DUDENKOV, S.; LIVSHITS, A.; PASHOVKIN A.; YEVSEYEVA, A.: BARLAUKHOV, M.; VARTANYANTS, S.; RABINOVICH, M.

Results of the industrial tests of the OPSB frother at the Kadzharan ore-dressing plant. Prom.Arm. 5 no.9:41-45 S '62.

(MIRA 15:9)

1. Gosudarstvennyy nauchno-issledovatel'skiy institut tsvetnykh metallov (for Dudenkov, Livshits). 2. Nauchno-issledovatel'skiy gornometallurgicheskiy institut Soveta narodnogo khozyaystva Armyanskoy SSR (for Pashovkin). 3. Kadzharanskiy kombinat Soveta narodnogo khozyaystva Armyanskoy SSR (for Yevseyeva, Barlaukhov, Vartanyants, Rabinovich).

(Kadzharan—Ore dressing—Equipment and supplies)

L 35914-66   EWT(m)   IJP(c)   GD

ACC NR: AT6015893   SOURCE CODE: UR/0000/65/000/000/0001/0013

AUTHOR: Livshits, A. A.; Nelidov, A. B.; Samoylov, I. M.; Sokolov, A. A.

ORG: Institute of Nuclear Physics, Siberian Department AN SSSR. Novosibirsk (Institut yadernoy fiziki Sibirskogo otdeleniya AN SSSR)

TITLE: Power supply for the magnet of the BSB coreless synchrotron

SOURCE: AN SSSR. Sibirskoye otdeleniye. Institut yadernoy fiziki. Doklady, 1965.
Sistema pitaniya magnita bezzheleznogo sinkhrotrona BSB, 1-13

TOPIC TAGS: synchrotron, synchrotron magnet, pulse transformer, commutator / BSB synchrotron

ABSTRACT: .The authors describe a power supply for the pulse magnet of the BSB synchrotron. In an inductive load ($\sim$350 cm) a pulse of a special shape is produced with a rise time of 1.5 μsec and a peak current of 10^6 amp. The single turn coreless BSB synchrotron has a small inductance and a large excitation current (the magnetic field at the orbit is $\sim$13.5 oersted). Therefore it is essential to design a sturdy feeder system with small inductance. The magnet supply consists of a condenser bank (0.045 F) which at 5 kn has $\sim$0.56 μjoule stored energy. A pulse transformer (1:10 current ratio) feeds the BSB single turn magnet. The power supply consists of two separate basic parts: the main supply and the auxiliary supply. The auxiliary power supply

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ACC NR: AT6015893   6

is used for accelerations up to 3 Mev. The condenser battery is divided in two sec-
tions charged to +5 kv and -5 kv. By means of vacuum commutators, the discharge cur-
rent is applied to the primary of the pulse transformer. The electrical parameters
of the main circuit are: $C_T = 11.25 \cdot 10^{-3}$ F × 10 kv, L=670 cm, R=3·10^{-4} ohm, Q=2.7,

with 20% loss of the peak current. The auxiliary circuit used for accelerations up
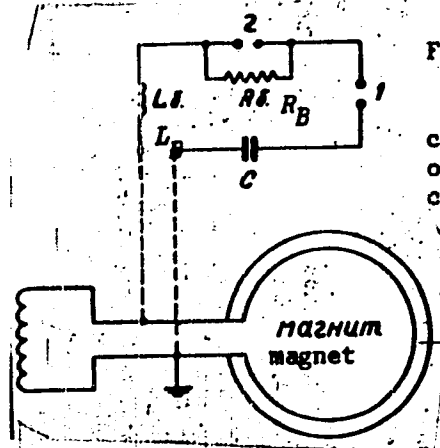to 3 Mev is given in figure 1. The repetition rate depends essentially on the power

Fig. 1. L_B=20 µh, C=11.50µF × 5 kv, and R_B=0.6Ω.

capacity of the power supply rectifiers. Al∿0.7·10^6 A
of the magnet current, (corresponding to 130 Mev syn-
chrotron energy) and 2·10 kw the repetition rate B_s ∿
∿30 per sec. After several thousand pulses with
0.5-1·10^6 A, there were no deformations observed in
this setup. In conclusion, the authors thank G.I.
Budker and A. A. Naumov for their interest and
counsel, and also G. S. Morozov, M. Ya. Ragutskiy,
G. T. Tsikin and Ye. V. Shun'ko for taking part in

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L 35914-66

ACC NR: AT6015893

the development of individual elements of the power supply system. Orig. art. has: 5 figures, 1 table.

SUB CODE: 20/   SUBM DATE: none/   ORIG REF: 001

Card 3/3

LEBEDEVA, Ye.G.; LIVSHITS, A.A.

Diagnostic value of the ring reaction with a color antigen in
determining the infection of milk with Brucella. Zhur. mikrobiol.
epid. i immun. no.11:68-71 N '54.   (MLRA 8:1)

1. Iz Respublikanskoy protivobrutseleznoy stantsii Ministerstva
zdravookhraneniya Azerbaydzhanskoy SSR glavnyy vrach kandidat
meditsinskikh nauk S.A. Imamaliyev)
        (MILK, bacteriology,
          Brucella, determ., annular reaction with color antigen)
        (BRUCELLA
          in milk, determ., annular reaction with color antigen)

L 47304-55   EWT(m)/EPA(w)-2/EWA(m)-2   Pab-10   IJP(c)   GS

ACCESSION NR: AT5007921

S/0000/64/000/000/0274/0287

AUTHOR: Bayyer, V. N.; Blinov, G. A.; Bondarenko, L. N.; Yerozolimskiy, B. G.;
Korobeynikov, L. S.; Mironov, Ye. S.; Naumov, A. A.; Onuchin, A. P.; Panasyuk,
V. G.; Popov, G. G.; Sidorov, V. A.; Sil'vestrov, G. I.; Skrinskiy, A. N.;
Khabakhpashev, A. G.; Auslender, V. L.; Kiseley, A. V.; Kushnirenko, Ye. A.;
Livshits, A. A.; Rodionov, S. N.; Synakh, V. S.; Yudin, L. I.; Abramyan, Ye. A.;
Vasserman, S. B.; Vecheslavov, V. V.; Dimov, G. I.; Papadichev, V. A.; Protopopov,
I. Ya.; Budker, G. I.

TITLE: Colliding electron-electron, positron-electron, and proton-proton beams

SOURCE: International Conference on High Energy Accelerators. Dubna, 1963.
Trudy. Moscow, Atomizdat, 1964, 274-287

TOPIC TAGS: high energy interaction, high energy plasma, particle physics, par-
ticle beam, charged particle beam

ABSTRACT: In the Institute of Nuclear Physics, Siberian Department, Academy of
Sciences SSSR, programs on high-energy particle physics are mainly concerned with
work on colliding charged particle beams. The Institute considers it unsuitable

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ACCESSION NR: AT5007921

for its purpose to install huge accelerators whose construction requires large
resources outlaid and long time. For work on colliding electron-electron, posi-
tron-electron, and proton-proton beams, three installations are being built, which
are in various stages of readiness. Work on colliding electron beams was con-
ducted at the institute (then a laboratory of the Institute of Atomic Energy imeni
I. V. Kurchatov) in the Fall of 1956, after Kerst's report on accelerators with
colliding proton beams of the FFAG type. By that time Soviet scientists had al-
ready acquired some experience in obtaining large electron currents; in particular,
the mentioned laboratory had installed and then abandoned a device for the spiral
storage of electrons (G. I. Budker and A. A. Naumov, CERN Symposium, 1, 76 (1956)),
by which, subsequently, circulating currents of the order of 100 amperes were ob-
tained. In 1957 two variants of this device were considered at the same time. The
first one consisted of two accelerators with spiral storage and subsequent transi-
tion of the particles to synchrotron state in comparatively narrow paths. The
second one had storage rings with constant magnetic field and frequent external in-
jection because of the damping of the oscillations under the action of radiation.
The first variant was more cumbersome; the second variant contained an element not
developed at that time, namely a 100-kilovolt commutator of 10 kilo-amperes with
nanosecond front. At the end of 1957, the first positive results were obtained

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ACCESSION NR: AT5007921   D!

with a packing discharger of 100 kilovolts, and work stopped on the variant with
storage rings. Originally it was proposed to set up two devices: VEP-1 of 2 × 130
Mev energy, and VEP-2 of 2 × 500 Mev energy. The VEP-1 was considered as an actual
model of an accelerator and as a device for conducting initial experiments at low
energies. After the Panofsky report in 1958 on his work with colliding electron
beams conducted in his laboratory at Stanford, construction ceased on 500-Mev
storage paths and work was continued on the 2 × 130-Mev installation. Instead of
work on colliding electron beams with energies of 500 Mev, work at the end of 1958
was conducted with colliding positron-electron beams and the planning of the VEPP-2
device was begun, whose main elements are a strong-current electron accelerator and
a high-vacuum storage path of 700 Mev energy. At the present time the VEP-1 and
VEPP-2 are installed in Novosibirsk. The VEP-1 is in a state of neglect, but at
the end of 1964 experiments will be begun with it. Installation of the VEPP-2 has
been completed. To obtain a marked effect from the application of colliding proton
beams, an accelerator is needed with an energy of at least 10 Gev. Since the ordi-
nary accelerator at such energies is a very bulky machine, it was decided to com-
bine the idea of colliding proton beams with the creation of an iron-less impulse
accelerator with very large fields and a neutralized central busbar. This latter
work of creating such a machine was reported by the authors at a Moscow conference

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ACCESSION NR: AT5007921   0

held in 1956. The presence of a field with two directions in an iron-less accelera-
tor with central busbar permits the acceleration of protons toward opposite sides
in one machine, which makes possible the collision of protons in case of a suitable
race-track. At the present time the Institute is developing a proton device with
a magnetic field of about 200 kilogauss and radius of 2 meters for a particle energy
of 12 Gev in the beam (equivalent energy is around 300Gev). Tests are being con-
ducted on models, and an effective method of injection by overcharging of negative
ions is under study. Also under development are an impulse electric power supply
system of 100 million joules capacity and an hf power supply. Since 1958 the
Institute has been conducting theoretical investigations on the limits of applicabi-
lity of quantum electrodynamics [V. N. Bayyer, ZhETF, 37, 1490 (1959), and UFN, 78,
619 (1962)] for the calculation of the radiational corrections to the electrodyna-
nic cross-sections [V. N. Bayyer and S. A. Kheyfets, ZhETF 40, 613-715 (1961) and
Nuclear Physics (in print)], and on other problems of high-energy particle physics
that are connected with the preparation of experiments on colliding beams [V. N.
Bayyer, I. B. Khriplovich, V. V. Sokolov, and V. S. Synakh, in ZhTF, 1961]. The
present report takes up under the mentioned three main headings the following perti-
nent topics: the accelerator-injection, storage paths, electron-optical channel,

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L 47304-65

ACCESSION NR: AT5007921

input and output system, experiments on storage, proposed work, experimental set-up, physical layout of magnets, power supply, etc. Orig. art. has: 8 figures.

