

SHMUL'YAN, Yu.L.; SMIRNOV, V.I., akademik.

Holomorphic bounded matrix-functions with a determinant, identically equal
zero. Dokl.AN SSSR 93 no.4:625-627 D '53. (MIRA 6:11)

1. Akademiya nauk SSSR (for Smirnov). 2. Zhitomirskiy gosudarstvennyy
pedagogicheskiy institut im. Iv.Franko (for Shmul'yan).
(Spaces, Generalized) (Matrices)

SMIRNOV, V.I.; KULYABKO, Ye.S.; LINNIK, Yu.S.; ZAYCHIK, N.K., redaktor;
~~ARONS~~, R.A., tekhnicheskii redaktor.

[Mikhail Sofronov, Russian mathematician of the middle of the
18th century] Mikhail Sofronov, russkii matematik serediny XVIII
veka. Moskva, Izd-vo Akademii nauk SSSR, 1954. 51 p. (MLBA 7:11)
(Sofronov, Mikhail, 1729-1760)

SMIRNOV, V. I.

GERM .

*Smirnov, W. I. *Lehrgang der höheren Mathematik. Teil III, 1.* Deutscher Verlag der Wissenschaften, Berlin, 1954. vii+283 pp. DM 14.00.

Reviews of volumes IV (1941, 1951) and V (1947) have appeared in MR 6, 42; 9, 574; 14, 145. This is a translation of the Russian fifth edition [Moscow, 1951]. A list of references and an index have been added. There are three main chapter headings: I. Determinanten und die Auflösung von Gleichungssystemen. II. Lineare Transformationen und Quadratische Formen. III. Elemente der Gruppentheorie und lineare Darstellungen von Gruppen. The material on linear algebra is fairly standard, but there is considerable detail concerning the applications to analysis, as well as an introduction to the infinite-dimensional case. An unusual item in Chapter III is a proof of the simplicity of the orthogonal group and of the Lorentz group. The book concludes with a 28-page introduction to Lie groups, the emphasis being on examples.

I. Kaplansky

II = F/W

SMIRNOV V.I

LYAPUNOV, A.M.; SRETENSKIY, L.N., otvetstvennyy redaktor; KOLOGOROV, A.M., akademik; SMIRNOV, V.I., akademik; SUBBOTIN, M.F.; ISHLINSKIY, A.Yu.; MIGIRENKO, G.S., kandidat fizicheskikh-matematicheskikh nauk; PETEVICH, V.V., kandidat fizicheskikh-matematicheskikh nauk; GERMOGENOV, A.V., redaktor; ALEKSEYEVA, T.V., tekhnicheskiy redaktor.

[Collected works] Sobranie sochinenii. Moskva, Izd-vo Akademii nauk SSSR. Vol. 1. 1954. 446 p. (MLA 7:11)

1. Chlen-korrespondent Akademii nauk SSSR (for Sretenskiy and Subbotin)
2. Deystvitel'nyy chlen Akademii nauk SSSR (for Izhlinskiy)
(Liapunov, Aleksandr Mikhailovich, 1857-1918) (Mathematics)

~~SMIRNOV, V. I.~~ akademik; AKILOV, G.P., redaktor; VOLCHOK, K.M., tekhnicheskii redaktor

[A course in higher mathematics] Kurs vysshei matematiki. Izd. 13-e stereotipnos. Moskva, Gos. izd-vo tekhniko-teoret. lit-ry. Vol.2. (MLRA 8:4)
1954. 627 p.
(Mathematics)

SMIRNOV, V.I., akademik; AKILOV, G.P., redaktor; VOLCHOK, K.M.,
tehnicheskii redaktor.

[Course in higher mathematics] Kurs vysshei matematiki. Izd. 6.
Moskva, Gos. izd-vo tekhniko-teoret. lit-ry. Vol. 3, pt. 1. 1954.
339 p. (MLRA 7:11)
(Groups, Theory of) (Transformations (Mathematics))

SMIRNOV, V.I.

On conjugate functions in many-dimensional Euclidean space. Part 3.
Vest.Len.un.9 no.5:3-17 My '54. (MIRA 9:7)
(Spaces, Generalized) (Differential equations, Partial)

SMIRNOV, V.I.

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★ Smirnov, W. I., *Lehrgang der höheren Mathematik. Teil II.* Deutscher Verlag der Wissenschaften, Berlin, 1955. xii+580 pp. DM 29.50.
 Translation by K. Krienes of vol. 2 of V. I. Smirnov's *Kurs vyššej matematiki* [12th ed., Gostehizdat, Moscow, 1953]. Contents: I) Ordinary differential equations; II) Linear differential equations; III) Multiple and curvilinear integrals; IV) Vector analysis and theory of fields; V) Elements of differential geometry; VI) Fourier series; VII) Partial differential equations of physics.

A COURSE OF HIGHER MATHEMATICS Part 2 Textbook (Ed. Westman)

RSD

LYAPUNOV, Aleksandr Mikhaylovich, akademik; SRETENSKIY, L.N., redaktor;
KOLMOGOROV, A.N., akademik, redaktor; SMIRNOV, V.I., akademik,
redaktor; SUBBOTIN, M.F., redaktor; ISHLINSKIY, A.Yu., redaktor;
MIGIRENKO, G.S., kandidat fiz.-mat. nauk, redaktor; PETKEVICH,
V.V., kandidat fiz.-mat. nauk, redaktor; KIRNARSKAYA, A.A., tekhnicheskiy redaktor.

[Collected works] Sobranie sochinenii. Moskva, Izd-vo Akademii nauk SSSR. Vol.2. 1956. 472 p. (MLRA 9:6)

- 1.Chlen-korrespondent AN SSSR (for Sretenskiy, Subbotin).
- 2.Deystvitel'nyy chlen AN USSR (for Ishlinskiy)
(Dynamics) (Differential equations)

SMIRNOV, Vladimir Ivanovich; akademik, udostoyen Stalinskoy premii v 1948 godu;
AKILOV, G.P., redaktor; VOLCHOK, K.M., tekhnicheskiy redaktor.

[Course in higher mathematics] Kurs vysshei matematiki. Izd. 16-oe, ispr.
Moskva, Gos.izd-vo tekhniko-teoret. lit-ry. Vol.1. 1956. 478 p.
(Mathematics) (MLRA 9:6)

SMIRNOV, Vladimir Ivanovich, akademik; udostoyen Stalinskoy premii v 1948 godu;
~~AKILOV, G.P.~~, redaktor; VOLCHOK, K.M., tekhnicheskiy redaktor

[A course in higher mathematics] Kurs vysshei matematiki. Izd. 14-oe,
ispr. Moskva, Gos. izd-vo tekhniko-teoret. lit-ry. Vol.2. 1956.
628 p. (MLRA 9:7)
(Mathematics)

PHASE I BOOK EXPLOITATION

610

Smirnov, Vladimir Ivanovich, Academician

Kurs vysshey matematiki. t. 3, ch. 2. (A Course in Higher Mathematics, v. 3, pt. 2), 6th edition. Moscow, Gostekhizdat, 1956, 674 p. 15,000 copies printed.

Ed.: Akilov, G. P.; Tech. Ed.: Volchok, K. M.

PURPOSE: This book is designed as a textbook for students of mechanics - mathematics and physics - mathematics faculties of Soviet State Universities.

COVERAGE: The basic theory of functions of a complex variable, including the theory of residues, and its application to various calculation processes and to analytic representation of functions, is given. Conformal mapping is treated with many illustrative

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A Course in Higher Mathematics

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A Course in Higher Mathematics

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AVAILABLE: Library of Congress

Card 16/16

LK/jmr
9-26-58

Translation from: Referativnyy zhurnal. Mekhanika, 1957, Nr 7, p 2 (USSR) SOV/124-57-7-7454

AUTHOR: Smirnov, V. I.

TITLE: The Mathematical Works of A. N. Krylov. (Address Before a Joint Meeting of the Academy of Sciences, USSR, and the People's Commissariat for Naval Affairs on December 15th, 1945.) [Matematicheskiye raboty A. N. Krylova. (Rech' na sovместnom sobranii AN SSSR i Nar. komissariata Voen.-Morsk. Flota 15 dek. 1945 g.)]

PERIODICAL: Tr. In-ta istorii yestestvozn. i tekhn. AN SSSR, 1956, Vol 15, pp 13-23

ABSTRACT: Bibliographic entry

Card 1/1

SOV/44-58-4-2611

Compilation from: Referativnyy zhurnal, Matematika, 1958,
Nr 4, p 5 (USSR)

AUTHOR: Smirnov, V.I.

TITLE: ~~The~~ Mathematical Works of A.N. Krylov. Speech at the Joint Meeting of the AN SSSR and the People's Commissariat for the Navy on December 15, 1945 (Matematicheskiye raboty A. N. Krylova. Rech' na sovmestnom sobranii AN SSSR i Narodnogo Kommissariata Voenno-Morskogo Flota 15 dekabrya 1945 g)

PERIODICAL: Tr. In-ta istorii yestestvozn. i tekhn. AN SSSR, 1956, 15, pp 13-23

ABSTRACT: The article contains a general description of the mathematical works of A.N. Krylov, which was directed toward the effective solution--reduced to a formula and often to tables--of individual problems of mechanics, physics and

Card 1/2

SMIRNOV, Vladimir Ivanovich, akademik; AKILOV, G.P., redaktor; VOLGHOK,
K.M., tekhnicheskii redaktor

[A course in higher mathematics] Kurs vysshei matematiki. Izd. 7-oe.
Moskva, Gos. izd-vo tekhniko-teoret. lit-ry. Vol.3, pt.1. 1956.
328 p. (MIRA 9:12)

(Mathematics)

PORTUGAL', V.B.; NATANSON, G.I.; ALEKSEYEVA, V.P.; SMIRNOV, V.I., akademik, red.; CHEBOTAREV, G.A., prof., doktor fiziko-matematičeskikh nauk, otvetstvenny red.; ZENDEL' R.Ye., tekhn.red.

