GVOZDEV, A.A., prof., doktor tekhn.nauk; KRYLOV, S.M., kand.tekhn.nauk;
PETROVA, V.V., red.izd-va; SHERSTNEVA, N.V., tekhn.red.

[Instructions for calculating statically indeterminate reinforced
concrete construction elements taking into account the redis-
tribution of stresses] Instruktsiia po raschetu staticheski neopre-
delimykh zhelezobetonnykh konstruktsii s uchetom pereraspredeleniia
usilii. Moskva, Gos.izd-vo lit-ry po stroit., arkhit. i stroit.
materialam, 1960. 109 p.                                (MIRA 13:6)

1. Akademiya stroitel'stva i arkhitektury SSSR. Institut betona i
zhelezobetona, Perovo. 2. Deystvitel'nyy chlen Akademii stroitel'stva
i arkhitektury SSSR (for Gvozdev).
      (Reinforced concrete)      (Strains and stresses)

82196

15.3200                                    S/097/60/000/03/01/003

AUTHORS:      Gvozdev, A.A., Professor, Doctor of Technical Sciences, Mikhaylov,
              K.V., Nikula, I., Candidates of Technical Sciences

TITLE:        Glass-Reinforced Plastics for Reinforcing of Concrete Structures

PERIODICAL:   Beton i Zhelezo-Beton, 1960, No. 3, pp. 105 - 111

TEXT:         The article deals with the latest development in the field of rein-
forced concrete, consisting in the employment of non-metal reinforcing material
on the basis of fiber-glass. The idea was first expressed by architect A.K.
Burov in 1941; since that time extensive research work has been done in the USSR
and abroad. Scientists have come to the conclusion, that fiber-glass alone is
unsuitable as reinforcement; it can be used, however, in the shape of bars with
plastic binders; for better adhesion fiber-glass is treated with silicohydride
combinations (silanes). From 1958 to this date special investigations were con-
ducted by the Institute of Concrete and Reinforced Concrete of the ASiA of the
USSR. For reinforcing material strips of glass veneer sheets of the Leningrad-
skiy zavod sloistykh plastikov (Leningrad Laminated Plastics Plant) were used.
This veneer contained about 67% of fiber-glass by weight, and 40% by volume.
The tensile strength of the fiber-glass of non-alkaline composition 14-16 $\mu$ in

Card 1/4                                                          X

82196

S/097/60/000/03/01/003

Glass-Reinforced Plastics for Reinforcing of Concrete Structures

diameter is given as being 8,000-9,000 kg/cm$^2$ (in the air); the same fiber- glass, but calcium-chloride-dried, increases in tensile strength to 13,500-15,000 kg/cm$^2$. The arithmetic mean value of tensile strength of glass veneer strips is equal to 11,750 kg/cm$^2$, in accordance with tests conducted on 150 samples of strips 50-70 cm long. The article gives a formula which shows to what extent the tensile strength depends upon the duration of stress being applied. At a given time the tensile strength has decreased by 35%. Tests have shown that after 10 hours of stress application the coefficient of decrease of tensile strength is 0.7. Tensile strength of fiber-glass is known to depend upon the medium in which it is situated. In this connection tests were conducted in different mediums, which are characteristic of the process of concrete production. In using Ca(OH)$_2$ which is similar to the action of concrete on reinforcement, it appeared that alkali and water have little effect on the tensile strength of fiber-glass veneer, reducing it by 7-8%. The reaction to high temperature was unfavorable, proving that steaming or autoclave treatment are prohibitive for fiber-glass reinforcement. Tests have shown that in using fiber-glass veneer, it is necessary to allow for reduction in tensile strength up to 40% of the initial nominal strength. Tests were also performed to determine the development of deformation of fiber-glass veneer under brief and long-lasting load. It can be seen that the ratio

Card 2/4

82196

S/097/60/000/03/01/003

Glass-Reinforced Plastics for Reinforcing of Concrete Structures

between the plastic part of the deformation and the final one remains an almost constant value until the breaking point. Tests which consisted in pulling out fiber-glass veneer strips 10-15 cm long from the concrete revealed that the average value of tensile strength of adhesion does not exceed 10 kg/cm$^2$. The pulling effort on the strips did not extend to a greater depth than 5-7 cm. Due to the low module of elasticity of glass reinforcing plastics, the summary losses of tension due to creeping and shrinkage of concrete did not exceed 5-6% as compared to 15-20% in case of high-grade wire. Table 2 shows the results of tensile strength and crack resistance tests performed on 15 concrete bars 70-200 cm long, reinforced with glass plastics. The results of the tests agree with the calculated theoretical values, which proves that in designing glass-plastics reinforced concrete it is possible to use the calculating device of Instruction CH 10-57 (SN 10-57). It is economically justifiable to employ glass-plastics reinforcement, when for technical considerations it is not possible to use steel reinforcement. A great deal of research work is yet to be done, until glass-plastics reinforcement can compete with steel reinforcement. The Institut betona i zhelezobetona (Institute of Concrete and Reinforced Concrete) of ASiA USSR

Card 3/4

82196

S/097/60/000/03/01/003

Glass-Reinforced Plastics for Reinforcing of Concrete Structures

YuzhNII, KhIIKS, Institut stroitel'stva i arkhitektury AN BSSR (Institute of Construction and Architecture) and others are engaged in further development work. There are 4 photographs, 8 graphs, 4 tables and 1 Soviet reference.