ASSOCIATION: Institut yadernoy fiziki SO AN SSSR (Institute of Nuclear Physics, SO AN SSSR)

SUBMITTED: 26May64   ENCL: 00   .SUB CODE: EE, NP

NO REF SOV: 012   OTHER: 003

Card 5/5

L 05821-67   EWT(m)   IJP(c)   GD

ACC NR: AT6031468   SOURCE CODE: UR/0000/65/000/000/0001/0012

AUTHOR: Auslender, V. L.; Blinov, G. A.; Budker, G. I.; Karliner, M. M.; Kiselev, A. V.; Livshits, A. A.; Mishnev, S. I.; Naumov, A. A.; Panasyuk, V. S.; Pestov, Yu. P.; Sidorov, V. A.; Sil'vestrov, G. I.; Skrinskiy, A. N.; Khabakh- pashev, A. G.; Shekhtman, I. A.

ORG: none

TITLE: Present state of research on the VEPP-2 electron-positron ring

SOURCE: AN SSSR. Sibirskoye otdeleniye. Institut yadernoy fiziki. Doklady, 1965. Sostoyaniye rabot na pozitron-elektronnom nakopitele VEPP-2, 1-12

TOPIC TAGS: electron, positron, electron positron storage ring, electron beam /B-3M synchrotron, VEPP-2 electron-positron, steradian

ABSTRACT: The VEPP-2 electron-positron storage ring was designed for experiments on the interaction of positrons and electrons with an energy of up to 2 x 700 Mev. It is basically a special type of B-3M synchrotron, and is equipped with an exterior injector, a high-vacuum storage track, a single thread system to extract the electron beam from the accelerator and insert it into the storage ring.

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L 05821-67

ACC NR: AT6031468

It has electron-optic channels and a converter to transform an electron beam into a positron beam. It now works at an energy of 200 Mev. Basic studies of the process of insertion into the storage ring were made at an energy of 100 Mev. A detailed description is given of the installation and storage of electrons and positrons. A system of spark chambers, comprising a 2 x 0.7 solid angle steradian close to the vertical direction, was prepared for experiments on the interaction of positrons and electrons. Efforts are now being made to increase the accumulation speed of positrons. Orig. art. has: 4 figures.

SUB CODE: 20/ SUBM DATE: none/ ORIG REF: 006/ OTH REF: 001/

kh

Card 2/2

L 25793-66   EWT(m)   IJP(c)

ACC NR: AP6016377   SOURCE CODE: UR/0089/65/019/006/0502/0505

AUTHOR: Auslender, V. L.; Blinov, G. A.; Budker, G. I.; Karliner, M. M.; Kiselev, A. V.; Livshits, A. A.; Mishnev, S. I.; Naumov, A. A.; Panasyuk, V. S.; Pestov, Yu. N.; Sidorov, V. A.; Sil'vestrov, G. I.; Skrinskiy, A. N.; Khabakhpashev, A. G.; Shekhtman, I. A.

ORG: none

TITLE: Status report on the VEPP-2 positron-electron storage ring

SOURCE: Atomnaya energiya, v. 19, no. 6, 1965, 502-505

TOPIC TAGS: electron positron pair, electron interaction, synchrotron, electron scattering, luminescence, betatron/B-3M synchrotron

ABSTRACT: The VEPP-2 was designed for electron-positron interaction experiments at energies of 2 X 700 Mev. as reported in the "Proceedings of the International Conference on Accelerators", Dubna, 1963. Work accomplished in the two years following that conference includes the following: start-up of the synchrotron injector, accumulation of large electron currents in the storage ring, study of instability related to the interaction of the beam with the resonator, and the accumulation of positrons. At present the VEPP-2 is being used to study the interaction of two beams and to measure the luminescence from the small-angle positron-electron scattering. An over-all schematic diagram of the VEPP-2 is shown, including its connection to a B-3M synchrotron. The latter operates in light-duty mode at 200 Mev, and its 100 ma output pulse is shorter than 20 nsec. Its energy scattering is less than 2% and pulse repetition frequency is about 3 cycles. The storage ring is a weakly focusing racetrack with four identical rectilinear segments 60 cm long. The equilibrium orbit radius is 150 cm and the aperture is

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ACC NR: AP6016377

8 X 14 cm. One segment of the ring is the experimental working section; the opposite section is a resonator; the remaining two are used to inject electrons and positrons. The experiments made and the operation of the equipment are described in detail. It is noted with interest that when betatron oscillations are excited by individual inflector pulses, most of the initial oscillation amplitude decays in a time interval much shorter than the natural radiation decay time. Orig. art. has: 4 figures. [JPRS]

SUB CODE: 20 / SUBM DATE: none / ORIG REF: 006 / OTH REF: 001

Card 2/2 CC

L 11425-67   EWT(1)   IJP(c)

ACC NR: AP6031258   SOURCE CODE: UR/0057/66/036/009/1544/1549

AUTHOR: Livshits, A.A.; Nelidov, A.B.; Samoylov, I.M.; Sokolov, A.A.

ORG: none

TITLE: Magnet power supply for the BSB iron-free synchrotron

SOURCE: Zhurnal tekhnicheskoy fiziki, v. 36, no. 9, 1966, 1544-1549

TOPIC TAGS: electron accelerator, synchrotron, magnet, power supply

ABSTRACT: The authors describe in some detail the power supply for the magnet of the BSB single turn iron-free electron synchrotron described elsewhere by G.I.Budker et al. (ZhTF 36, 1523 (1966)/see Abstract AP6031256/). The main power supply is a 5 kV 0.045 F capacitor bank coupled to the single turn synchrotron magnet with a pulse transformer that steps the current up by a factor of 10. The pulse transformer consists of a 40 turn primary and a 4 turn secondary of heavy copper strip on a 600 cm^2 cross section ring-shaped rectangular core of transformer steel sheets. Design features of the pulse transformer that enable it to withstand the electrodynamic forces incident to supplying a secondary current of up to 10^6 A are discussed. The pulse transformer operates with superposed magnetization, which is provided by discharge through the primary of an auxiliary capacitor bank prior to the discharge of the main

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ACC NR: AP6031258

capacitors. The time dependence of the magnet current required for synchrotron opera-
tion is achieved with the aid of an auxiliary supply containing one or two capacitor
banks, which are discharged at appropriate times prior to discharge of the main capa-
citor bank. Two successful variants of the auxiliary supply are described. The dura-
tion of the operating pulse is 1.8 millisec. The described supply operates at the
rate of one pulse every 30 sec; the pulse rate could be increased by a factor of 10 by
employing larger rectifiers for charging the capacitors and providing appropriate cool-
ing. The authors thank G.I.Budker and A.A.Naumov for their interest and advice, and
G.S.Morozov, M.Ya.Rogutskiy, G.T.Tsikin, and Ye.V.Shun'ko for their participation in
the development of different parts of the power supply. Orig. art. has: 4 figures
and 1 table.

SUB CODE: 20/   SUBM DATE: 27Sep65/   ORIG REF: 001/   OTH REF: 000

Card 2/2   bab

SAYENKO, A.S.; LIVSHITS, A.B.; POLUSHINA, T.V.; ROZENFEL'D, Ye.L.

Break in the 1,3-bonds in dextran by enzymatic preparations
from animal and human liver. Dokl. AN SSSR 157 no.3:723-724
Jl '64.   (MIRA 17:7)

1. Institut biologicheskoy i meditsinskoy khimii AMN SSSR.
Predstavleno akademikom Oparinym.

BADYL'KES, I.S., prof., doktor tekhn.nauk; BUKHTER, Ye.Z., inzh.;
VEYNBERG, B.S., kand.tekhn.nauk; VOL'SKAYA, L.S., inzh.; GERSH,
S.Ya., prof., doktor tekhn.nauk [deceased]; GUREVICH, Ye.S., inzh.;
DANILOVA, G.N., kand.tekhn.nauk; YEFIMOVA, Ye.V., inzh.; IOFFE,
D.M., kand.tekhn.nauk; KAN, K.D., kand.tekhn.nauk; LAVROVA, V.V.,
inzh.; MEDOVAR, L.Ye., inzh.; ROZENFEL'D, L.M., prof., doktor tekhn.
nauk; TKACHEV, A.G., prof., doktor tekhn.nauk; TSYRLIN, B.L.;
SHUMELISHSKIY, M.G., inzh.; SHCHERBAKOV, V.S., inzh.; YAKOBSON, V.B.,
kand.tekhn.nauk; GOGOLIN, A.A., retsenzent; GUKHMAN, A.A., retsenzent;
KARPOV, A.V., retsenzent; KURYLEV, Ye.S., retsenzent; LIVSHITS, A.B.,
retsenzent; CHISTYAKOV, F.M., retsenzent; SHEYNDLIN, A.Ye., retsen-
zent; SHEMSHEDINOV, G.A., retsenzent; PAVLOV, R.V., spetsred.;
KOBULASHVILI, Sh.N., glavnyy red.; RYUTOV, D.G., zam.glavnogo red.;
GOLOVKIN, N.A., red.; CHIZHOV, G.B., red.; NAZAROV, B.A., glavnyy
red.izd-va; NIKOLAYEVA, N.G., red.; EYDINOVA, S.G., mladshiy red.;
MEDRISH, D.M., tekhn.red.