[Mathematics and mechanics in the publications of the Academy of Science of the U.S.S.R.; a bibliography] Matematika i mekhanika v izdaniakh Akademii nauk SSSR; bibliografiia. Sostavili V.B.Portugal', G.I.Natanson, V.P.Alekseyeva. Pod red. V.I.Smirnova. Moskva, Vol.3. 1948-1952. 1957. 361 p. (MIRA 11:4)

1. Akademiya nauk SSSR. Biblioteka.
(Bibliography--Mathematics)
(Bibliography--Mechanics)

SMIRNOV, Vladimir Ivanovich, akad.; AKULOV, G.P., red.; VOLCHOK, K.M., tekhn. red.

[Course in higher mathematics] Kurs vysshei matematiki. Izd. 3.
Moskva, Gos. izd-vo tekhniko-teoret. lit-ry. Vol. 4. 1957. 812 p.
(MIRA 11:11)

(Mathematics)

PA - 2617

AUTHOR SMIRNOV V.I.
TITLE Leonhard Euler (on the Occasion of 250 Anniversary of His Birthday)
(Leonhard Euler (k 250-letiyu so daya rozhdyniya - Russian)
PERIODICAL Vestnik Akademii Nauk SSSR, 1957, Vol 27, Nr 3, pp 61-68 (U.S.S.R.)
Received 7/1957 Reviewed 7/1957

ABSTRACT Leonhard Euler was born at Basel, Switherland, as the son of a Protestant pastor. He was one of the prominent physicists and mathematicians of his time. The author gives a short biography of Euler in which he points out that, in accordance with a decree issued by Peter the Great, the Academy of Science was founded at St.Petersburg in 1724 and that two friends of Euler's Niclas and Daniel Bernoulli, were the first foreigners to become members, and that it was by their instigation that later also Euler was appointed member of the Academy for Mathematics. In 1730 Euler was appointed professor of physics, and in 1733 professor of mathematics at the Academy. By his work at the Petersburg Academy Euler acquired world fame, and in 1741 emperor Frederick II. invited him to come to Berlin in order to work there. Euler accepted the invitation but he remained an honorary member of the Petersburg Academy, kept up correspondence with the Academy, and looked after Russian students who came to Berlin. After having worked at the Berlin Academy for 25 years, some tension arose between him and the Academy as well as the Emperor, so that he accepted an invitation extended by Czarina Catherine II. and returned to St.Petersburg, where he as well as his sons obtained important positions. In 1783 Euler died at St.Petersburg where he was also

Card 1/2

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PHASE I BOOK EXPLOITATION

SOV/2018

Smirnov, Vladimir Ivanovich, Academician

Kurs vysshey matematiki, tom 1 (A Course in Higher Mathematics, Vol 1) 18th ed., unrev. Moscow, Fizmatgiz, 1958. 478 p. 25,000 copies printed.

Ed.: G.P. Akilov; Tech. Ed.: K.M. Volchok.

PURPOSE: This book is approved by the USSR Ministry of Higher Education as a textbook for students of ~~mechanics-mathematics~~ and ~~physics-mathematics~~ faculties of universities and for students of vtuzes with extended teaching programs.

COVERAGE: In general, the material found in the book can be found in any standard textbook on differential and integral calculus. However, the concepts of limits, continuity of a function, and real numbers are analyzed in greater detail and with greater exactness. Fundamental properties of polynomials, properties of complex numbers, and arithmetical operations on them are discussed in order to facilitate the integration of rational fractions, expressions containing radicals, and other complicated integrals. The author thanks Professor G.M. Fikhtengol'ts for help in producing the book. There are no references.

Card 1/14

ROGOVER, Grigoriy Borisovich. Prinimal uchastiye MOSKOV, A.M., astronom-geodezist. SMIRNOV, V.I., red.; FEDOROVA, L.H., red.izd-va; BYKOVA, V.V., tekhn.red.

[Characteristics of the Noril'sk deposit 1, having possible prospecting significance and the efficient method of prospecting it] Mestorozhdenie Noril'sk I, nekotorye ego osobennosti, mogushchie imet' poiskovoe znachenie, i ratsional'naya metodika ego razvedki. Moskva, Gos.nauchno-tekhn.izd-vo lit-ry po geologii i okhrane nedr, 1959. 167 p. (MIRA 13:5)
(Noril'sk region--Ore deposits)

SMIRNOV, Vladimir Ivanovich, akademik. Primalni uchastiye: LADYZHENSKAYA,
O.A., prof.; BIRMAN, M.S.; AKILOV, G.P., red.; POL'SKAYA, R.G.,
tekh.red.

[Course in higher mathematics] Kurs vysshei matematiki. Moskva,
Gos.izd-vo fiziko-matem.lit-ry. Vol.5. 1959. 655 p.

(MIRA 12:10)

(Mathematics)

16(1)

AUTHORS: Sairnov, V.I., Linnik, Yu.V.

SOV/42-14-3-5/22

TITLE: Nikolay Sergeyeovich Koshlyakov; in Memoriam

PERIODICAL: Uspekhi matematicheskikh nauk, 1959, Vol 14, Nr 3, pp 115-122 (USSR)

ABSTRACT: This is a memory on Nikolay Sergeyeovich Koshlyakov, Corresponding Member, Academy of Sciences, USSR, Doctor of Physico-Mathematical Sciences, who died on September 23, 1958 at the age of sixty-seven in Moscow. He was a follower of A.A. Markov, V.A. Steklov, Ya.V. Uspenskiy, Professor A.A. Adamov, Yu.V. Sokhotskiy. Followers of the deceased are : I.V. Kurchatov, Academician, D.I. Shcherbakov, Academician, and Professor L.G. Loytsyanskiy. A list of the publications of N.S. Koshlyakov from 1912-1958 with 68 titles is given. A photo of the deceased is added. G.F. Voronoy is mentioned in the paper.

Card 1/1

OSTROGRADSKIY, Mikhail Vasil'yevich, matematik, mekhanik; SHTOKALO, I.Z., akademik, otv. red.; GNEDENKO, B.V., akademik, zam. otv. red.; ISHLINSKIY, A.Yu., akademik, zam. otv. red.; BOGOLYUBOV, N.N., akademik, red.; REMEZ, Ye.Ya., red.; SAVIN, G.N., akademik, red.; SOKOLOV, Yu.D., red.; SMIRNOV, V.I., akademik, red.; YUSHKEVICH, A.P., prof., red.; POGREBYSSKIY, I.B., dotsent, red.; SHTELIK, V.G., red. izd-va; RAKHLINA, N.P., tekhn. red.

[Complete works in three volumes] Polnoe sobranie trudov v trekh tomakh. Kiev, Izd-vo Akad. nauk USSR. Vol.2. 1961. 358 p.

(MIRA 14:11)

1. AN USSR (for Shtokalo, Gnedenko, Ishlinskiy). 2. Chlen-korrespondent AN USSR (for Remez, Sokolov).

(Mechanics, Analytic)

SMIRNOV, V.I., otv. red.; BUROV, V.N., red.; VORONOVSKAYA, Ye.V., red.;
LOZINSKIY, S.M., red.; NATANSON, G.I., red.; RYMARENKO, B.A.,
red.; FAYNSHIDT, V.L., red.; SMOLYANSKIY, M.L., red.; MURASHOVA,
N.Ya., tekhn. red.

[Studies on modern problems in the constructive theory of func-
tions] Issledovaniia po sovremennym problemam konstruktivnoi
teorii funktsii; sbornik statei. Moskva, Gos.izd-vo fiziko-
matem.lit-ry, 1961. 368 p. (MIRA 15:1)
(Functional analysis)

BOGOLYUBOV, N.N., red.; GNEDENKO, B.V., red.; POGREBYSSKIY, I.B., red.;
REMEZ, Ye.Ya., red.; SHIRNOV, V.I., red.; SOKOLOV, Yu.D., red.;
SHTOKALO, I.Z., red.; YUSHKEVICH, A.P., red.; SHIROKOVA, S.A., red.;
YERMAKOVA, Ye.A., tekhn. red.

[Pedagogical heritage and documents on the life and work of Mikhail Vasil'evich Ostrogradskii (1.1.1862 - 1.1.1962)] Mikhail Vasil'evich Ostrogradskii, 1 ianvaria 1862 - 1 ianvaria 1962; pedagogicheskoe nasledie, dokumenty o zhizni i deiatel'nosti. Pod red. I.B. Pogrebysskogo i A.P. Ushkevicha. Moskva, Gos. izd-vo fiziko-matem. lit-ry, 1961. 397 p. (MIRA 15:1)

1. Akademiya nauk SSSR. Institut matematiki.
(Ostrogradskii, Mikhail Vasil'evich, 1801-1861)

SMIRNOV, Vladimir Ivanovich, akademik; AKILOV, G.P., red.; VOLCHOK,
K.M., tekhn. red.

[Course in higher mathematics] Kurs vysshei matematiki. Izd.19.,
ispr. Moskva, Gos.izd-vo fiziko-matem.lit-ry. Vol.1. 1961.
478 p. (MIRA 15:1)

(Mathematics)

ARBUZOV, A.Ye., akad.; VAVILOV, S.I., akad.; VOL'FKOVICH, S.I., akad.;
KOCHINA, P.Ya., akad.; LANDSBERG, G.S., akad.; LEYBENZON, L.S.,
akad.; PORAY-KOSHITS, A.Ye., akad.; SMIRNOV, V.I., akad.; FESENKOV,
V.G., akad.; CHERNYAYEV, V.I., akad.; KAPUSTINSKIY, A.F.; KORSHAK,
V.V.; KRAVKOV, S.V.; NIKIFOROV, P.M.; PETROV, A.D.; PREDVODITELEV,
A.S.; FRISH, S.E.; CHETAYEV, N.G.; CHMUTOV, V.K.; SHOSTAKOVSKIY, M.F.;
KUZNETSOV, I.V., red.; MIKULINSKIY, S.R., red.; MURASHOVA, N.Ya.,
tekh.red.

