorption Spectra of Iron in Some Antiferromagnetics and Ferrites

SOV/20-125-1-13/67

of the Iogann type. Some of the spectra of α-Fe_2O_3 and $MnO.Fe_2O_3$ recorded in this way are illustrated in 2 diagrams. A remarkable (almost treble for iron oxide and double for $MnO.Fe_2O_3$) change of absorber thickness influences but very little the relative intensity of the longwave range in the absorption spectrum of iron in these compounds, leads, however, to an impoverishment in the fluctuations and to a distortion of the true ratio of their intensities at the shortwave side of the absorption limit. It was found by a similar series of experiments that the optimum density of the absorber corresponds to the density 5 mg/cm^2. Two further diagrams show the group of the absorption edges of iron in various compounds and the absorption edge of iron in iron ferrite and iron oxide. The following provisional conclusions were drawn from the experimental data: 1) the wavelength of the first absorption maximum and the position of the center of the absorption edge of iron in α-Fe_2O_3 in the ferrites investigated practically do not depend on the magnetic state of the substance. In the

Card 2/4

group of the ferrites investigated the said wavelength also does not depend on the nature of the bivalent metal. 2) The ordered distribution of the electron spins in the antiferromagnetic lowers the relative intensity of the longwave range in the absorption spectrum of the transition metal, as compared to the paramagnetic or ferromagnetic state of the substance. 3) At the shortwave side of the X-ray absorption spectra of all ferrites investigated here a more or less clearly marked fine structure was observed. 4) These conclusions are merely of a provisional nature and must therefore be substantiated by further purposive and systematic experiments. Some of these are being carried out at present in the authors' laboratory. There are 4 figures and 12 references, 5 of which are Soviet.

ASSOCIATION: Institut geokhimii i analiticheskoy khimii im. V. I. Vernadskogo Akademii nauk SSSR (Institute of Geochemistry and Analytical Chemistry imeni V. I. Vernadskiy of the Academy of Sciences, USSR) Odesskiy pedagogicheskiy Institut im.

Investigation of the Fine Structure of X-ray Absorption Spectra of Iron in Some Antiferromagnetics and Ferrites

SOV/20-125-1-13/67

K. D. Ushinskogo (Odessa Pedagogical Institute imeni K. D. Ushinskiy)

PRESENTED: November 19, 1958, by A. P. Vinogradov, Academician

SUBMITTED: November 17, 1958

Card 4/4

VAYNSHTEYN, E. Ye.

"X-Ray-Spectroscopic Investigation of the Structure of Solids." Thesis for degree of Dr. Physico-Mathematical Sci. Sub 27 Feb 50, Physics Inst imeni P. N. Lebedev, Acad Sci

Summary 71, 4 Sep 52, Dissertations Presented for Degrees in Science and Engineering in Moscow in 1950. From Vechernyaya Moskva, Jan-Dec 1950.

24(4) PHASE I BOOK EXPLOITATION SOV/1508

Vaynshteyn, E. Ye.

Rentgenovskiye spektry atomov v molekulakh khimicheskikh soyedineniy i v splavakh (X-Ray Spectra of Atoms in Molecules of Chemical Compounds and In Alloys) Moscow, Izd-vo AN SSSR, 1950. 206 p. 4,000 copies printed.

Sponsoring Agency: Akademiya nauk SSSR. Institut geokhimii i analiticheskoy khimii.

Resp. Ed.: A.P. Vinogradov, Corresponding Member, USSR Academy of Sciences; Ed. of Publishing House: L.L. Razumova; Tech. Ed: N.A. Nevrayeva.

PURPOSE: This book is intended for specialists who use the methods of X-ray spectrography for research in physics and physical chemistry.

COVERAGE: This book presents a survey of achievements in the

Card 1/

field of X-ray spectroscopy as it is applied in the structural analysis of chemical compounds, metals, and alloys. A systematic review is given of Soviet and foreign experimental data. Research methods and fundamental theoretical concepts are also included. Much attention is given to transition elements, especially the iron group, due to the great practical and theoretical interest in these elements. Certain difficult aspects of X-ray spectrography which belong to the larger group of theoretical and experimental problems of the so called "satellite" lines are not included in this text. Bright prospects are seen for the application of X-ray spectrography to metallography. The author consulted the following persons: N.V. Ageyev, Corresponding Member of the AS USSR; Professors I.B. Borovskiy and G.B. Bokiy; and K.I. Narbutt and R.A. Borinskiy. There are 133 references, 96 of which are Soviet, 33 English, and 4 German.

TABLE OF CONTENTS:

X-Ray Spectra of Atoms (Cont.)

X-Ray Spectra of Atoms (Cont.)

X-Ray Spectra of Atoms (Cont.) SOV/1508

AVAILABLE: Library of Congress

TM/rj
6-1-59

Card 7/7

CA

Structure of the K-edge of atomic x-ray absorption spectra in gaseous molecules. II. E. B. Valnshtein and K. I. Narbutt. *Izvest. Akad. Nauk. S.S.S.R., Otdel. Khim. Nauk* 1950, 344–9.—With the x-ray absorption spectrum of gaseous HCl and their previously developed formula (*C.A.* 39, 5175⁹), the bond in this mol. is calcd. to be approx. 20% polar. Since the presence of selective absorption lines causes an apparent displacement of the *K* absorption edge from its true position in many light elements, methods are suggested for obtaining the parameters necessary to calc. the absorption coeff. in this region.