[Refrigeration engineering; encyclopedic reference book in three
volumes] Kholodil'naia tekhnika; entsiklopedicheskii spravochnik
v trekh knigakh. Glav.red. Sh.N.Kobulashvili i dr. Leningrad,
Gostorgizdat. Vol.1. [Techniques of the production of artificial
cold] Tekhnika proizvodstva iskusstvennogo kholoda. 1960. 544 p.
(MIRA 13:12)

(Refrigeration and refrigerating machinery)

ALEKSANDROV, S.V.---(continued)   Card 2.
     1. Vsesoyuznyy institut rasteniyevodstva (for Sechkarev, Lizgunova,
Brezhnev, Gazenbush, Meshcherov, Filov, Tkachenko, Kazakova,
Krasochkin, Levandovskaya, Shebalina, Syskova, Makasheva, Ivanov,
Martynov, Girenko, Ivanova, Shilova). 2. Gribovskaya ovoshchnaya
selektsionnaya opytnaya stantsiya; chleny-korrespondenty Vsesoyuznoy
akademii sel'skokhozyaystvennykh nauk im. V.I.Lenina (for Alpat'yev,
Solov'yeva). 3. Deyatvitel'nyy chlen Vsesoyuznoy akademii sel'sko-
khozyaystvennykh nauk im. V.I.Lenina (for Brezhnev).
                (Vegetables--Varieties)

KABOSHINA, Ye.S.; LIVSHITS, A.G.; OSIPOVA, V.F.; IVANOV, P.V.;
   AGAFONOVA, K.I.

Some new synthetic odorous substances.   Trudy VNIISNDV   no.6:85-90
'63.   (MIRA 17:4)

AUTHORS: Gross, Ye. F., Suslina, L. G., and Livshits, A. I.

TITLE: Reflection and luminescence of zinc telluride single crystals

PERIODICAL: Fizika tverdogo tela, v. 5, no. 3, 1963, 801-806

TEXT: This is the third paper in a series of studies of the optical properties of ZnS - ZnSe - ZnTe crystals (Opt. i spektr., 8, 516, 1960; FTT, 4, 396, 1962); it describes investigations made in the visible and ultraviolet ranges at 293, 77 and 4.2°K, including also luminescence at 4.2°K. For the reflection spectra a ИСП-51 (ISP-51) spectrograph was used for the visible and a Q-12 for the UV ranges. At 77°K a narrow reflection peak was observed at 5236.3±0.3 Å (2.3675 ev) which, at 4.2°K, shifted to 5209.3±0.1Å (2.3798 ev). At room temperature only two broad diffuse maxima were found, one at 3600±50 Å (3.44 ev), the other at 3100±50 Å (4.00 ev). Which at 77°K, these maxima shifted to shorter waves (3330±5 and 2865±3 Å) and narrowed considerably from 2700 to 230 cm^{-1}, and from 2000 to 140 cm^{-1}. The 5236.3Å peak is attributed to

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Reflection and luminescence of zinc ...   S/181/63/005/003/016/046
                                          B102/B180

direct transitions exciton states connected with extrema, at $\vec{k}=0$ (Γ-point), of the lower conduction and the upper valence bands; 3330 and 2865 Å to direct transitions to exciton states connected with extrema of the two valence bands and the conduction band, lying at $\vec{k}$ $\langle 111 \rangle$ at the edge of the Brillouin zone (L-point). The luminescence spectrum observed differed somewhat from that of D. G. Thomas et al. (Phys. Rev. Lett., 8, 391, 1962; Phys. Rev., Ser. II, 122, 1382, 1961). Luminescence was excited by irradiation in the self-absorption band and was taken on the ISP-51 spectrograph. The three types of ZnTe crystal (I, II, III) investigated have different types of spectra due to different types of luminescence centers. I has a spectrum similar to CdS; it has a narrow line at 5222 Å, a group of lines in the range 5240-5500Å and several bands at $\lambda > 5536$Å. II has a simpler spectrum consisting of 9 - 10 equidistant triplets. Type III was studied in greatest detail; it consists of narrow lines of different intensity; a faint line at 5222Å, a group of equidistant intense lines at 5288Å, and other groups at 5316, 5452, 5528, 5619, and 5834 Å. Common to all types of crystals are the 5222 Å (exciton) line and the presence of line groups whose intensity decreases

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Reflection and luminescence of zinc ...

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toward the red side of the spectrum. The lines of these groups are equidistant ($\sim$0.026 ev) and are attributed to longitudinal lattice vibrations. There are 10 figures.

ASSOCIATION: Fiziko-tekhnicheskiy institut im. A. F. Ioffe AN SSSR,
                Leningrad (Physicotechnical Institute imeni A. F. Ioffe
                AS USSR, Leningrad)

SUBMITTED: October 4, 1962

Card 3/3

GEL'PERIN, N.I.; IDEL'SON, Ye.M.; LIVSHITS, A.K.; BORISENKO, A.T.;
ZIL'BERG, V.I.

Improved method for the production of xanthates. Report no.4:
Preparing xanthates by the continuous method from isobutyl,
butyl SK, and isopropyl alcohol. Sbor. nauch. trud. Gintsvet-
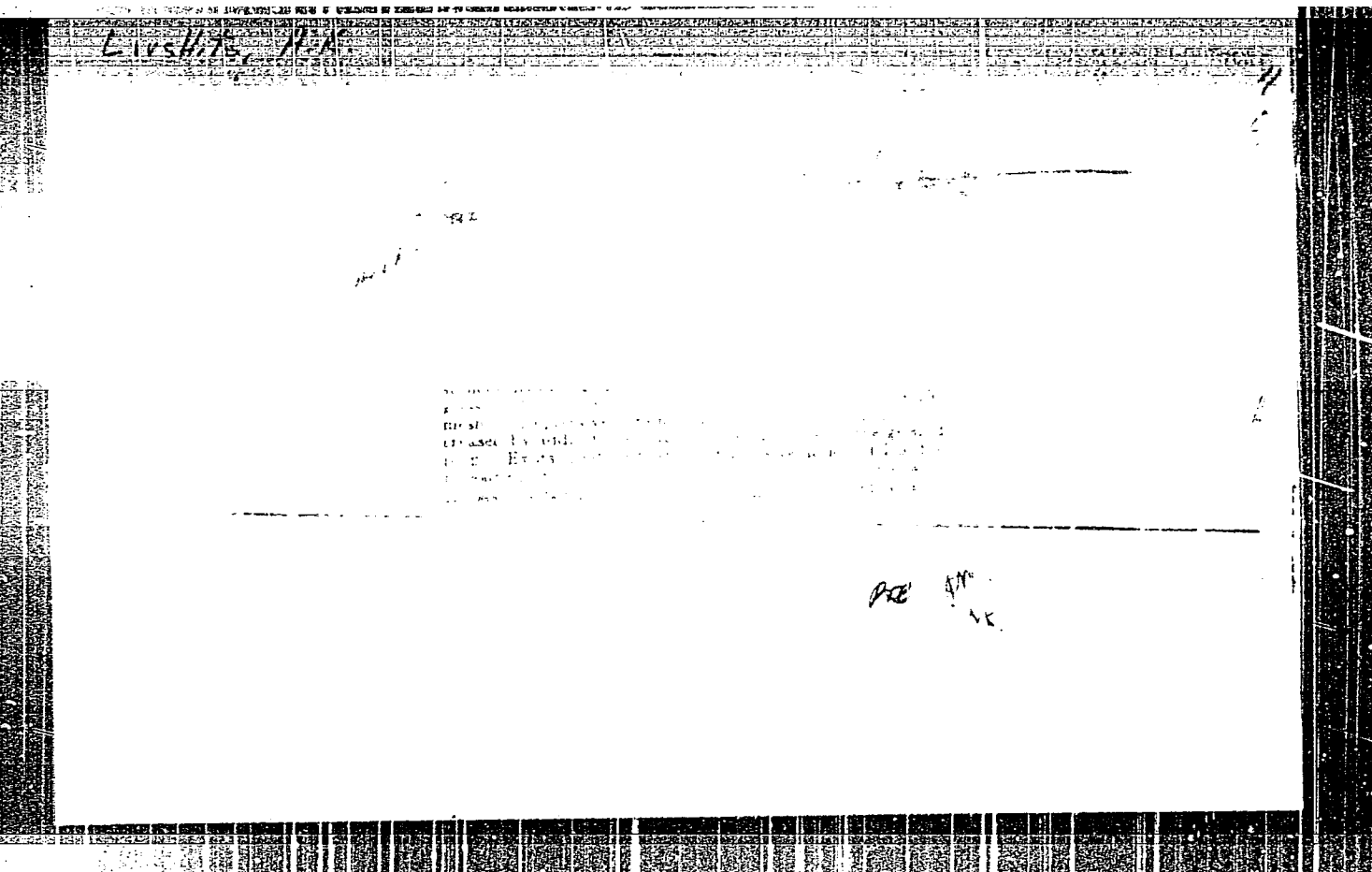meta no.19:255-262   '62.   (MIRA 16:7)

(Xanthic acid)

DUDENKOV, S.V.; LIVSHITS, A.K.

Using flocculants for the thickening of Zyryanovsk Ore Dressing
Plant concentrates. Sbor. nauch. trud. Gintsvetmeta no.19:
263-272 '62.   (MIRA 16:7)

(Zyryanovsk—Ore dressing)

LIVSHITS, A.X.