[Men of Russian science; essays on prominent persons in natural
science and technology: Mathematics, mechanics, astronomy, physics,
chemistry] Liudi russkoi nauki; ocherki o vydaishchikhsia deiate-
liakh estestvoznaniia i tekhniki: matematika, mekhanika, astronomiia,
fizika, khimiia. Moskva, Gos. izd-vo fiziko-matem. lit-ry, 1961.
599 p. (MIRA 14:10)

1. Chleny-korrespondenty AN SSSR (for Kapustinskiy, Korshak, Kravkov,
Nikiforov, Petrov, Predvoditelev, Frish, Chetayev, Chmutov, Shostakovskiy).
(Scientists)

SMIRNOV, Vladimir Ivanovich, akademik; AKILOV, G.P., red.; VOLCHOK,
K.M., tekhn. red.

[Course in higher mathematics] Kurs vysshei matematiki. Izd. 18,
stereotipnoe. Moskva, Gos.izd-vo fiziko-matem.lit-ry, Vol.2.
1962. 628 p. (MIRA 15:9)

(Mathematics)

BOGATSKIY, V.V.; SMIRNOV, V.I., red.; FEDOROVA, L.N., red. izd-va;
BYKOVA, V.V., tekhn. red.

[Mathematical analysis of test area] Matematicheskii analiz
razvedochnoi seti. Moskva, Gosgeoltekhizdat, 1963. 211 p.
(MIRA 16:7)

(Prospecting)

SMIRNOV, V. i.

In memory of Vladimir Andreevich Steklov; 1864-1926. Trudy
Mat. inst. 73:5-13 '64. (MIRA 18:3)

SMIRNOV, Vladimir Ivanovich; GORINOV, Yu.A., red.

[Course in higher mathematics] Kurs vysshei matematiki.
Moskva, Nauka, Vol.1. Izd.21., ispr. 1965. 479 p.
(MIRA 18:3)

SMIRNOV, Vladimir Ivanovich; GOR'KOV, Yu.A., red.

[Course in higher mathematics] Kurs vysshei matematiki.
Moskva, Nauka. Vol.2. 1965. 655 p. (MIRA 18:8)

L 25779-66 EWT(d) IJP(c)

ACC NR: AP6016360

SOURCE CODE: UR/0020/65/164/004/0732/0735

23
B

AUTHOR: Gokhberg, I. Ts.; Kreyn, M. G.; Smirnov, V. I. (Academician)

ORG: Institute of Mathematics and Computing Center, AN MoldSSR (Institut matematiki s vychislitel'nym tsentrom AN MoldSSR); Odessa Construction-Engineering Institute (Odesskiy inzhenerno-stroitel'nyy institut)

TITLE: Multiplicative representation of the characteristic functions of operators which are close to unitary operators

SOURCE: AN SSSR. Doklady, v. 164, no. 4, 1965, 732-735

TOPIC TAGS: mathematic operator, mathematics, function

ABSTRACT: The article shows that previous investigations by the authors on the factorization of operators, in conjunction with various investigations of others (V. I. Matsayev, Yu. I. Lyubich, B. Sz.-Nagy, and C. Foias), make it possible to obtain a multiplicative representation of the characteristic functions of operators of a comparatively wide class. The following theorem is formulated: If operator $T \in \mathcal{C}(\mathcal{C}_\infty)$ with unitary spectrum possesses a proper chain dividing the spectrum, its characteristic function $\theta_T(\lambda)$ permits the multiplicative representation

$$\theta_T(\lambda) = (\theta_T(0))^{-1} \int_0^1 \left(I + \frac{H^{1/s} dP (I - PHP)^{-1} H^{1/s}}{\lambda c^{(s)P} - 1} \right)$$

2

Card 1/2

Card 2/2 C.C.

BEYEV, V.I.; KOCHNEV, M.I.; SMIRNOV, V.I.

Rhenium behavior during converter smelting with an oxygen-
enriched blow. Trudy Inst. met. UFAN SSSR no.8:61-68 '63.
(MIRA 17:9)

DROBCHENKO, A.T.; MAZANIK, V.N.; RANSKIY, B.N.; KHARAIM, V.A.; SMIRNOV, V.I.;
TIKHONOV, A.I.

Regularities of the reduction process for liquid slags from copper
smelting. TSvet. met. 36 no.12:15-18 U '63. (MIRA 17:2)

SMIRNOV, V.I.; POPIY, N.P., metod opticheskogo izmereniya (paralel'no Gornyak Al'tayskogo kraya).

Optical method of determining mine shaft cross sections. Tr. shk.
no.6:59-62 Je '60. (MIRA 14:2)

1. Glavnyy kartsheniye Zolotushinskogo rudoupravleniya (Por Smirnov).
(Mine surveying)

YAROSLAVTSEV, A.S.; SMIRNOV, V.I.

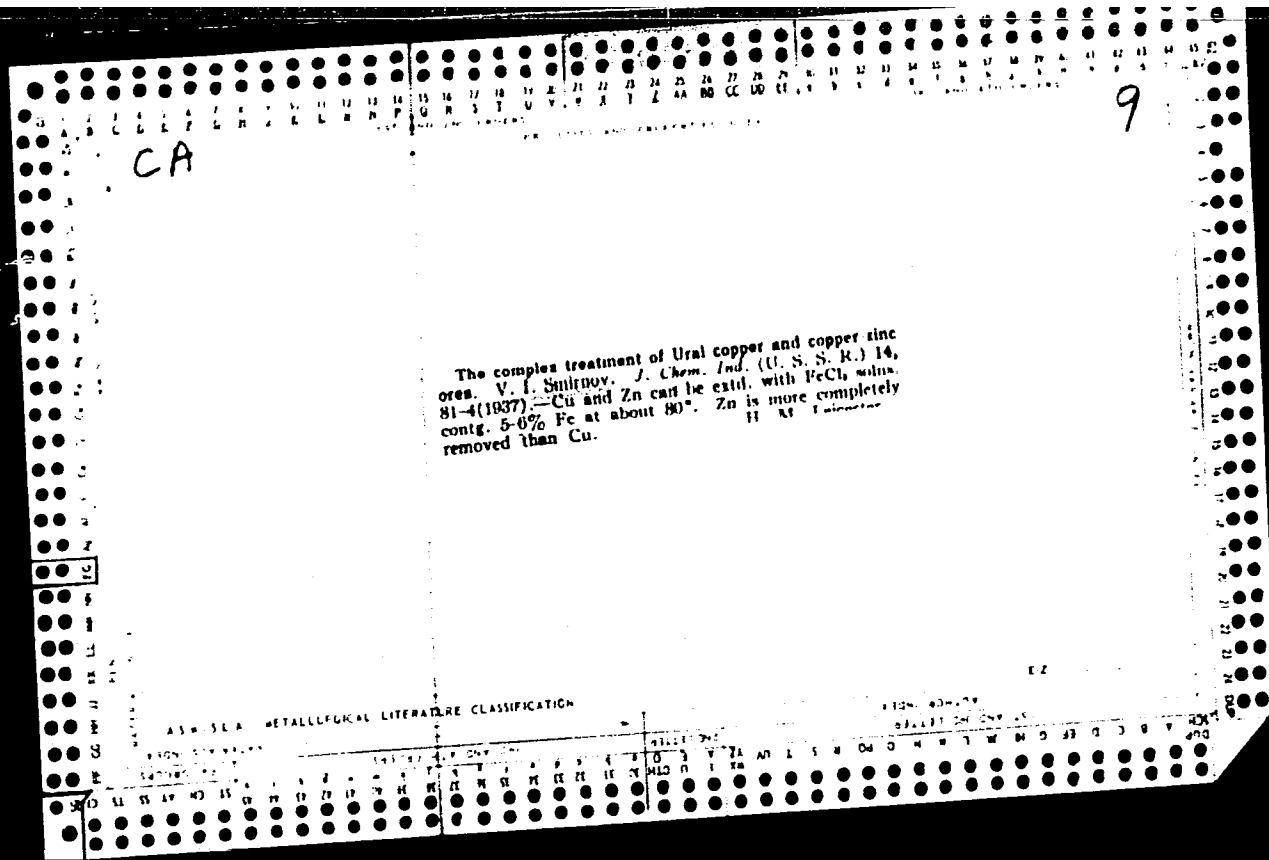
Metal and sulfur distribution in the autoclave leaching of zinc concentrate. Izv. Vys. Ucheb. zav., tsvet. met. 7 no.5:58-62 '64
(MIRA 18:1)

1. Kafedra tyazhelykh tsvetnykh metallov Ural'skogo politekhnicheskogo instituta.

SMIRNOV, V. I.
IK

Zinc-copper fusions and their fuming. V. I. Smirnov
and S. V. Berenoy. *Tral'khi Gosudarst. Nauch. Tsitol-
rakh. Inst. Tsvetnykh Metal., Sbornik Nauch.-Issled. vstrel-
Rabot No. 1, 5-24 (1936). Cu-Zn residues contg. ZnS
and Fe₂O₃ are heated with C at 1250°. Unless the Fe₂O₃ is
present, C will not properly reduce the ZnS. Good sepn.
of fume Zn is thus obtained. H. M. Leicester*

ASB 51.6 METALLURGICAL LITERATURE CLASSIFICATION



PROCESSES AND PROPERTIES INDEX

1ST AND 2ND ORDERS

B-18

BC

National composition of pyrites chlorides from different levels of the oven. V. L. SHARNOV (J. Chem. Ind. Russ., 1937, 14, 741-742). The reactions at the upper levels (lowest temp. and content) are chiefly those of dissociation of FeS_2 and of formation of $CaFeS_2$. The highest temp. and greatest intensity of oxidation are found at the middle level, whilst at the lower levels dissociation and oxidation of sulphides and formation of fayalite take place.