Cyrus Feldman

CA

X-ray spectrum analysis with the aid of interpolation from standards. E. E. Vainshtein, M. M. Kakhana, and I. D. Shevaleevskil (V. I. Vernadskil Inst. of Geochem. and Anal. Chem., Acad. Sci. U.S.S.R., Moscow, U.S.S.R.) *Zhur. Anal. Khim.* 5, 231–4(1930). When interpolating x-ray spectrograms by comparing their intensities with those of standards, the relation between the intensity of the line of the sought element and the d. of the analyzed sample must be taken into account. A formula expressing this relation was derived:

$$\frac{I_A}{I_B} = \frac{1 + \left(\frac{100}{a} - 1\right)\frac{\mu_A}{\mu_{A'}}}{1 + \left(\frac{100}{a} - 1\right)\frac{\mu_B}{\mu_{B'}}}$$

where I_A and I_B are the intensities of the lines of the sought element in standards A and B, a is the wt. % of the sought element, ρ is the d. of the sought element, and μ_A' and μ_B' are the ds. of the fillers in A and B. M. Hoch

VAYNSHTEYS E. YE.

USSR/Physics - X-Ray Analysis Aug 50

"Optimum Thickness of Absorbent for X-Ray Absorption Spectra," E. Ye. Vaynshteyn, Inst of Geochem and Anal Chem, Acad Sci USSR

"Zavod Lab" Vol XVI, No 8, pp 962-964

Studies problem of calculating on optimum thickness of absorbent in general form for binary alloys. Considers only investigations conducted with aid of photographic method for registering spectra, with their subsequent microphotometering.

169T89

PA 160T103

VAYNSHTEYN, E. YE.

May 50

USSR/Physics - Nickel Compounds
X-Ray Spectra

"Form of X-Ray $K_{\alpha 1,2}$ -Lines of Nickel Atoms in Very Simple Chemical Compounds, III," E. Ye. Vaynshteyn, Inst of Geochem and Anal Chem, Acad Sci USSR, 4 pp

"Zhur Eksper i Teoret Fiz" Vol XX, No 5

Experimentally investigates form and width of X-ray spectral $K_{\alpha 1,2}$ -lines of nickel oxides and sulfides ($NiSO_4$, NiO, Ni_2O_3, NiS, Ni_3S_4). Shows index of asymmetry of lines to be dependent on method of preparing oxides. Proposes new explanation of this asymmetry. Submitted 12 Nov 49.

160T103

PA 160T102

VAYNSHTEYN, E. Ye.

USSR/Physics - Nickel Alloys May 50
X-Ray Spectra

"Form of the X-Ray $K_{\alpha 1,2}$ -Lines of Cu and Ni Atoms in Alloys of the System: Ni--Cu, IV," E. Ye. Vaynshteyn, Inst of Geochem and Anal Chem, Acad Sci USSR, 5 pp

"Zhur Eksper i Teoret Fiz" Vol XX, No 5

Experimentally investigates form and width of X-ray $K_{\alpha 1,2}$ -lines of Ni and Cu in Ni--Cu alloys. Results obtained are connected with structure of atoms in alloy lattice. Studies form of $K_{\alpha 1,2}$ -lines of Ni and Cu alloys in para- and ferromagnetic states. Submitted 12 Nov 49.

160T102

VAYNSHTEYN, E.

155T78

USSR/Physics - Metals, Structure Jan 50
Elements, Transition

"Structure of the Principal K-Absorption Edge of Atoms of Transition Elements in Metals," E. Vaynshteyn, Inst of Geochem and Anal Chem imeni V. I. Vernadskiy, Acad Sci USSR, 3 pp

"Dok Ak Nauk SSSR" Vol LXX, No 1

Recent studies of form and structure of several X-ray emission lines of Ni and Cu in Ni-Cu and Ni-Al alloys show elements of transition groups in different states of ionization can exist in lattices of pure metals and alloys. These

155T78

USSR/Physics - Metals, Structure (Contd) Jan 50

peculiarities in behavior of atoms of transition elements in metallic lattices and alloys must unavoidably complicate the process of X-ray absorption. Structure of principal absorption edge of atoms in metal must be superposition of two (or more) individual edges, each appearing because of transitions of the K-electron of the atom of given type in the region of continuous energies into free optical levels which are different in atoms differing in degree of ionization. Submitted by Acad S. I. Vavilov 29 Oct 49.

155T78

VAYNSHTEYN, E. Ye.

USSR/Chemistry - X-Ray Spectrography Nov/Dec 51

"One Means for Eliminating Focusing Error and Increasing Radiation Intensity of the Cauchois Type Spectrograph," A. V. Pivovarov, E. Ye. Vaynshteyn, Kazakh State U; Inst of Geochem and Analyt Chem imeni V. I. Vernadskiy, Acad Sci USSR

"Zhur Analit Khim" Vol VI, No 6, pp 386, 387

Authors describe method and apparatus for bending of crystal of X-ray spectrograph which increase radiation intensity and accuracy of ~~spectro~~graph. They state that same principle was used for design of new spectrograph RSK-3 of high radiation intensity.

LC 195T35

PA 195T35