Constant conditions are the basis for control of the flotation
process. TSvet.met. 27 no.2:10-13 Mr-Ap '54.   (MIRA 10:10)
(Flotation)

Livshits, H.

LIVSHITS, A.

Questions of the theory of flotation at the London Conference
on Ore Concentration. TSvet.met. 27 no.4:74-80 Jl-Ag '54.

(MIRA 10:10)

(Flotation)

LIVSHITS, A.K.; BAZANOVA, N.M.

      Consumption of copper sulfate in zinc flotation. TSvet.met.
      28 no.5:9-11 S-O '55.   (MIRA 10:10)
                (Copper sulfate) (Zinc--Metallurgy)

LIVSHITS, A.K.

Lithium in the United States; lithium bearing ores and minerals, dressing and chemical processing of ores and concentrates. TSvet. met. 29 no.6:84-89 Je '56.   (MIRA 9:9)
      (United States--Lithium)

LIVSHITS, A.K.; MADIYEV, K.M.

Experimental use of butyl aerofloat SK. TSvet. met. 29 no.8:
10-13 Ag '56.   (MLRA 9:10)

(Balkhash--Flotation) (Krasnoural'sk--Flotation)

Ore flotation." A. K. Levchits and S. M. Gurvich. U.S.S.R. 105,606, Mar. 20, 1957.—As frothers in ore flotation are used tetralkoxydialkyl sulfides of the general formula $(RO)_xCH(CH_3)_2S(CH_2)_xCH(OR)_2$, where R = a hydrocarbon radical and n : 1.   M. Hoseh

LIYSHITS, A.K.

Distr: 4E2c

Flotation agents. P. G. Sergeev, L. A. Ivanova, M. P. Tyukov, A. K. Livshits, and S. M. Gurvich. U.S.S.R. 107,957, Oct. 25, 1957. As frothers for ore flotation hydrogenated and nonhydrogenated oxidation products of C_5-C_6 olefins are used. M. Hoseh

Distri 4814

Synthetic flotation agents. A. K. Ilyina, L. I. Ga-
richova, and N. M. Hasanovi. U.S.S.R. 106,131, Oct.
15, 1957. Flotation agents are obtained by condensing still
residues from hexamethylenetiamine production with
higher fatty or resinous acids, or both, and further condens-
ing the product with dichlorides, e.g., dichlorethane or di-
chlorodiethyl ether. These reagents promote thickening
and facilitate the filtration of finely dispersed slimes.

M. Hosch

281

AUTHOR: Livshits, A.K. and Dudenkov, S.V.

TITLE: The stability of flotation foams. (K Voprosu o stabilnosti
            flotatsionnykh pen.)

PERIODICAL: "Tsvetnye Metally" (Non-ferrous Metals),
            1957, No. 1, pp. 14 - 23, (U.S.S.R.)

ABSTRACT: The aim of the present work was a more detailed study than
            so far available of the effect of "extinction" of three-phase
            flotation foams under the action of added collectors. No
            satisfactory explanation of this effect has yet been advanced.
            The stability of foams was determined from the time of the
            breakdown of a foam formed by standard shaking of 25 ml of
            solution with mineral powder in a glass cylinder provided with
            a ground stopper. Galenite, sphalerite, quartz and gumbrin,
            ground to various degrees of fineness were used as the minerals.
            It was found that the stability of three-phase foams, formed
            by suspensions of sulphide minerals in solutions of foaming
            agents, decreases and can be reduced to 0 by adding xantho-
            genate if these suspensions contain dissolved salts of lead and
            copper (oxidation products of the minerals or introduced as
            activators) and if the concentration of foaming agent is less
            than a certain critical value; with increasing xanthogenate
            concentration the concentration of foaming agent necessary for
            providing a given stability to a three-phase foam increases.
            Foaming extinguished by xanthogenate can be renewed by adding

            _____ __ _ ___ three-
            _____ _ __mation of insoluble
            _____ ___om the reaction of xanthogenates with
            _____ and lead ions or of sodium oleate with barium ions (and

The stability of flotation foams. (Cont.)   281

alkaline-earth metals).

The experimental results obtained provide explanations for the poorer foam formation and greater expenditure of foaming agent in the flotation of some oxidised and sulphide lead and copper ores, in the zinc flotation of polymetallic ores and in the flotation of ores containing carbonaceous shale.

There are 19 references, of which 12 are Russian, and 12 figures.

LIVSHITS, A.K.

AUTHORS: Livshits, A.K. and Madiyev, K. M.   136-3-2/25

TITLE: The Composition of Aliphatic Amines and Their Flotational
Action. (O sostave alifaticheskikh aminov i ikh
flotatsionnom deystvii).

PERIODICAL: Tsvetnyye Metally, 1957, No.3, pp.5-8 (USSR)

ABSTRACT: In connection with the organization of the production
of aliphatic amines for use in flotation the problem of
how their composition affects their flotational action has
become very important. In this article the collecting
action on quartz and smithsonite of pure primary and
secondary amines (represented by octadecylamine and methyl-
octadecylamine) is compared, as is the action of IM-11
technical amines and the amine mixture obtained from
synthetic aliphatic acids. Preparation methods are out-
lined and amine properties tabulated; and the size grading
of the quartz used in the experiments is given as
-0.2 + 0.15 mm yield 83%; -0.15 + 0.1 mm yield 17%, the
lump smithsonite containing 83.3% of the mineral. Experi-
mental curves are given of quartz extraction against pH of
the pulp (range 7.0 to 10.7), and of zinc extraction
against collector consumption. Among the conclusions
drawn is that the view of Lenz, Terry and Wittcoff (Ref.7)
that all secondary amines are pool collectors does not

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The Composition of Aliphatic Amines and Their Flotational Action.

136-3-2/25

apply to those in which ore radical is composed of a
long chain and the other is a methyl group: such are good
collectors for quartz, but secondary amines, irrespective
of chain lengths, are poor collectors for smithsonite.

2/2   There are 4 figures, 1 table and 9 references, 2 of which
are Slavic.

ASSOCIATION: Gintsvetmet.

AVAILABLE: Library of Congress

LIVSHITS, A.; TROICKII, A.

"Supplying ore-dressing plants with flotation reagents and their rational application. Tr. from the Russian."

p. 389 (Rudy) Vol. 5, no. 11, Nov. 1957
Prague, Czechoslovakia

SO: Monthly Index of East European Accessions (EEAI) LC. Vol. 7, no. 4,
     April 1958

LIVSHITS, A.K.

136-12-2/18

AUTHORS: Livshits, A.K., Gurvich, S.M., and Madiyev, K.M.

TITLE: Search for Collectors for Cement Copper Flotation (Izyskaniye sobirateley dlya flotatsii tsementnoy medi)

PERIODICAL: Tsvetnyye Metally, 1957, No.12, pp. 6 - 9 (USSR).

ABSTRACT: This is a preliminary communication of the results of laboratory-scale tests on the following classes of sulphur-containing compounds for the flotation of cement copper: dialkyl- and diaryl-dithiophosphoric acids, xanthic acids, disulphides, polydisulphides and bis-sulphides. The seventeen reagents giving the best results are listed. Reagent consumptions and data on the two concentrates and tailings obtained by the use of various reagents for cement copper from samples of two almalyks ores are tabulated (Tables 1 and 2). The effectiveness of the re-agents is discussed in terms of their structures. There are 2 tables.

ASSOCIATION: Gintsvetmet

AVAILABLE: Library of Congress
Card 1/1

AUTHORS: Gurvich, S. M., Livshits, A. K.

TITLE: Synthetic Frothers. Communication 2 (Sinteticheskiye penoobrazo-
           vateli. Soobshcheniye 2)

PERIODICAL: Sb. nauchn. tr. Gos. n.-i. in-t tsvetn. met., 1957, Nr 13,
           pp 58-66

ABSTRACT: Work in the synthesis and testing of polypropyleneglycol
           esters (the so-called OPS reactants) is described, also the
           results of investigation of the frothing action of a new class of
           compounds - the polyalcoxyalkanes and their monosulfide iso-
           logs. Monomethyl and mono-2-oxyethyl esters of polypropy-
           leneglycols (I), 1,1,3,-triethoxybutane, 1,3,3-triethoxypro-
           pane, $\beta, \beta, \beta', \beta'$-tetraethoxydiethylsulfide, $\gamma, \gamma, \gamma', \gamma'$-tetra-
           ethoxydipropylsulfide,and $\gamma, \gamma, \gamma', \gamma'$-tetraethoxydibutylsulfide
           were synthesized and tested in laboratory flotation experi-
           ments. In the selective flotation of Pb in polymetallic ore,
           the synthesized frothers, except for I and tetraethoxydibutyl-
           sulfide, were superior to cresol in the strength and selectiv-
           ity of the flotation effect. I is inferior to cresol in the strength

Card 1/2

SOV/137-58-7-14030

Synthetic Frothers

of the frothing action, but is superior in selectivity. Tetraethoxydibutylsul-
fide has virtually no frothing effect. For communication Nr I see RZhKhim,
1958, Nr 3, abstract 9447.

A. Sh.

1. Glycines--Synthesis   2. Propenes--Synthesis   3. Alkanes--Applications
4. Lead---Flotation

Card 2/2

LIVSHITS, A. K.   137-1958-3-4533

Translation from: Referativnyy zhurnal, Metallurgiya, 1958, Nr 3, p 9 (USSR)

AUTHORS: Livshits, A. K.,   Dudenkov, S. V.