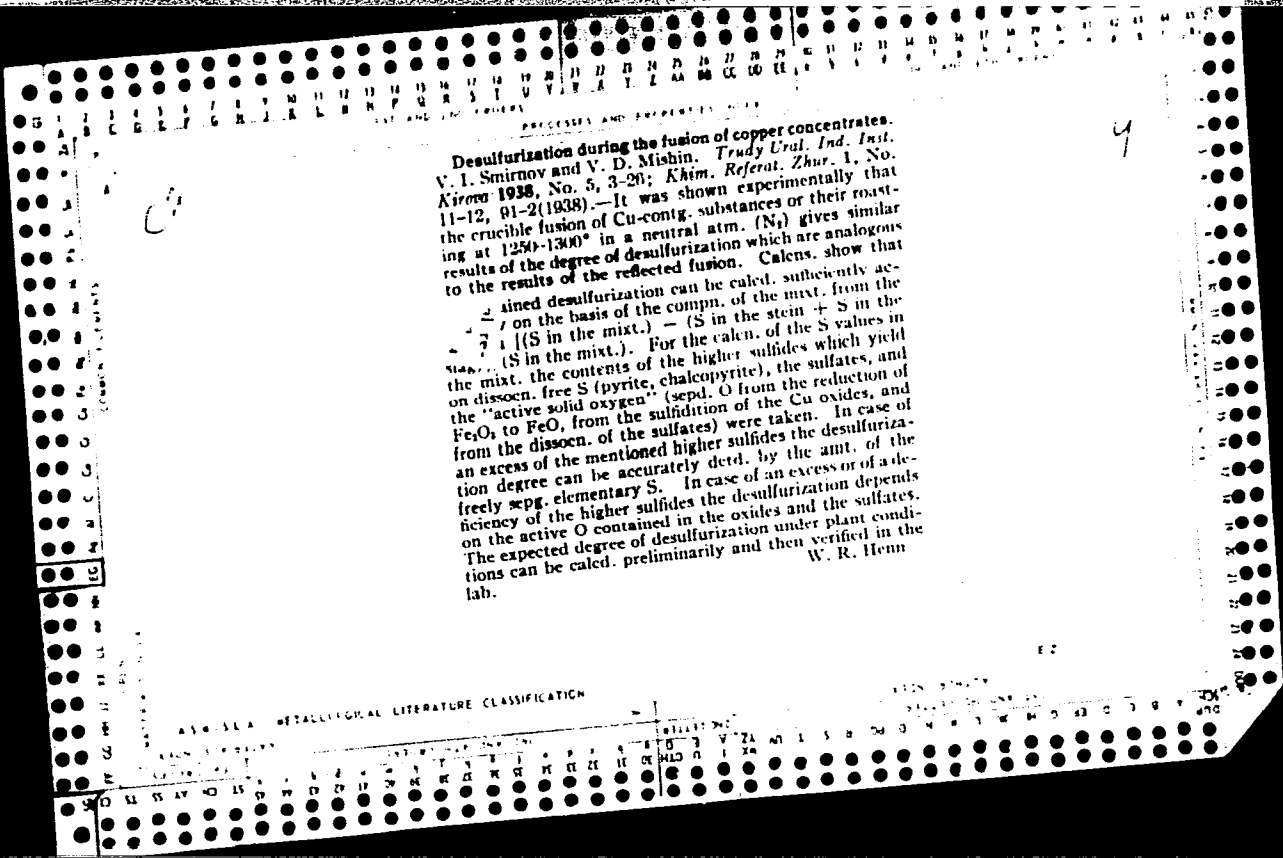
B. T.

METALLURGICAL LITERATURE CLASSIFICATION

A 38.51.A

SMIRNOV, V. I.

"The Roasting and Concentration of Copper Ores under Oxidizing Conditions,"
ONTI, 1938



PROCESSES AND PROPERTIES INDEX

1ST AND 2ND ORDERS

2

CPA

The effect of SiO_2 , CaO , MgO and Al_2O_3 on the dissociation of Fe_2O_3 and Fe_3O_4 . V. I. Smirnov and V. D. Mishin. *Trudy Ural. Inst. Inst.* 1938, No. 5, 26-39; *Khim. Refort. Zhur.* 1, No. 11-12, 38 (1938).—The mutual effect was investigated of the components and the chemical character of transformations at high temp. in the systems $Fe_2O_3-SiO_2$, Fe_2O_3-CaO , Fe_2O_3-MgO , $Fe_2O_3-Al_2O_3$, $Fe_2O_3-SiO_2-Fe_2O_3-CaO$, Fe_2O_3-MgO and $Fe_2O_3-Al_2O_3$. For each series of expts. tables are given, and the expl. methods are described. Conclusions of previous investigators are verified with regard to the disocn. of Fe_2O_3 and Fe_3O_4 in the pure state as well as with admixts. of SiO_2 and CaO when roasted in an atm. of N_2 . A no. of new factors were found: the inhibiting effect of MgO on the disocn. of Fe_2O_3 (which is smaller than that of CaO), and the increase of disocn. from the effect of Al_2O_3 at 1200° and above, the decompn. of Fe_3O_4 by CaO and Mg at above 900° with the formation of ferrites of Fe_2O_3 and MgO , and indications of the effect of clay which admit supposition of the formation of aluminates of FeO . W. R. Henn