TITLE: Employment of Oxidizing Reagents in the Separation of Collective
             Concentrates (Primeneniye reagentov-okisliteley dlya
             razdeleniya kollektivnykh kontsentratov)

PERIODICAL: Sb. nauchn. tr. Gos. n.-i. in-t tsvetn. met., 1957, Nr 13,
             pp 67-72

ABSTRACT: Investigations were performed on the employment of oxidizing
             reagents for the separation of Cu-Pb concentrate (C). After
             subjecting the C to an oxidizing agent (calcium hypochlorite),
             the flotation of Cu minerals (chalcopyrite) is depressed to a
             greater extent than the flotation of galenite; thus it is possible
             to permit the major portion of galenite to be floated away with
             the froth, while the chalcopyrite remains as the chamber product
             (first method of separation).   If the C is treated first with an
             oxidizing agent (calcium hypochlorite, persulfate of ammonium)
             and then with sulfurous acid, then primarily the Cu minerals are
             converted to froth, while galenite remains as the chamber product
Card 1/2   (second method of separation). Optimal separation results,

137-1958-3-4533

Employment of Oxidizing Reagents in the Separation of Collective Concentrates

equivalent to those achieved with the bichromate method, were
obtained by employing persulfate of ammonium and sulfurous acid.
The Authors describe the mechanism of the proposed flotation
separation method employing oxidizing agents.

A. Sh.

Card 2/2

L IVSHITS, A.K.

137-58-5-8747

Translation from: Referativnyy zhurnal, Metallurgiya, 1958, Nr 5, p 4 (USSR)

AUTHORS: Livshits, A. K., Dudenkov, S. V.

TITLE: Reduction of Butyl Xanthogenate Consumption in Flotation
             Processes (O sokrashchenii raskhoda butilovogo ksantogenata
             pri flotatsii)

PERIODICAL: Byul. tsvetn. metallurgii, 1957, Nr 16, pp 13-15

ABSTRACT: A report on the results of experiments performed in a number
             of milling plants in the Soviet Union in an effort to reduce the con-
             sumption of butyl xanthogenate (establishment of flotation pro-
             cedures and study of the possibilities of replacing butyl xan-
             thogenate with ethyl xanthogenate and frother reagents, particu-
             larly those containing cresyl and xylenol).
                                                                    A. Sh.

             1. Butyl xanthogenate--Applications   2. Ores--Flotation

Card 1/1

137-58-6-11319

Translation from: Referativnyy zhurnal, Metallurgiya, 1958, Nr 6, p 9 (USSR)

AUTHORS: Livshits, A.K., Gabriyelova, L.I.

TITLE: Synthetic Flocculants (Sinteticheskiye flokulyanty)

PERIODICAL: Byul. tsvetn. metallurgii, 1957, Nr 21, pp 12-17

ABSTRACT: The synthesis and testing of efficient flocculants, made by
polymerization and polycondensation, are presented. It is shown
that the best of the American flocculants tested is Separan-2610.
Slightly inferior to Separan is a product of the condensation of
cubic hexamethylenediamine residues, tallol and dichloroethane
(KODT), polyacrylic amides, and a copolymer of vinyl alcohol,
methylolcrotonamide and polyvinyl alcohol. Products of caustic
hydrolysis and polyacrylonitril (PANG-55 and 56) and a product
of the condensation of cubic residues of hexamethylenediamine
and dichloroethane have good flocculating capacities.

A.Sh.

1. Synthetic floculants--Materials   2. Synthetic floculants
--Production

Card 1/1

AUTHORS: Idel'son, Ye.M. and Livshits, A.K.   SOV/136-58-5-2/22

TITLE: Gas Evolution from Diaryldithiophosphates (Phenol
            Aerofloats) (Vydeleniye gazov iz diarilditiofosfatov
            (fenol'nykh aeroflotov))

PERIODICAL: Tsvetnyye Metally, 1958, Nr 5, pp 8 - 13 (USSR)

ABSTRACT: The object of the work described was to find the conditions
            under which hydrogen sulphide and other toxic gases are
            evolved from aerofloat. The experiments were carried out
            with and without the addition of various materials which
            might be expected to stimulate gas evolution. A stream of
            air or nitrogen was passed through the test liquid, the
            temperature being varied in the range 20 - 60 °C. Com-
            parative tests were carried out with the ordinary cresyl
            and xylene as well as the ammonia-cresyl and ammonia-
            xylene aerofloats, whose production is now being undertaken.
            The toxic action of the evolved gas is attributed to the
            presence in it of hydrogen sulphide, no hydrogen arsenide
            being found in the gas and very little, if any, hydrogen
            phosphide. It was found that contamination of the aerofloat
            (especially with water) and heating increased hydrogen-
            sulphide evolution; that the presence of precipitates of

Card 1/2

SOV/136-58-5-2/22

Gas Evolution from Diaryldithiophosphates

unreacted phosphorus pentasulphide had this effect only at temperatures over 50 °C and that hydrogen sulphide dissolved in the aerofloat is removed by heating to 140 °C (in the absence of phosphorus pentasulphide or impurities promoting the decomposition of the aerofloat). The importance is indicated of protecting stored aerofloat from heat and con-tamination and of adhering to the safety instructions in supplement Nr 1 to order Nr 190 of the former Ministry of Non-ferrous Metallurgy of the USSR dated May 20, 1954. Hydrogen-sulphide evolution from the ammonia aerofloats was found to be non-existent or 30-100 times less than from the ordinary cresyl and xylene aerofloats. There are 6 figures, 3 tables and 3 Soviet references.

ASSOCIATION: Gintsvetmet

Card 2/2   1. Diaryldithiophosphates--Properties   2. Hydrogen sulfides
               --Production   3. Poisonous gases--Production

L IVSHITS. A. K.

127-58-6-18/25

AUTHORS: Buzanova, N.M., Mining Engineer and Livshits, A.K., Candidate of Technical Sciences

TITLE: The Action of Surface-active Agents on Filtration of Flotation Concentrates (Deystviya poverkhnostno-aktivnykh veshchestv na fil'tratsiyu flotatsionnykh kontsentratov)

PERIODICAL: Gornyy Zhurnal, 1958, Nr 6, pp 63-67 (USSR)

ABSTRACT: It is important from the practical point of view to increase the productivity of filters and to reduce the humidity of cakes. One of the means to increase the effectiveness of the filtration is the introduction in the suspension of reagents influencing the surface of molecules and the structure of cakes. To speed up the concentration and the filtration, inorganic reagent coalgulators, like lime or alum, are added. These reagents reduce the electrokinetic potential of the molecules in the suspension, and under the influence of cohesive force, sets of molecules are formed which settle quickly. The authors describe synthetic highly-molecular flocculents used for these purposes abroad $\sqrt{\text{Ref. 3 to 8}}$. Some flocculents produced by Soviet industry (KODT, KOD and PANG) are also described.

Card 1/2

127-58-6-18/25

The Action of Surface-Acting Agents on Filtration Concentrates

The efficiency of these Soviet products is represented
graphically. The authors find that the highly-molecular
flocculents act differently on different concentrates. Only
the Separa 2610, produced by the American firm Dow Chemic-
als, speeds up the filtration of all the concentrates;
KODT and KOD increase the filtration productivity of lead,
cupri-pyritic, pyritic and cupri-oxided concentrates and
often reduce the humidity of cakes. PANG increases the
productivity of filtration of oxided lead and copper con-
centrates but does not work on other concentrates.
There are 5 graphs, 1 table and 11 references, 2 of which
are Soviet and 9 American.

ASSOCIATION: (Gintsvetmet)

AVAILABLE: Library of Congress

Card 2/2   1. Filters

LIVSHITS, A.K.

2nd. conl.

SOV/136-59-2-20/24

AUTHOR: Okolovich, A.

TITLE: Organisation of the Flotation-Reagent Section in the
            Standing Committee on Synthetic Surface-Active Agents
            of the GNTK USSR and the Problems Facing It
            (Organizatsiya sektsii flotatsionnykh reagentov v
            postoyannoy komissii po sinteticheskim poverkhnostno
            aktivnym veshchestvam pri GNTK SSSR i yeye zadachi)

PERIODICAL:Tsvetnyye Metally, 1959, Nr 2, pp 84-85 (USSR)

ABSTRACT: One of the four sections of the surface-active agents
            committee of the GNTK of the Sovet Ministrov SSSR
            (Council of Ministers of the USSR) is that dealing with
            flotation reagents. The following have been confirmed
            as members: I.N.Plaksin, corresponding member AN SSSR
            (AS USSR) of IGD of the AS USSR (Chairman);
            O.S.Bogdanov, Professor, Mekhanobr Institute;
            Ye.S.Alekseyev, Sredneural'skiy medeplavil'nyy zavod
            (Sredneural'ky Copper Smelting Works); K.G.Bagatur'yants,
            Gosudarstvennyy komitet (State Committee) of the Council
            of Ministers of the USSR; S.I.Gorlovskiy, Mekhanobr
            Card 1/4   Institute: L.A.Ivanova, Nauchno-issledovatel'skiy

SOV/136-59-2-20/24

Organisation of the Flotation-Reagent Section in the Standing
Committee on Synthetic Surface-Active Agents of the GNTK USSR and
the Problems Facing It

(Gosplan USSR); M.A.Eygeles, Professor, Vsesoyuznyy
nauchno-issledovatel'skiy Institut mineral'nogo syr'ya
(All-Union Scientific Research Institute for Mineral
Raw Materials). The author enumerates the tasks of the
section and notes that at a conference on the
10th December 1958, the programme of work for the section
was adopted. This conference heard the following reports:
S.I.Mitrofanov, Professor, on "Directions and Projects
for Research Work in 1959 in the Field of the Production
and Use of Flotation Reagents"; A.K.Livshits, Candidate
of Technical Sciences on "Xanthate Production Methods";
D.M.Rudkovskiy, Candidate of Technical Sciences on
"Production of Washing Media from Flotation Reagents".
The conference adopted resolutions aimed at increasing
facilities for research on flotation reagent and
improving its co-ordination. At a conference on the
Card 3/4   14th-17th December 1958 of the standing committee on

AUTHORS: Kakovskiy, I.A., Bessonov, S.V., Professor,
            Klassen, V.I., Doctor of Technical Sciences and
            Livshits, A.K.