E-2

METALLURGICAL LITERATURE CLASSIFICATION

1ST AND 2ND ORDERS

1ST AND 2ND ORDERS

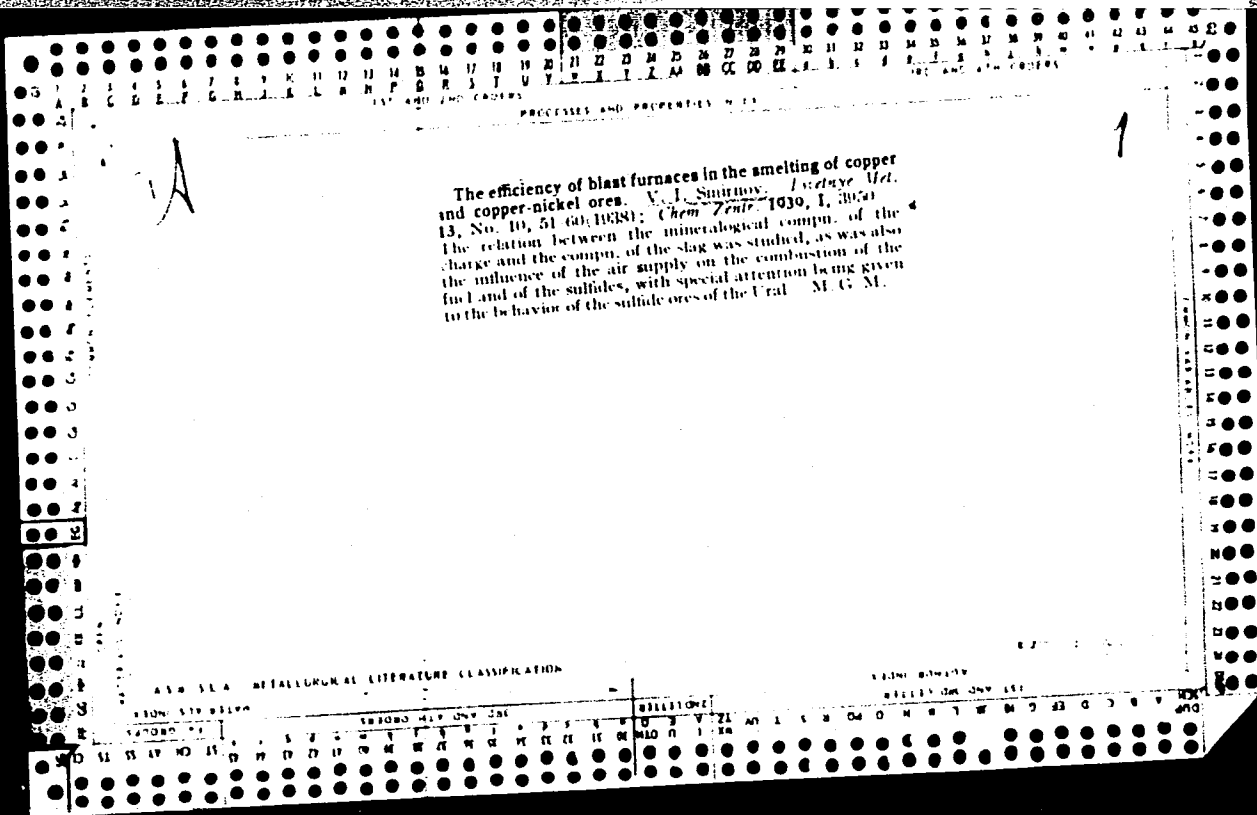
ca

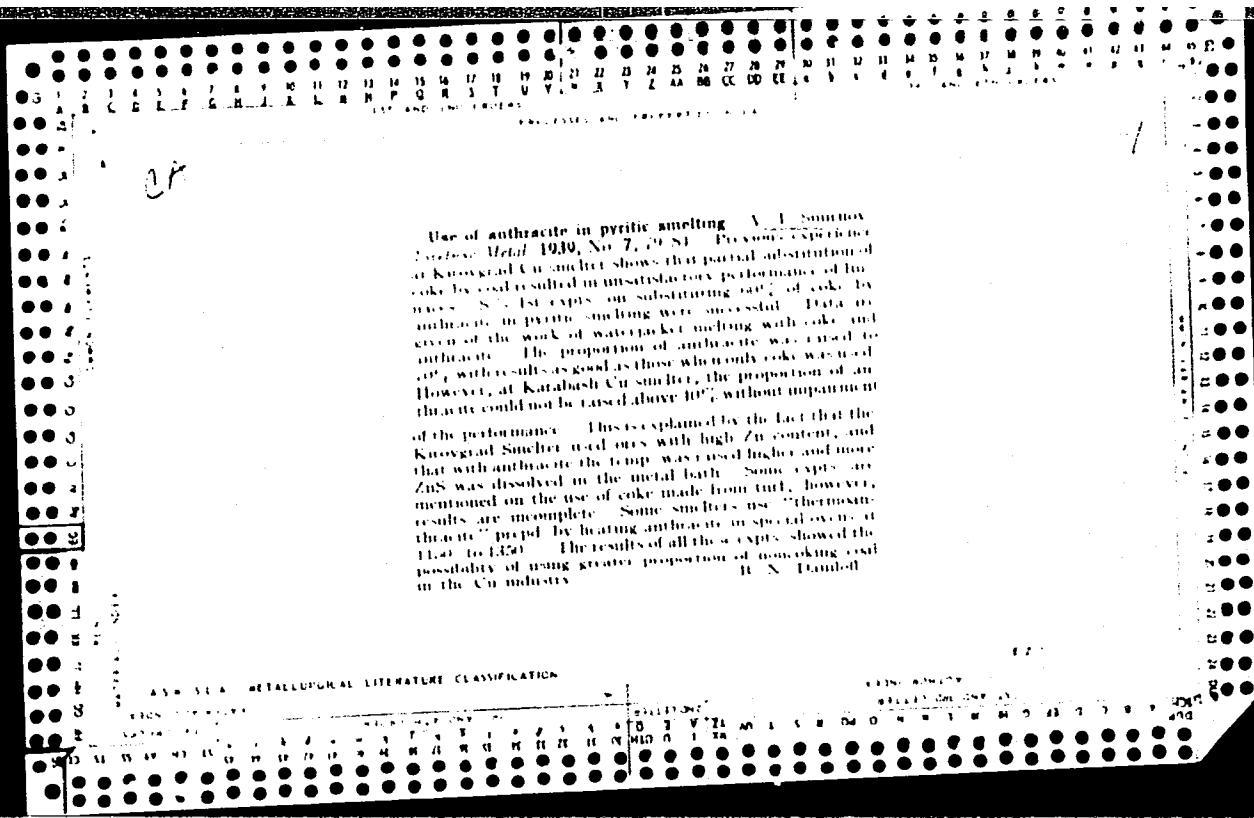
6

Reactions of the higher oxides of iron with the sulfides of heavy metals. V. I. Smirnov and A. A. Veselovskii. *Trudy Ural. Ind. Inst.* 1938, No. 5, 39-53; *Khim. Referat. Zhur.* 1, No. 11-12, 39 (1938). The reaction of Fe_2O_3 with the sulfides of heavy metals was investigated from the point of view of their character and the completeness of the reactions in systems $FeS-Fe_2O_3$, $FeS_2-Fe_2O_3$, $FeS_3-Fe_2O_3$, $Cu_2S-Fe_2O_3$, $CuS-Fe_2O_3$, $ZnS-Fe_2O_3$, and $ZnS_2-Fe_2O_3$. The reactions took place in a flue oven in an atm. of N carefully purified from admixts. of O. The results for each system are given in diagrams. Fe_2O_3 shows a high chem. activity toward the sulfides of heavy

metals. The reaction between Fe_2O_3 and the heavy metals takes place in 2 stages; in the first of these (500-550°) Fe_2O_3 is reduced to Fe_3O_4 , and in the second (at a higher temp.) Fe_3O_4 is reduced to FeO in the presence of an excess of the sulfide. The presence of silica shortens the time of the reduction of Fe_2O_3 , and lowers the temp. of the reaction. Max. activity is shown by FeS , and min. by Cu_2S .
W. R. Henn

AS 6 154 METALLURGICAL LITERATURE CLASSIFICATION





PROCESSES AND PROPERTIES INDEX

1ST AND 2ND ORDERS

CA

9

Roasting of nickel mat in the suspended state V. I. Smirnov and N. I. Chelysheva. *Facture Metal* 1939, No. 9, 98-102. The authors studied possibilities of roasting Ni mat in suspended (pulverized) state. Lab. expts. were made to study the following factors: temp., fineness of mat, height of roasting furnaces with top charging and air blast both from the bottom, and with the charge for atomization. The material used was a Ni mat from the Ufalet Works contg. 23.5% S. The expts. led to the following conclusions: (1) The Temp. of roasting must be not lower than 1250°. (2) Mat should be pulverized to pass 200 mesh. (3) Five times the theoretical amt. of air required for conversion of sulfide to oxide of Ni is necessary. (4) Increase in the height of furnace from 50 to 120 cm. resulted only in slight improvement of efficiency. (The S in the toast was only 1-1.5% less than with a 50-cm. furnace.) (5) The increase in the rate of charging within the limits of 16-68 kg. per cu. m. of furnace vol. does not decrease the S elimination only slightly. (6) It was not possible to reduce the S content to less than 6.5%. (7) Apparently a film of Ni oxide is formed on the surface of the mat particles which prevents further access of O to the interior of the particle. For complete desulfurization longer roasting time would be necessary. (8) No caking of the powder mat was observed during roasting. (9) Repeated roasting without intermediate regrinding produced no further effect. (10) Expts. with the use of O instead of air gave unsatisfactory results, which fact is attributed to the rapid formation of impermeable oxide films on the surface of the particles. On the basis of these results a two-stage continuous roasting furnace of semi-size was constructed for preliminary roasting in a stationary shaft and final ignition in a tubular rotary furnace. Air, preheated by exhaust gases, is delivered to the tubular furnace (600°) and to the shaft furnace (1000°). The furnace is oil-fired and is equipped with dust collectors which return incompletely roasted fines to an injector at the shaft furnace. B. N. Daniloff

E. 27

METALLURGICAL LITERATURE CLASSIFICATION

AS B - 51 A

MATERIALS INDEX

1ST AND 2ND ORDERS

PROCESSES AND PROPERTIES INDEX

SMIRNOV, V.I.

Professor, "Shaft Smelting with Anthrocite", Tsvet. Met. 14, No.7, July 1939.

Report U-1506, 4 Oct. 1951.

SMIRNOV, V. I., CHELYSHEVA, N. L.

Professor, Engineer. "The Calcining of Nickel Faynshteyn (Sic) in Suspension"
Tsvet. Met. 14, No 9, September 1939.

U-1506, 4 Oct. 1951

Slivov, V.I.

Inter-crystalline Corrosion of Austenite Chromium-Nickel Stainless Steels", Proceedings of the Second Conference on Metals Corrosion, Vol. 1 (1940).

"Research in Corrosion of Metals (Issledovaniya Po Korrosii Metallov)".

Published by- Inst. of Physical Chemistry, US SR Academy of Sciences, Moscow-1951.

Translation- ATIC-7 062-D

F-TS-0030-A/V.

PROCESSES AND PROPERTIES INDEX

Shaft smelting of oxidized nickel ores V. I. Svirnov. *Tsvetnye Metal.* 1940, No. 3, 66-73. Refining shifite smelting of oxidized Ni ores in shaft furnaces was first introduced in Russia in 1934. Several smelters are now in operation. S. discusses various factors accounting for inefficiency and low recovery, and suggests improvements, some of which have already been introduced in practice.

The improvements suggested are along the following lines: better prepn. of the ore, improvements in roasting, control of charge compn. and air consumption, control of charge vol., slag control aimed to improve the smelting of acid ores with the use of min. addns. of limestone, use of fluor-spar, etc. Other improvements suggested are: recovery of Ni from slags, collection of dust, treatment of ores high in Mg, and improvements in the design of the furnaces.

B. N. Daniloff

9

ASME SLA METALLURGICAL LITERATURE CLASSIFICATION

ASME SLA METALLURGICAL LITERATURE CLASSIFICATION

PROCESSES AND PROPERTIES INDEX

11

Determination of the Linear Expansion Coefficient at Low Temperatures with the Differential Dilatometer by Chevenard's Method. V. I. Smirnov and L. P. Smirnova (*Zavod. Lab.*, 1940, 8, 1342-1343; *Chem. Zentr.*, 1942, 113, (II), 2296; *C. Abs.*, 1944, 38, 2539).—[In Russian.] A mixture of benzene and liquid oxygen, adjusted to give a temperature of -100°C ., was used as a cooling agent for the differential dilatometer. The bath was gradually warmed and readings were made at 20° intervals up to a temperature of 20°C . Measurements on various steels and bronzes are reported.

ASB-51A METALLURGICAL LITERATURE CLASSIFICATION

GROUPS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
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Temperature conditions for the formation of copper and nickel silicates. V. I. Shtromov and A. P. Shtromov. *Izvestiya Akad. Nauk SSSR, Ser. Khim. Nauk*, 1940, No. 11, pp. 69-78; *Khim. Referat. Zhur.*, 1940, No. 6, p. 75; *Chem. Abstr.*, 37, 841 (1943). Mixtures of pure $2\text{Cu}_2\text{O} + \text{SiO}_2$ and $2\text{NiO} + \text{SiO}_2$ were ignited at temperatures up to 1000° and 1300° C., respectively, in an atmosphere of air and N_2 ; the ignited mixtures were treated with selective solvents to dissolve the free oxides of Cu (5% NH_3 solution) and Ni (5% HCl solution), and the temperature and kinetics of the formation of Cu and Ni silicates were determined. The formation of Cu silicate begins even during the firing of the furnace and proceeds vigorously for 1 to 2 hr. at 1000° ; the product has a characteristic bright black color. The formation of Ni silicate begins at 800° to 900° after ignition for 1 hr. A longer ignition not only does not increase the yield of the silicate but may decrease it.

9

PROCESSES AND PROPERTIES INDEX

Ca

Investigation of the properties of heat-resistant aluminum cast iron. V. I. Smirnov and G. I. Nerovetskaya. *Metallurg* 15, No. 3, 13-21 (1940). *Met. Eng. Digest (in Metals & Alloys)* 13, No. 2, 222 (1941). - The addn. of 5% Al to cast iron increases its resistance to oxidizing gases at 800-875° but to obtain the most satisfactory mech. properties at temp. up to 900° an Al content of 8-18% is desirable. An 8% Al cast iron has max. resistance to bending at 400-500°, with a sharp decrease at 700°. The room-temp. hardness reached a max. at 12.1% Al.