SOV/136-59-3-17/21

TITLE: On the Use of Radiography in Work on the Theory of
            Flotation (O primenenii radiografii v rabote po teorii
            flotatsii)

ABSTRACT: This collection of letters to the editor were written
            in connection with the publication by Tsvetnyye Metally,
            1958, April, of an article by Professor S.I. Mitrofanov.
            This criticised the use of radiographic methods of
            reagent distribution on the surface of the mineral
            particles.
            I.A. Kakovskiy suggests that since radiography and
            radiometry are the same in principle, Mitrofanov's
            critical remarks should apply to both. He considers
            however, that the experiments of that author were entirely
            unrealistic and unnecessarily complicated. He mentions
            his experiments which showed that it is impossible to
            wash xanthate off a polished silver plate. He also

Card1/5

discounts Mitrofanov's assumption of the existence of the
collector in the electrical double layer and gives some
other factors which he has found to be contrary to
Mitrofanov's views.

S.V. Bessonov of the Irkutskiy gorno-metallurgicheskiy
institut (Irkutsk Mining-metallurgical Institute) welcomes
contributions on methods applicable to flotation-kinetics
research but maintains that Mitrofanov's criticisms of
radiographic methods are experimentally unsupported. He
mentions work at the Institut gornogo dela AN SSSR
(Mining Institute of the Ac.Sc.USSR) which clearly contra-
dicts that author's contention that the results of drying-
films experiments represent the distribution of reagent
over glass as much as over mineral particles. Bessonov
particularly deplores unfounded criticism by Mitrofanov of
a technique which has contributed to the progress and
international reputation of Soviet science but emphasises
that he favours constructive criticism.

V.I. Klassen classifies Mitrofanov's experiments as
artificially contrived to support incorrect ideas. The
Card2/5 basis of these ideas is that when a mineral particle is

removed from the pulp it takes with it an envelope of
reagent-containing water; when the water evaporates the
envelope splits into islands which lead to localised
fixing of the tracer-containing reagent. In correctly
conducted radiographic experiments the possibility of this
happening is carefully avoided, e.g. by repeated washing
of the particle. He also points out that if Mitrofanov's
views were correct, the amount of collector on particles
remaining in the tailings would be much more than on those
in the concentrate: the opposite is found experimentally.
Mitrofanov's attitude is inconsistent since he accepts radio-
metry of powders, to which his own objections should apply.
The author urges further studies in this field.
A.K. Livshits does not deal specifically with Mitrofanov's
article but himself criticises some work in which radio-
graphic methods were used. The author admits that any of
the microradiograms published give a direct picture of the
reagent-distribution in particle surfaces. A general
criticism is that the purity of the reagent is never stated:
Card3/5 but the presence of impurities could alter the radiographic

SOV/136-59-3-17/21

On the Use of Radiography in Work on the Theory of Flotation

       pattern and the presence of radioactive sulphur is
likely to lead to their production. It may well be
impossible to wash the impurities off the mineral
surface. The author complains of the lack of quantitative
data and the frequent discrepancies of results, e.g.
between those of V.I. Klassen and of I.N. Plaksin and
R.Sh.Shafeyev, published in Tsvetnyye Metally, Nr 7 for
1957 and 1958, respectively. He notes that the first
attempts at quantitative radiography confirmed the
validity of doubts on the usefulness of results based on
visual examination of radiographic patterns. The author
regards much of the pattern obtained by Plaksin and
Shafeyev as being due to liquid droplets. He deals with
some other published data and concludes, making specific
recommendation, that much remains to be done to establish
the radiographic method for flotation-kinetic studies.
In the editorial introduction the following are invited
to contribute to the discussion: M.A. Eygeles,
V.A. Mokrousov, O.S. Bogdanov, G.S. Strel'styn,
V.Ya. Khaynman and S.I. Krokhin (workers in flotation-
theory research) and N.V. Matveyenko, M.I. Gorodetskiy,

Card4/5

SOV/136-59-3-17/21

On the Use of Radiography in Work on the Theory of Flotation

M.M. Polyakov and S.N. Kulinin (works' personnel).

ASSOCIATION :   Irkutskiy gorno-metallurgicheskiy institut
                  (Irkutsk Mining-metallurgical Institute)
                  (Bessonov, S. V.)

Card5/5

SOV/136-59-7-3/20

AUTHORS: Dudenkov, S.V., Livshits, A.K.

TITLE: Influence of Collectors on the Degree of Dispersion of Air
            Bubbles

PERIODICAL: Tsvetnyye metally, 1959, Nr 7, pp 14-20 (USSR)

ABSTRACT: The volume and stability of flotation froth depends on the
            size and number of air bubbles. The authors have used a
            nephelometric method (Ref 8) in which a time is determined
            which is approximately proportional to the total air
            surface: with a constant rate of solution aeration the
            value of the time increases with falling bubble diameter.
            Figs 1 and 2 show the time (seconds) as functions of con-
            centrations in distilled water of some frothing agents
            and of various xanthates, respectively. The dependence of
            the time on potassium butyl xanthate concentration in water
            with various concentrations (1-5 mg/litre) of monoethyl
            tetrapropylene glycol ester is shown in Fig 3. The pre-
            sence of heavy-metal salt in the frothing-agent solution
            profoundly effects the time vs. xanthate consumption rela-
Card 1/3   tion (Fig 4 shows curves for zinc sulphate, lead acetate

SOV/136-59-7-3/20

Influence of Collectors on the Degree of Dispersion of Air Bubbles

and copper sulphate). For a more detailed study of the influence of collectors on air-bubble dispersion a given portion of the chamber was photographed with transmitted light and a type Zenit-C camera, the bubbles then being measured and counted on the photograph. A high sensitivity film (300 GOST units) was used with 1/500 sec. exposure at an aperture of 8. The film was examined on a type 5 PO-1 "Mikrofot" device with a 35 cm focal-length objective at a magnification of 16. The results showed (Fig 5) that on introduction of xanthate the mean bubble size in copper-sulphate or lead-acetate solution increases appreciably, that in zinc-sulphate solution remaining practically unchanged. The size distribution of bubbles in frothing agent solutions containing the heavy-metal salts is shown in the table. Total quantity of bubbles is shown as a series of functions of bubble diameter in Fig 6 for potassium butyl-xanthate consumption of 50 - 0 mg/litre, similar but flatter curves were obtained with ethyl or Card 2/3 β-ethoxyethyl potassium xanthates. The dependence of

SOV/136-59-7-3/20

Influence of Collectors on the Degree of Dispersion of Air Bubbles

mean bubble size on the concentration of butyl, ethyl and
β-ethoxyethyl potassium xanthate at a constant concentra-
tion of monomethyl esters of tetrapropylene glycol and
lead acetates shown in Fig 4. The authors briefly discuss
the factors (particularly the nature of the precipitate
formed) influencing bubble size and note that their present
results confirm their previous (Ref 9) conclusion that
fine, insoluble hydrophobic precipitates promote air-
bubble coagulation. There are 7 figures, 1 table and
9 references, 7 of which are Soviet, 1 English and
1 German.

Card 3/3

BAZABIVAM N.M.; LIVSHITS, A.K.

Air dispersion in aqueous solutions and the adsorption of frothers.
Sbor.nauch.trud.GINTSVETMET no.16:81-88 '59.   (MIRA 14:4)
                    (Flotation—Equipment and supplies)

DUDENKOV, S.V.; LIVSHITS, A.K.; SHAFEYEV, R.Sh.

New method of characterizing the disper... of air in solutions
of frothing reagents. Sbor.nauch.trud.GINTSVETMET no.16:89-101
'59.   (MIRA 14:4)
                (Flotation--Equipment and supplies)

LIVSHITS, A.K.; GURVICH, S.M.; MADIYEV, K.M.

Synthesis and the testing of collectors of ement copper. Sbor.
nauch.trud.GINTSVETMET no.16:128-136 '59.   (MIRA 14:4)
    (Copper--Metallurgy) ,   (Flotation--Equipment and supplies)

GURVICH, S.M.; LIVSHITS, A.K.; MADIYEV, K.M.

Preparation and industrial use of butyl aerofloat SK. Sbor.nauch.
trud.GINTSVETMET no.16:137-143 '59.   (MIRA 14:4)
(Butyl aerofloat SK)

GEL'PERIN, N.I.; IDEL'SON, Ye.M.; LIVSHITS, A.K.; ZIL'BERG, V.I.; BORISENKO, A.T.; GABRIYELOVA, L.I.

Improving methods of xanthate production. Report no.1: Preparation of potassium and sodium butyl and theyl xanthates from anhydrous alcoholates. Sbor.nauch.trud.GINSTVETMET no.16:153-169 '59.

(MIRA 14:4)

(Xanthic acid)   (Alcoholates)

GEL'PERIN, N.I.; IDEL'SON, Ye.M.; LIVSHITS, A.K.; BORISENKO, A.T.;
        GABRIYELOVA, L.I.; ZIL'BERG, V.I.

    Improving methods of xanthate production. Report no.2: Preparation
    of potassium and sodium isobutyl and isoamyl xanthates from practically
    anhydrous alcoholates. Sbor.nauch.trud.GINTSVETMET   no.16:170-179
    '59.   (MIRA 14:4)
                (Xanthic acid)   (Alcoholates)

IDEL'SON, Ye.M.; GEL'PERIN, N.I.; LIVSHITS, A.K.; GABRIYELOVA, L.I.

Improving method of xanthate production. Report no.3. Obtaining
high-quality xanthates from water-alcohol alkali solutions. Sbor.
nauch.trud.GINTSVETMET no.16:180-190 '59.   (MIRA 14:4)
                        (Xanthic acid)

LIVSHITS, A.K., kand.tekhn.nauk

"Flotation" by A.M. Guadin. Reviewed by A.K. Livshits. Gor.
zhur. no.12:67-68 D '60.   (MIRA 13:12)

1. Gintsvetmet, Moskva.
                        (Flotation)   (Gaudin, A.M.)

LIVSHITS, A.K.; MADIYEV, K.M.