H. W. Bathmann

METALLURGICAL LITERATURE CLASSIFICATION

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CA

Investigation of the converter slag in Ni recovery
 V. I. Smirnov and V. D. Mishin. *Travaux Metal.* 16, No. 5, 24-7(1941); *Chem. Zentr.* 1942, II, 2410. The initial and final slag (IS and FS) in the melting of Ni in the converter consists of 70% of fayalite with isomorphic FeO exchange by Mg and magnetite occlusions (21-20% in the slag from the middle of the melt and 15-22% in FS), 5-8% glass, and sulfides of 0.45 mm grain size. The NiS content is 60-70% in IS, and 35-40% in FS. The overall content together with metallic Ni, as detd. by chlorination at 800° is 32%. By reduction with CO, 40-60% Ni oxides were found. The slag contains in addn. metallic Ni, Co and Fe, CoS and small amts. of MgS, CaS and Al₂S₃. The total content of Ni and Co is much greater in FS than in IS. Co forms the same compds. as Ni. However, the content of Co and CuS in FS is only 15-20%. By mere slag segregation, 29-40% Ni and 10-15% Co can be recovered. A 20-30% pyrite addn. increases the amts. to 90% Ni and 72% Co. By flotation of slags of 2-7% Ni content, 60-70% Ni and 20-23% Co can be recovered at best. In this case the Ni removal from IS is considerably higher than from FS. This indicates that Ni is initially admixed in metallic form and becomes slag during the course of the melt. The slag portion (Ni silicates and solid Ni compds.) is 30-40% in IS and 40-65% in FS. The slag portion of Co (CoO) in FS is as high as 75-85%.
 Frederick C. Nachod

ASB-SLA METALLURGICAL LITERATURE CLASSIFICATION

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50
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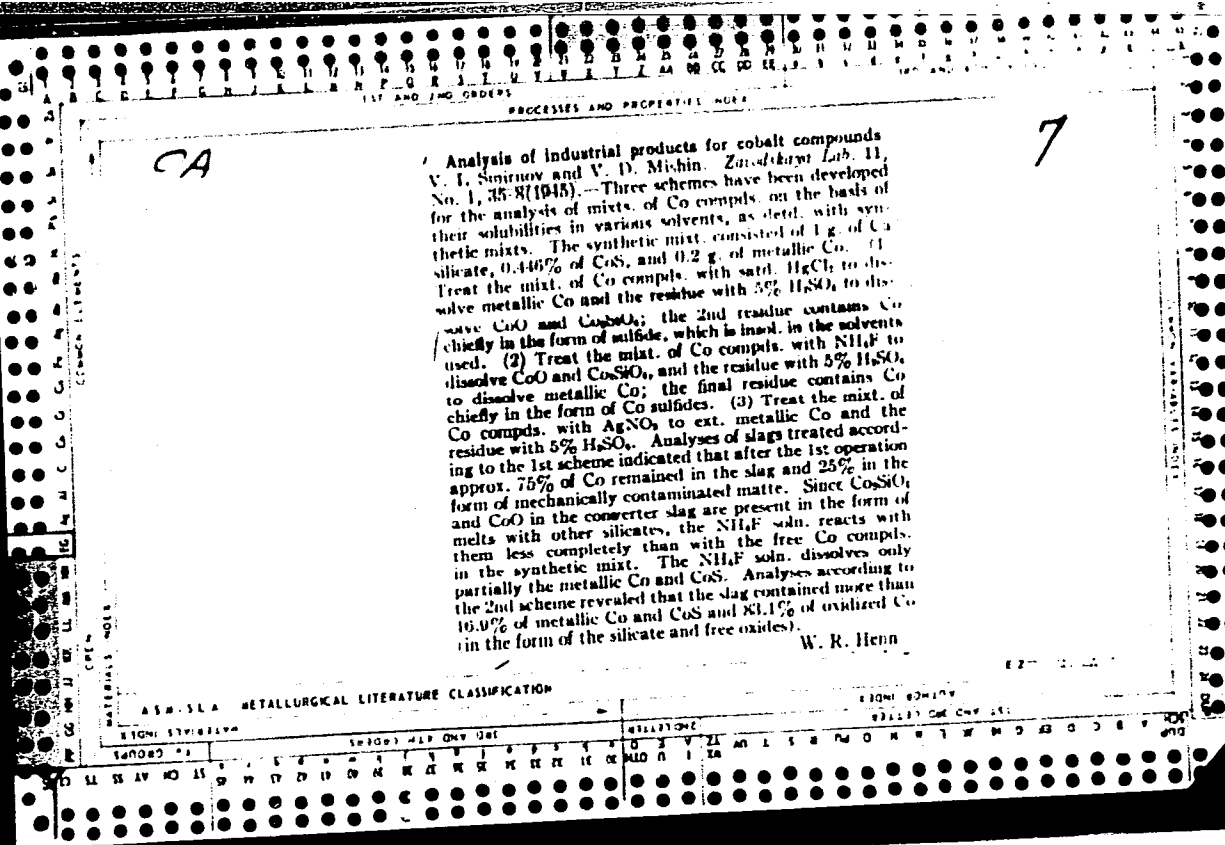
CA

7

Analysis of industrial products for cobalt compounds
 V. I. Smirnov and V. D. Mishin. *Zhurnal Khim. Fiz.* 11,
 No. 1, 35-8(1945).—Three schemes have been developed
 for the analysis of mixts. of Co compds. on the basis of
 their solubilities in various solvents, as detd. with syn-
 thetic mixts. The synthetic mixt. consisted of 1 g. of Co
 silicate, 0.446% of CoS, and 0.2 g. of metallic Co. (1)
 Treat the mixt. of Co compds. with satd. HgCl₂ to dis-
 solve metallic Co and the residue with 5% H₂SO₄ to dis-
 solve CoO and Co₂SO₄; the 2nd residue contains Co
 chiefly in the form of sulfide, which is insol. in the solvents
 used. (2) Treat the mixt. of Co compds. with NH₄F to
 dissolve CoO and Co₂SO₄, and the residue with 5% H₂SO₄
 to dissolve metallic Co; the final residue contains Co
 chiefly in the form of Co sulfides. (3) Treat the mixt. of
 Co compds. with AgNO₃ to ext. metallic Co and the
 residue with 5% H₂SO₄. Analyses of slags treated accord-
 ing to the 1st scheme indicated that after the 1st operation
 approx. 75% of Co remained in the slag and 25% in the
 form of mechanically contaminated matte. Since Co₂SiO₄
 and CoO in the converter slag are present in the form of
 melts with other silicates, the NH₄F soln. reacts with
 them less completely than with the free Co compds.
 in the synthetic mixt. The NH₄F soln. dissolves only
 partially the metallic Co and CoS. Analyses according to
 the 2nd scheme revealed that the slag contained more than
 16.0% of metallic Co and CoS and 81.1% of oxidized Co
 (in the form of the silicate and free oxides).

W. R. Henn

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION



SMIRNOV, VASILII IVANOVICH

N/5
615.5
.S6

Metallurgiya Medi i Niekelya (Metallurgy of Copper and Nickel) Sverdlovsk
Metallurgizdat, 1950.
592 p. Port., Diagr., Tables.
"Literatura": p. (592)

SATRN V, V. I.

Otrazhatel'naya Flavka (Reverberatory Smelting) Teoriya i Praktika. Izd. 3. Pever.,
isprav. I Dopol. Sverdlovsk, Metallurgizdat, 1952.
326 P. Illus., Diags., Tables.
"Literatura": P. (322)-324.

SD: H/5
615.926
.S6
1952

SMIRNOV, V. I.

USSR/Minerals - Metallurgy

Card 1/1 : Pub. 123 - 4/13

Authors : Smirnov, V. I., Mem. Corresp. Kazakh Acad. Sci.

Title : About the quantity and elasticity of blasting in shaft-furnace smelting

Periodical : Vest. AN Kaz. SSR, 11/2, 44-48, Feb 1954

Abstract : An analysis is made of the factors involved in shaft-furnace work where careful calculations are required for size and form of the tuyeres, due to elasticity and pressure of the air. A study is made of methods for proper distribution of the gases during blasting in order to attain the highest efficiency. Five Russian references (1939-1953).

Institution :

Submitted :

SMIRNOV, V.I.; KHUDYAKOV, I.F.

Problems of the mechanization of labor-consuming operations in non-ferrous metallurgical plants. Vest.AN Kazakh.SSR 11 no.4:37-42 Ap '54.

(MLRA 7:5)

(Metallurgical plants)

SMIRNOV, V.I.

Fully utilize the productive power of metallurgical plants
of Kazakhstan. Vest. AN Kazakh. SSR 11 no.9:28-30 S '54.

(MIRA 8:2)

1. Chlen-korrespondent Akademii nauk KazSSR.
(Kazakhstan--Metallurgical plants)

SMIRNOV, Vasilii Ivanovich, prof., dokt. tekhnicheskikh nauk ;
AGLITSKIY, V.A., redaktor; KOVALENKO, N.I., tekhnicheskii
redaktor.

[Shaft furnaces in the metallurgy of non-ferrous metals].
Shakhtnaya plavka v metallurgii tsvetnykh metallov. Sverdlovsk,
Gos. nauchno-tekhn. izd-vo lit-ry po chernoi ittsetnoi metallur-
gii, Sverdlovskoe otd-nie, 1955. 520 p. (MLBA 8:8)
(Smelting furnaces)

SMIRNOV, V. I.

Pyrometallurgical processes and their importance in the development
of Kazakh metallurgy. Vest. AN Kazakh. SSR 11 no. 10:14-19 0'55.

(MLRA 9:1)

1. Deystvitel'nyy chlen AN KazSSR
(Kazakhstan--Metallurgy)

SMIRNOV, V.I., professor; KLYUYEVA, A.V., Inzhener.

Investigation of forehearth accretions. TSvet.met. 28 no.1:46-48
Ja-F '55. (MIRA 10:10)

(Blast furnaces)

SMIRNOV, V. I.

Possible methods of ³⁴ ~~slag~~ ¹⁸ extraction in the Ural copper ²⁷ smelters. V. I. Smirnov. *Tsvetnye Metally*, 1956, No. 1, 35-40. — The smelting methods used in the Urals and elsewhere are discussed. A series of problems for investigation are suggested. L. Benevise

for RB
and

SMIRNOV, V. I.

Category: USSR / Physical Chemistry
Thermodynamics. Thermochemistry. Equilibrium. Physico-
chemical analysis. Phase transitions.

B-8

Abs Jour: Referat Zhur-Khimiya, No 9, 1957, 29889

Author : Smirnov V. I., Tikhonov A. I.

Inst : Academy of Sciences USSR

Title : Equilibrium of Interaction of the Chlorides of Cobalt, Nickel and
Copper with Oxygen

Orig Pub: Izv. AN SSSR, Otd. tekhn. n., 1956, No 9, 48-54

Abstract: Description of the layout of a circulation unit and of the method
investigating the equilibrium in the chloride - oxygen system.
Approach to the state of equilibrium is effected from two sides.
Calculation of K is carried out on the basis of determination of
change in gas pressure Δp , and at small Δp , also from the results
of analysis of the gaseous phase for the chlorine content. Decompo-
sition of CoCl_2 and NiCl_2 by the oxygen takes place in a single stage
according to the reactions: $3\text{CoCl}_2 + 2\text{O} \rightarrow \text{Co}_2\text{O}_3 + 3\text{Cl}_2$ (l) and

Card : 1/2

-16-

SMIRNOV, V.I., akademik.

Means of developing the metallurgy of nonferrous metals of
Kazakhstan. Vest.AN Kazakh.SSR 12 no.4:3-7 Ap '56. (MLRA 9:8)

1. Akademiya nauk Kazahskoy SSR.
(Nonferrous metal industries)

SMIRNOV, V.I., professor.

Feasible zinc extraction methods for Ural copper smelting plants.
TSvet. met. 29 no.1:35-40 Ja '56. (MIRA 9:6)
(Ural Mountains--Copper--Metallurgy) (Zinc--Metallurgy)

SMIRNOV, V.I., professor; POLUKAROV, A.N., inzhener.

"Selenium and tellurium production." D.M.Iukhtanov. Reviewed by
V.I.Smirnov, A.N.Polukarov. *Tsvet.met.*29 no.1:78-79 Ja '56.
(Selenium)(Tellurium)(Iukhtanov) (MIRA 9:6)

SMIRNOV, V.I.; YABLONSKIY, Yu.A.; KLYUYEVA, A.V.

Examination of slags at the Irtysh copper smelting plant. TSvet.met.
29 no.9:22-24 S '56. (MLRA 9:10)
(Irtysh Valley--Copper--Metallurgy)

KHRUSHCHOV, N.A.; KOSOV, B.M.; POLIKARPOCHKIN, V.V.; BRITAYEV, M.D.; TARKHOV, A.G.; SHCHERBAKOV, A.V.; KREYTER, V.M., glavnyy red.; SHATALOV, Ye.T., zamestital' glavnogo red.; YEROFEYEV, B.N., red.; ZENKOV, D.A., red.; KRASNIKOV, V.I., red.; NIFONTOV, R.V., red.; SMIRNOV, V.I., red., YAKZHIN, A.A., red.; VERSTAK, I.V., red. izd-va; AVERKIYEVA, T.A., tekhn. red.

[Prospecting for molybdenum, tungsten, tin, bismuth, antimony, and mercury deposits] Razvedka mestorozhdenii molibdena, vol'frama, olóva, vismúta, sur'my i rtuti. Moskva, Gos. nauchno-tekhn. izd-vo lit-ry po geol. i okhrane neдр, 1957. 130 p. (Metodicheskie ukazaniia po proizvodstvu geologo-razvedochnykh rabot, no.6). (MIRA 11:1)
(Ore deposits) (Prospecting)

GINZBURG, Il'ya Isaakovich; SMIRNOV, V.I., redaktor; GODOVIKOVA, L.A.,
redaktor izdatel'stva; GUROVA, O.A., tekhnicheskiy redaktor

[Experience in the development of theoretical principles for
geochemical methods of prospecting for nonferrous and rare
metals] Opyt razrabotki teoreticheskikh osnov geokhimicheskikh
metodov poiskov rud tsvetnykh i redkikh metallov. Moskva, Gos.
nauchno-tekhn. izd-vo lit-ry po geol. i okhrane nedr, 1957. 298 p.
(Prospecting) (MLRA 10:8)

1 37-58-4-6764

Translation from: Referativnyy zhurnal. Metallurgiya, 1958, Nr 4, p 66 (USSR)

AUTHOR: Smirnov, V. I.

TITLE: 40 Years of Development of Copper and Nickel Metallurgy in
the USSR (Razvitiye metallurgii medi i nikelya v SSSR za 40 let)

PERIODICAL: Byul. tsvetn. metallurgii, 1957, Nr 19-20, pp 40-45

ABSTRACT: Bibliographic entry

1. Metallurgy--Development--USSR
2. Copper--Applications
3. Nickel--Applications

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Smirnov U.I.

Dissociation pressure of cobalt sesquioxide V.I. Smirnov
 and M. A. Abdeev. *Izv. Akad. Nauk Kazakh S.S.R., Ser. Gornogo Dela, Met. Stroitel. i Stroimaterial.* 1957, No. 1, 97-101. — The dissocn. pressure p of (a) Co_2O_3 and (b) $Co_2O_3 \cdot nH_2O$ was detd. by the static method. Co_2O_3 preheated at 800° at 162-292 mm. Hg gave reproducible values of p . The results agreed with those of Watanabe (C.A. 27, 2617). Above 800° p began to rise rapidly; this indicated dissocn.; in air Co_2O_3 was completely decompd. to CoO at 910° and in O at 980-1000°. $Co_2O_3 \cdot nH_2O$ heated so that the H_2O formed was absorbed by $CaCl_2$ and P_2O_5 was completely decompd. to Co_2O_3 at 180-200°. In the presence of its own H_2O vapor, p , detd. by difference (cf. Kapustinskii *et al.*, C.A. 31, 4888), increased with the temp., the rate of which increased in the 230-50° range. In air it was completely decompd. at 250-80° and in O (by extrapolation) at 300°. I. Bencowitz

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SMIRNOV, V.I.

136-10-3/13

AUTHOR: Smirnov, V.I.

TITLE: Scientific Developments in the Field of the Metallurgy of Heavy Non-Ferrous Metals in the Forty Years of Soviet Rule (Razvitiye nauki v oblasti metallurgii tyazhelykh tsvetnykh metallov za 40 let sovetskoy vlasti)

PERIODICAL: Tsvetnyye Metally, 1957, Nr 10, pp.15-23 (USSR)

ABSTRACT: After a brief review of the development of the non-ferrous metals industry and its scientific services the author outlines the cardinal features of Soviet practice in the production of copper, lead, zinc, nickel, cobalt. Among exemplified original Soviet contributions he cites the extraction of cobalt from nickel-works converter slags, fluidized-bed roasting and sulphatization of complex materials, and states that works planning and the training of numerous engineers and designers have been carried out in special institutes founded in the early years of the regime. In the development in the USSR of the science of heavy non-ferrous metals the author distinguishes three periods: the first, in the twenties, when old copper-smelting works were being repaired and started, and there were no special research

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SMIRNOV, V.I.

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21-4620

Sulfatizing roasting in the boiling layer of copper-zinc concentrates. A. R. Babenko and V. I. Smirnov. *Vestnik Akad. Nauk Kazakh. S.S.R.* 13, No. 2, 78-81 (1957).—Roasting of sulfides of Cu, Zn, and Fe in a quartz tube with percolation by an air stream was investigated. It was shown that the rate of sulfatization of the sulfides occurs several times more rapidly in the fluid, "boiling" layer than in a stationary sample. Pyrites and chalcopyrites samples are oxidized most rapidly in both sets of conditions. At 700-800° ZnS is oxidized least rapidly, while Cu₂S is attacked above 760°. The kinetic curves of oxidation of the 3 simple sulfides and of chalcopyrites, pyrites, and sphalerite are shown. These allow the estn. of apparent activation energies as follows: oxidation of ZnS in interval of 600-750° 44,000-46,000 cal./mole, Cu₂S in the interval 600-750° 8000-8100 cal./mole, pyrites 8100-11,000 cal./mole, and chalcopyrites 9000-9500 cal./mole. Sulfatization of oxides of Cu and Zn occurs rather slowly in a stream of gas contg. 4-12% SO₂ and 4-18% O₂; the process is much slower than that of oxidation of corresponding sulfides. The sulfatizing roasting of metallic sulfides gave the best results: thus, at 500° chalcopyrites can be 95% oxidized in 1 hr. at 500° if the reaction is run in a boiling mobile layer of the ore; ZnS under such conditions at 700° gives in 1 hr. but 28% water-sol. Zn. In a continuous-feed lab. installation, which is shown diagrammatically, successful sulfatizations were run with production type of ore concentrates contg. Cu 11.6, Zn 9.93, Fe 29.03, S 38.84, and Pb 0.38%. Leaching of the roasted product permits ready sepn. of Fe from Cu and Zn. Max. conversions of Cu and Zn to sol. forms are attained at about 90% at approx. 500°. Almost complete sulfatization is attained by suspending the ore in 10N H₂SO₄ and air blowing under conditions stated above.

G. M. Kosolapoff

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chem

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SMIRNOV, V.I.