Mechanism of the collecting action of dixanthogenides. TSvet.
met. 33 no.6:1-3 Je '60.   (MIRA 14:4)
            (Flotation—Equipment and supplies)

LIVSHITS, A.K.; DUDENKOV, S.V.

Effect of the solid phase on froth stability. TSvet. met. 33 no.11:
23-26 N '60.   (MIRA 13:11)
                          (Flotation)

MARGOLIN, Isay Zakharovich; EYGELES, M.A., prof., doktor tekhn. nauk,
    retsenzent; LIVSHITS, A.K., otv. red.; KACHALKINA, Z.I., red.
    izd-va; SABITOV, A., tekhn. red.; SHKLYAR, S.Ya., tekhn. red.

[Coal preparation and dressing of nonmetallic minerals in
heavy suspensions] Obogashchenie uglei i nemetallicheskikh is-
kopaemykh v tiashelykh suspenziiakh. Moskva, Gos. nauchno-tekhn.
izd-vo lit-ry po gornomu delu, 1961. 271 p.   (MIRA 14:6)
        (Coal preparation)   (Ore dressing)

LIVSHITS, A.K.; BEZRODNAYA, R.M.

Speed of the passage of water and solids into the flotation
froth product. TSvet. met. 34 no.11:15-17 N '61.   (MIRA 14:11)
                          (Flotation)

LIVSHITS, A.K.; KUZ'KIN, A.S.

Action of gangue depressants in xanthate flotation with
hydrocarbon oils. TSvet.met. 35 no.2:9-11 F '62. (MIRA 15:2)
(Flotation--Equipment and supplies)

S/137/63/000/002/005/034
A006/A101

AUTHORS: Gabriyelova, L. I., Livshits, A. K.

TITLE: Industrial production of PANG flocculant and its use in dehydrating
                processes

PERIODICAL: Referativnyy zhurnal, Metallurgiya, no. 2, 1963, 7 - 8, abstract
                2G45 ("Sb. tr. n.-i. in-t tsvetn. met.", 1962, no. 19, 279 - 288)

TEXT: The PANG flocculant can be easily produced at concentration plants
from the commercial "Polinak" polymer by acid or alkaline hydrolysis. The use
of 2% aqueous solution of alkali PANG in liquefaction of oxidized Cu-concentrate
under industrial conditions, made it possible to replace three liquefying agents
by two, and eliminate Cu losses in decantation.(up to 1.5 tons/day). Approxi-
mate industrial tests with acid PANG in liquefaction of a cement copper concen-
trate show that at a yield of the concentrate as high as 12 - 15 tons/day, the
addition of 50 - 70 g/ton of flocculant reduces the liquefaction surface by a
factor of 8. Alkali PANG increases the efficiency of filters by a factor of
2 - 2.5 in the operation of Cu-concentrate liquefaction; the moisture content

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Industrial production of...

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in the cakes is reduced by about 3%. By supplying PANG to the decantation tank
of the filter, the efficiency of equipment for filtrating Pb-concentrate pulp
can be risen by a factor of 1.5 - 2.

From the summary

[Abstracter's note: Complete translation]

Card 2/2

LIVSHITS, A.K.; KUZ'KIN, A.S.

Improving conditions and flow sheet for the flotation of
Dzhezkazgan copper sulfide ores with the use of hydrocarbon
oils. Sbor. nauch. trud. Gintsvetmeta no.19:212-239 '62.
(MIRA 16:7)

(Dzhezkazgan region--Copper ores)
(Flotation)

DUDENKOV, S.V.; LIVSHITS, A.K.

Effect of modifier-reagents on the stability of flotation
froths. Sbor. nauch. trud. Gintsvetmeta no.19:273-278 '62.
(MIRA 16:7)

(Flotation)

GABRIYELOVA, L.I.; LIVSHITS, A.K.

Industrial production of the flocculant PANG and its use in
dehydration processes. Sbor. nauch. trud. Gintsvetmeta no.19:
279-288 '62.   (MIRA 16:7)

     (PANG)   (Ore dressing--Equipment and supplies)

GURVICH, S.M.; LIVSHITS, A.K.; POLUBNEVA, E.P.

Production of the OPSB frother. Sbor. nauch. trud. Gintsvetmeta
no.19:289-292 '62.   (MIRA 16:7)

(Flotation--Equipment and supplies)

GABRIYELOVA, L.I.; LIVSHITS, A.K.

Using new effective flocculants for thickening in acid and
mineralized solutions. TSvet. met. 36 no.3:77-78 Mr '63.

(MIRA 16:5)

(Flocculation) (Nonferrous metals—Metallurgy)

LIVSHITS, A.K.; KUZ'KIN, A.S.

Action of hydrocarbon oils during flotation. TSvet. met. 36
no.5:17-24 My '63.   (MIRA 16:10)

LIVSHITS, A.K.; SHUBOV, L.Ya.

Reagents in the flotation of copper precipitate. TSvet. met.
36 no.10:11-16 O   '63.   (MIRA 16:12)

LIVSHITS, A. K.;DUDENKOV, S. V.

"Some factors in flotation froth stability."

report submitted for 7th Intl Mineral Processing Cong, New York, 20-25 Sep 64.

DERYAGIN, B.V.; SAMYGIN, V.D.; LIVSHITS, A.K.

Flocculation of mineral particles under turbulent conditions.
Part 1: Mechanism of flocculation. Koll.zhur. 26 no.2:179-185
Mr-Ap '64. (MIRA 17:4)

1. Nauchno-issledovatel'skiy institut tsvetnykh metallov, Moskva.

LIVSHITS, A Kh

The present author shows by an example that even the weaker condition (B) is not required for the [...] theorem. [...]

$(j=0, 1, \cdots, s-1)$ are obtained, where $a_j = a_j + a_j b_j$ and $b_j = b_j + \ldots$ The $\ldots$

"σ-Dedekindian" if $a \ge b$ and $a(b+c) = b+ac$. [Compare in this connection O. Ore, Trans. Amer. Math. Soc. 41, 266–275 (1937).] Theorem. The Zassenhaus series (3) and (4) of any two normal series 1 and 2 are such that the pairs of corresponding factors $a \ldots a \ldots$ and $b \ldots b \ldots$ are isomorphic, and the factor whose extension $\ldots$ has the form $\ldots$ if and only if the relation of normality satisfies the following conditions for any four elements $\ldots$

$x_{j} \ldots N \ldots y_{j} + x_{j} \ldots$ element y with $\ldots$ is σ-Dedekindian such $\ldots$

$\ldots$ normal $\ldots$ compared $\ldots$
Math. [Mat. Sbornik] N. S. 16/58, 59–72 (1945). [these Rev. 8, 253] are transferred to lattice theory.

K. A. Hirsch (Newcastle-upon-Tyne).

Source: Mathematical Reviews,   Vol 10, No. 10

LIVŠIC, A. H.

Livšic, A. H. On the theory of direct decompositions of
groups. Doklady Akad. Nauk SSSR (N.S.) 64, 289–292
(1949). (Russian)

The author extends a result due to Kuroš [Bull. Acad.
Sci. URSS. Sér. Math. [Izvestia Akad. Nauk SSSR] 10,
47–72 (1946); these Rev. 8, 309]. An L-subgroup of a group
G is defined to be a subgroup of the center Z of G which is a
homomorphic image of G/K, where K is the commutator
of G. The author proves the theorem that if each L-subgroup
of G is periodic (with a suitable minimal condition on its
primary components) then each two direct decompositions
of G have centrally isomorphic refinements. Use is made of
the work of Baer on direct decompositions [Trans. Amer.
Math. Soc. 62, 62–98 (1947); Bull. Amer. Math. Soc. 54,
167–174 (1948); these Rev. 9, 134, 410]. The proof pro-
ceeds from the case due to Kuroš, where the number of
summands in each decomposition is finite, by intermediate
stages to the case where the summands in one or both of the
decompositions are indexed by arbitrary classes. The theorem
is proved by means of a lemma which employs the concept of
p-F-group. A group G is a p-F-group if it has a single sub-
group which is unique with the property of being primary,
belonging to the prime p, and being an L-subgroup of G. [On
page 289, the equations $A' \times B' = B' \times D' = D' \times E' = E' \times A'$
should be replaced by $A' \times B' = B' \times C' = C' \times D' = D' \times A'$.]

F. Haimo, St. Louis, Mo.
Vol   Adic.   7

USSR/Mathematics - Structures, Dedekind   May/Jun 51

"Direct Decompositions of Completely Dedekind Struc-
tures," A. Kh. Livshits, Moscow

"Matemat Sbor" Vol XXVIII, No 3, pp 481-502

Devoted to problem on existence of directly equal
"elongations" for 2 arbitrary direct decomps of
unit completely Dedekind structure and is develop-
ment of the works of A. G. Kurosh, "Isomorphisms
of Direct Decompositions" in "Iz Ak Nauk SSSR, Ser
Matemat" (Vol VII and X, 1943 and 1946, pp 185-202
and 47-72). Cf R. Baer, "Direct Decompositions,"

USSR/Mathematics - Structures, Dedekind   May/Jun 51
                    (Contd)

"Trans Amer Math Soc" 62, 1947, 62-98; "Direct De-
compositions Into Infinitely Many Summands" 1bidem,
64, 1948, 519-551. Submitted 22 Sep 49.

186T54

186T54

LIVSHITZ, A. KH., CAND PHYS-MATH SCI, DIRECT EXPANSIONS
IN ALGEBRAIC CATEGORIES. MOSCOW, 1960. (MOSCOW STATE PED
INST IM V. I. LENIN). (KL, 2-61, 199).

KUROSH, A.G.; LIVSHITS, A.Kh.; SHUL'GEIFER, Ye.G.