27 27 7
 ✓ The kinetics of chlorination of the oxides of copper, nickel, and cobalt by gaseous chlorine. V.I. Smirnov and V.I. Likhonin. *Vysok. Shkol. Nauch. Kazakh. S.S.R.* 13, No. 6, 1971, p. 1307. The reactions $2MO + 2Cl_2 \rightarrow 2MCl_2 + O_2$, where M = Cu, Ni, or Co, were investigated at 300-700°. CuO is easily chlorinated this way, the chlorination of NiO and CoO is much more difficult, and any chlorination proceeds better at the higher temps. In the reaction with CuO, the CuCl₂ formed at lower temps. is contaminated with CuO, CuCl, and at higher temps. with Cu₂Cl₂. Therefore, the activation energies for the 2 branches of the curves obtained can be calcd. accurately for NiO and CoO only. They are: E_{NiO}, kcal/mole, 11,600; E_{NiO}, atm., 2440; E_{CoO}, kcal/mole, 41,700; and E_{CoO}, atm., 6200 cal/mole. For Cu the values should be roughly 7400 and 670 cal/mole. These data show that it is worth while to try to treat natural minerals that contain Cu, Ni, or Co by a chlorination roasting.
 W. J. Jackson

SMIRNOV, V.I.

Development of metallurgical science in the field of heavy non-ferrous metals during the forty years of the Soviet regime. TSvet. met. 30 no.10:15-23 0 '57. (MLRA 10:11)
(Nonferrous metals--Metallurgy)

SMIRNOV V.I.

MISHIN, V.D.; SMIRNOV, V.I.; ARKHIPOVA, M.S.

Reprocessing the stannic wastes of a tinplating plant. Trudy Ural.
politekh.inst. no.58:97-112 '57. (MIRA 11:4)
(Tin industry--By products)

SMIRNOV, V.I.

YABONSKIY, Yu.A.; SMIRNOV, V.I.

Interaction between nickel sulfide and oxide. Trudy Ural.politekh.
inst. no.58:145-152 '57. (MIRA 11:4)
(Nickel sulfide) (Nickel oxide)

PLETNEV, H.F.; SMIRNOV, V.I.

Determination of the sulfur dioxide buoyancy during interaction of
antimony sulfide and oxide. Trudy Ural.politekh.inst. no.58:153-158
'57. (MIRA 11:4)

(Sulfur dioxide) (Antimony sulfide) (Antimony oxide)

TIKHONOV, A.I.; SMIRNOV, V.I.; SRYVALIN, I.T.

Decomposition kinetics of cobalt, nickel, and copper chlorides by
oxygen. Trudy Ural. politekh.inst. no.58:167-176 '57.
(Cobalt chloride) (Nickel chloride) (MIRA 11:4)
(Copper chloride)

8(2)

AUTHOR:

Smirnov, V. I.

SOV/32-24-11-32/37

TITLE:

~~Inertialess~~ Thermoregulator (Bezinertsionnyy termoregulyator)

PERIODICAL:

Zavodskaya Laboratoriya, 1958, Vol 24, Nr. 11, pp. 1421-1421
(USSR)

ABSTRACT:

The dilatometric thermoregulator according to N. D. Zaytsev (Ref :) has a number of shortcomings arising from the use of a small tube of austenite steel as regulating unit. A new portable thermoregulator was developed (Sketch), in which a chromium-nickel strip is used as regulating unit (0.3 mm thick, 1.5 mm wide). The strip is attached to a quartz bar (0.5 - 1.0 m long) and sticks out into the furnace. By extending or shrinking, this Cr/Ni strip (or wire) moves a mechanism (Hg-relay) which turns the heat on or off. Such a design of a thermoregulator permits a temperature regulation of $\pm 0.5^{\circ}$ at 500-1000 $^{\circ}$. At lower temperatures the accuracy amounts to $\pm 1^{\circ}$. The experiments were performed with fluctuations of voltage (in the electricity supply) between 110 and 125 volt. There are 1 figure and 1 Soviet reference.

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Leningrad Polytech Inst.

TSEYDLER, Aleksandr Al'bertovich, prof. doktor; SMIRNOV, V.I., prof., doktor;
DIOMIDOVSKIY, D.A., prof.-doktor; DOBROKHOTOV, G.N., kand. tekhn.
nauk; BULAKH, S.A., kand. tekhn. nauk; GURIMA, N.V., red.;
SMOLDYREVA, L.G., red. izd-va; VAYNSHTEYN, Ye.B., tekhn. red.

[Metallurgy of copper and nickel] Metallurgia medi i n kelia.
Moskva, Gos. nauchno-tekhn. izd-vo lit-ry po chernoi i tsvetnoi
metallurgii, 1958. 391 p. (MIRA 11:8)

1. Deystvitel'nyy chlen Akademii nauk KazSSR (for Smirnov).
2. Leningradskiy gornyy institut; kafedra metallurgii tyazhelykh
i blagorodnykh metallov (for Diomidovskiy, Dobrokhotov, Bulakh).
(Copper--Metallurgy) (Nickel--Metallurgy)

SMIRNOV, Vasily Ivanovich; TIKHONOV, Anatoliy Ivanovich; AGLITSKIY, V.A.,
red.; LUCHKO, Yu.V., red. izd-va; ZEP, Ye.M., tekhn. red.

[Roasting of copper ores and concentrates; theory and practice]
Obzhig mednykh rud i kontsentratov; teoriia i praktika. Sverdlovsk,
Gos. nauchno-tekhn. izd-vo lit-ry po chernoi i tsvetnoi metallurgii,
Sverdlovskoe otd-nie, 1958. 284 p. (MIRA 11:9)
(Copper ores)

YABLONSKIY, Yu.A.; SMIRNOV, V.I.

Electric conductivity of copper, iron and nickel sulfides at high temperatures. Izv. vys. ucheb. zav.; tsvet. met. no.2: 44-55 '58. (MIRA 11:8)

1. Ural'skiy politekhnicheskiy institut. Kafedra metallurgii tyazhelykh tsvetnykh metallov.
(Sulfides---Electric properties) (Metals at high temperatures)

BABENKO, A.R.; SMIRNOV, V.I.

Processing copper-zinc concentrates by means of sulfatized roast
with subsequent leaching of tailings. Biul. TSIIN tsvet. met.
no. 6:23-25 '58. (MIRA 11:7)

(Copper--Metallurgy)
(Zinc--Metallurgy)
(Leaching)

MISHIN, V.D.; SMIRNOV, V.I.; FOKIN, V.V.

Zinc recovery from blast-furnace dust. Biul.TSIIN tsvet.met.

no.10:16-20 '58.

(MIRA 11:9)

(Zinc--Metallurgy)

SOVIET 59-2 2809

Translation from: Referativnyy zhurnal. Metallurgiya. 1959. Nr 2. p 79 (USSR)

AUTHORS: Babenko, A. P., Smirnov, V. I.

TITLE: A Study of the Processes of Sulfating of Copper and Zinc During Fluidized-bed Roasting (Izucheniye protsessov sulfatizatsii mednoi i tsinka pri obzhige v "kipyashchem" sloye)

PERIODICAL: Tr. Ural'skogo politekhn. in-ta. 1958. Nr 73. pp 250-267

ABSTRACT: It was established through laboratory investigations of sulfating roasting of pure oxides and sulfides of Cu and Zn that the sulfating (S) of these oxides in the fluidized bed proceeds more completely than in roasting under static conditions. The rate of S increases with a decrease in the grain size of the oxides. The maximum S for Cu oxide is observed at 600°C; upon a further increase in temperature it decreases. Up to 700° the rate of S of ZnO increases, but does not attain the Cu oxide rate of S. The highest S rate was observed during the first 5 min of roasting after which the process slowed down; the rate of S increases with the increase in the length of roasting time. An increase in the concentration of SO₂ in the gaseous mixture increases the S rate with marked intensity in the 2-8% range whereas a

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A Study of the Processes of Sulfating of Copper and Zinc During (cont.)

further increase in the SO₂ content has appreciably less effect on the completeness of S. The S of sulfides of Cu and Zn proceeds more completely than that of their oxides. In a fluidized bed at 500° 95% of all the Cu of chalcopyrite becomes sulfatized. At 650° and with 8% SO₂ content of the gases 83% Zn and ~80% Cu from a Cu:Zn concentrate of the following composition (in %): Cu 11.6, Zn 0.63, Fe 29.03, S 39.84 and Pb 0.78 are sulfatized in 1 hour. At 700° 90% Zn and only ~53% Cu from the concentrate are transformed into sulfates. Ye Z

Card 2/2

BABENKO, A.R.; SMIRNOV, V.I.

Kinetics of sulfide oxidation in a fluidized bed. Trudy Ural.
politekh.inst. 73:268-278 '58. (MIRA 12:8)
(Sulfides--Metallurgy) (Fluidization)

VLADIMIROV, V.P.; SMIRNOV, V.I.

Heat content and the fusion temperature of slags in shaft
furnace lead smelting. Izv.AN Kazakh.SSR.Ser.met.obog.i ognoup.
no.1:34-39 '59. (MIRA 13:4)
(Slag--Thermal properties) (Smelting furnaces)

SOV/136-59-1-15/24

AUTHORS: Polukarov, A.N. and Smirnov, V.I.

TITLE: Sulphatizing Roasting of Gold-Containing Slimes (Sul'-fatiziruyushchiy obzhig zolotosoderzhashchikh shlamov)

PERIODICAL: Tsvetnyye Metally, 1959, Nr 1, pp 71-72 (USSR)

ABSTRACT: The authors briefly discuss sulphatizing roasting practice in Canada and Finland and describe their own laboratory experiments. Their object was to find a rational scheme for the sulphatizing roasting of two slimes of the following respective percentage compositions: Cu, 15.0, 3.2; Ni, 0.8, 1.3; Pb, 7.0, 10.0; SiO₂, 6.0, 10.0; Se, 5.0, 6.2; Te, 1.3, 1.6; Ag, 25.0, 28.0; Au, 1.8, 2.3; Sb, 11.0, 13.0; As, 2.2, 2.7; no platinoid metals. The reactions were effected at 170-230°C for 1.5 to 2 hours. For the copper-rich material the optimal sulphuric-acid (specific gravity 1.83) consumption was 90% of the slime weight and 70% for the other. High degrees of copper recovery on water leaching of the sulphatized slime were obtained with acid consumptions as low as 50%. Selenium volatilizations of 96-98% were obtained with sulphatized slimes, the maximal

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