Fundamentals of the theory of categories. Uep. mat. nauk 15
no. 6:3-52 N-D '60.   (MIRA 14:2)
                    (Topology)

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S/039/60/051/004/004/007XX
C 111/ C 333

AUTHOR: Livshits, A. Kh. (Moscow)

TITLE: Direct decompositions with indecomposable
             summands in algebraic categories

PERIODICAL: Matematicheskiy sbornik, v. 51, no. 4, 1960,
             427-458

TEXT: The paper treats direct decompositions with indecomposable
summands in algebraic categories and continues the paper of A. G.
Kurosh (Ref.1: Pryamyye razlozheniya v algebraicheskikh kategoriyakh
[Direct decompositions in algebraic categories] , Trudy Mosk. matem.
o-va, 8 (1959), 391-412); the knowledge of (Ref.1) is proposed.
The representation is carried out in terms of the semirings, which
according to (Ref.1) is equivalent to a representation in terms of
the categories.

The semiring $H(g,g)$ of the mappings into itself of an object g of
the category K with summation of mappings (see (Ref.1)) is a set
in which an associative multiplication is defined for every pair
of elements and an addition for some families of elements (= mappings),
where a.) there exists a unit ε in the set $H(g,g)$, b.) it holds
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Direct decompositions with . . .

$$\sum_{i \in I} \alpha_i = \sum_{s \in S} \left(\sum_{i \in I_s} \alpha_i \right) \tag{1}$$

if the index set I is decomposed into subsets I_s, $s \in S$, with void
intersection
c.) it holds

$$\sum_{i \in I} \gamma \alpha_i = \gamma \sum_{i \in I} \alpha_i \quad , \quad \sum_{i \in I} \alpha_i \delta = \left(\sum_{i \in I} \alpha_i \right) \delta \tag{2}$$

for arbitrary γ , δ if $\sum_{i \in I} \alpha_i$ exists, d.) there exists a zero mapping
ω which is unique.
$\chi \in H(g,g)$ is the direct sum of the $\alpha_i \in H(g,g)$, $i \in I$:

$$\chi = \sum_{i \in I} \alpha_i, \text{ if } \alpha_i^2 = \alpha_i, \quad \alpha_i \alpha_j = \omega \text{ for } i \neq j, \text{ the set of}$$

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Direct decompositions with . . .

mappings α_i is summable and $\sum\limits_{i \in I} \alpha_i = \chi$; α_i are called direct summands.

The mappings α and β are called to be bound to the right (left), if $\alpha\beta = \beta$, $\beta\alpha = \alpha$ ($\alpha\beta = \alpha$, $\beta\alpha = \beta$). The direct summand α of the mapping χ is subordinate to the direct summand β of χ, if there exists a direct summand γ of χ such that α and γ are bound on the right and β and γ on the left. The mapping γ is called normal relative to the mapping χ, if $\gamma\chi = \chi\gamma = \gamma$ and if from the fact that a mapping, which is representable as product of γ and of arbitrary direct summands of χ, is idempotent, it follows that it is direct summand of χ.

Condition ($*$): For every indecomposable direct summand α of the mapping χ and for an arbitrary pair of complementary direct summands β, $\bar{\beta}$ of χ: $\chi = \beta + \bar{\beta}$, there exists a normal mapping γ with respect to χ such that at least one of the following conditions is satisfied:

1.) $\gamma \cdot \alpha\bar{\beta}\alpha = \alpha\bar{\beta}\alpha \gamma = \alpha$ 2.) $\gamma \, \alpha\bar{\beta}\alpha = \alpha\bar{\beta}\alpha \cdot \gamma = \alpha$

Theorem 1: $\chi \in H(g,g)$ is said to satisfy ($*$). If χ possesses a

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χ

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direct decomposition with a finite number of indecomposable summands, then every direct decomposition of χ can be continued to a indecomposable decomposition, and all the direct decompositions of χ with indecomposable summands possess the same number of summands, where to every summand of one of two decompositions with indecomposable summands there is a summand of the other decomposition such that the corresponding summands are subordinate to each other.

Theorem 2: If $\chi \in H(g,g)$ satisfies the conditions of theorem 1 and if

$$\chi = \alpha_1 + \alpha_2 + \ldots + \alpha_n = \beta_1 + \beta_2 + \ldots + \beta_n \qquad (29)$$

with indecomposable summands, then a one-to-one correlation can be given such that every α_i is subordinate to the corresponding β_j.

Theorem 3 is an extension of the preceding statements to direct decompositions with an infinitely number of direct summands.

Condition (**): If $\chi \in H(g,g)$ and

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Direct decompositions with . . .

$$\chi = \sum_{i \in I} \alpha_i \quad , \tag{56}$$

then to every indecomposable direct summand β of χ a finite number of summands $\alpha_{i_1}, \alpha_{i_2}, \ldots, \alpha_{i_n}$ from (56) can be given so that there is no $\gamma \in H(g,g)$ for which $\beta \bar{\alpha}' \gamma = \beta$, where $\alpha' = \alpha_{i_1} + \alpha_{i_2} + \ldots + \alpha_{i_n}$.

Theorem 4: Assume that $\chi \in H(g,g)$ satisfies (*) and (* *). For any two decompositions

$$\chi = \sum_{i \in I} \alpha_i = \sum_{i \in I} \beta_j \tag{59}$$

with indecomposable summands, a $\beta_k(\alpha_1)$ can be given to every $\alpha_1(\beta_j)$ so that the corresponding summands are subordinate to each other. Two direct summands α and β of χ are called similar, if

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Direct decompositions with . . .

there is a sequence of direct summands of χ : $\alpha = \alpha_0$, α_1 , α_2 ,... $\iota_n =$ $= \beta$, such that α_{i-1} and α_i (i = 1,2,..., n) are bound either from the right or the left.

Theorem 6: Assume that $\chi \subseteq H(g,g)$ satisfies (*), (**). Two arbitrary direct decompositions of χ with indecomposable summands then are similar.

The given results are applied to groups corresponding to the scheme of (Ref. 1): For every direct factor A and every pair of complementary factors B, $\bar{B}$ of the group G, G = B $\times \bar{B}$, it is said to be satisfied: 1.) A = $A_1 \times A_2$, 2.) the endomorphism $\alpha \beta \alpha'$ of G induces the authomorphism of A_1, 3.) the endomorphism $\alpha \beta \alpha$ of G induces the automorphism of A_2; (α ,β ,$\bar{\beta}$ are endomorphisms of G mapping every element of G onto its component in A, B, $\bar{B}$).

Theorem 7 sates that, if G satisfies these conditions, the unit ε of the semiring of endomorphisms H(G,G) of G satisfies the condition (*).

Theorem 8: If the exact category (in the sense of D. A. Buchsbaum Card 6/7

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(Ref. 6: Exact categories and duality, Trans. Amer. Math. Soc., 80 (1955), 1-34)) $\mathcal{O}$ satisfies the bichaind condition, then the unit $\mathcal{E}$ of the ring $E(g,g)$ of the mappings of an arbitrary object g of the exact category A in itself satisfies the condition (*).

The author mentions O. Yu. Shmidt, O. N. Golovin and Ye. N. Mochul'skiy.

There are 8 references: 3 Soviet-bloc and 5 non-Soviet-bloc. The four most recent references to English-language publications read as follows: R. Baer, Direct decompositions, Trans. Amer. Math. Soc., 62 (1947), 62-98; R. Baer, Direct decompositions into infinitely many summands, Trans. Amer. Math. Soc., 64 (1948), 519-551; D. A. Buchsbaum, Exact categories and duality, Trans. Amer. Math. Soc., 80 (1955), 1-34; M. Atiyah, On the Krull-Schmidt theorem with application to sheaves, Bull. Soc. Math. France, 84 (1956), 307-317.

SUBMITTED: November 13, 1958

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LIVSHITS, A.Kh.

Direct decompositions in algebraic categories. Trudy Mosk.mat.
ob-va 9:129-141 '60.   (MIRA 13:9)
              (Algebra, Abstract)

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C 111/ C 333

/6.2000

AUTHOR: Livshits, A. Kh.

TITLE: Direct Decompositions of Idempotents in Semigroups

PERIODICAL: Doklady Akademii nauk SSSR, 1960, Vol. 134, No. 2,
            pp. 271-274

TEXT: A. G. Kurosh developed in (Ref.1) a theory of direct decom-
positions in the categories with partial summation of the mappings.
In (Ref.2,3) the author further developed the theory. Thereby two
parallel theories of the direct decompositions exist: a structure-
theoretical one and a category-theoretical one. In the present paper
the author tries to combine the two theories in terms of the semi-
group theory. In a semigroup H with zero and unit the author con-
siders maximal systems of pairwise orthogonal idempotents and in-
vestigates the relation between these systems. After ten defini-
tions he formulates seven theorems without proof. From theorem 1
one obtains the results (Ref.3) of the author, from theorem 2 the
results (Ref. 1,5) of Kurosh. Moreover, from the theorems there
follow also certain results of Ye. N. Mochul'skiy (Ref.4) and of
R. Baer (Ref.6), furthermore:
Theorem 7: Two arbitrary decompositions of an associative ring

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Direct Decompositions of Idempotents in Semigroups

with unit into a complete direct sum possess a common continuation.

There are 6 references: 5 Soviet and 1 American.

[Abstracter's note: (Ref.1) is a paper of A. G. Kurosh in Tr. Mosk. matem. obshch., 1959, Vol. 8, 391;(Ref.5) is a paper of A. G. Kurosh in Izvestiya Akademii nauk SSSR, Seriya matematicheskaya, 1943, Vol.7 185;(Ref.2) is a paper of the author in Matematicheskiy sbornik, 1960, Vol.51, 4; (Ref.3) is a paper of the author in Tr. Mosk. matem. obshch., 1960, Vol. 9, 129].

PRESENTED: April 26, 1960, by P. S. Aleksandrov, Academician
SUBMITTED: April 22, 1960

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