Card 4/4

GVOZDEV, A.A., doktor tekhn.nauk, prof.

Current problems in developing precast prestressed reinforced
concrete construction elements. Bet.i zhel.-bet. no.7:295-297
Jl '60.                                      (MIRA 13:7)

1. Deystvitel'nyy chlen Akademii strotiel'stva i arkhitektury.
        (Precast concrete)

GVOZDEV, A.A., doktor tekhn.nauk, prof.; DMITRIYEV, S.A., kand.tekhn.nauk

Designing cross sections according to the tendency to form cracks.
Bet.i zhel.-bet. no.7:331-332 Jl '60.                    (MIRA 13:7)
           (Strains and stresses)

GVOZDEV, A.A., prof., doktor tekhn.nauk; KRYLOV, S.M., kand.tekhn.nauk;
KLIMOVA, G.D., red.izd-va; KASIMOV, D.Ya., tekhn.red.

[Instructions for calculating statistically indeterminate
reinforced-concrete construction elements taking the redistribution
of stresses into account] Instruktsiia po raschetu staticheski
neopredelimykh zhelezobetonnykh konstruktsii s uchetom pereraspre-
deleniia usilii. Izd.2. Moskva, Gos.izd-vo lit-ry po stroit.,
arkhit. i stroit.materialam, 1961.  109 p.

(MIRA 15:2)

1. Akademiya stroitel'stva i arkhitektury SSSR.  Institut betona
i zhelezobetona, Perovo. 2. TSentral'naya laboratoriya teorii
zhelezobetona i armatury Nauchno-issledovatel'skogo instituta
betona i zhelezobetona Akademii stroitel'stva i arkhitektury SSSR
(for Gvozdev, Krylov).
        (Strains and stresses)    (Reinforced concrete)

TEMKIN, L.Ye., inzh., nauchn. red.; OVSYANKIN, V.I., red.; STRELETSKIY, N.S.,
prof., red.; GVOZDEV, A.A., prof., red.; IVANOV, Yu.M., red.; SE-
MENTSOV, S.A., kand. tekhn. nauk, red.; GALKIN, Ya.G., red.; KRASIL'-
NIKOV, P.A., red.; MURASHEV, V.I., red. [deceased]; NIKITIN, N.V.,
red.; TAL', K.E., kand. tekhn. nauk, red.; VILKOV, G.N., red. izd-va;
GARNUKHIN, Ye.K., tekhn. red.

[Papers from the International Conference on Designing Building
Elements] Mayerialy Mezhdunarodnogo soveshchaniia po raschetu stroitel'-
nykh konstruktsii. Moscow, 1958. Moskva, Gos. izd-vo lit-ry po stroit.,
arkhit. i stroit. materialam, 1961.  258 p.                (MIRA 14:7)

1. Mezhdunaronoye soveshchaniye po raschetu stroitel'nykh konstruktsiy.
Moscow, 1958. 2. Deystvitel'nyy chlen Akademii stroitel'stva i arkhitek-
tury SSSR (for Streletskiy, Gvozdev). 3. Chlen-korrospondent Akademii
stroitel'stva i arkhitektury SSSR (for Sementsov, Tal')
                          (Building)

GVOZDEV, A.A., doktor tekhn. nauk, prof.; CHINENKOV, Yu.V., kand. tekhn. nauk; IFTINKA, G.A., red. izd-va; KLIMOVA, G.D., red. izd-va; MOCHALINA, Z.S., tekhn. red.

[Handbook on the design of three-dimensional reinforced concrete thin-walled roofs and spans] Instruktsiia po proektirovaniiu zhelezobetonnykh tonkostennykh prostranstvennykh pokrytii i perekrytii. Moskva, Gos. izd-vo lit-ry po stroit., arkhit. i stroit. materialam, 1961. 334 p.

(MIRA 15:2)

1. Akademiya stroitel'stva i arkhitektury SSSR. Institut betona i zhelezobetona, Perovo. 2. Nauchno-issledovatel'skiy institut betona i zhelezobetona Akademii stroitel'stva i arkhitektury (for Gvozdev, Chinenkov). 3. Deyatvitel'nyy chlen Akademii stroitel'stva i arkhitektury SSSR (for Gvozdev).

(Reinforced concrete construction)
(Roofing, Concrete)

GVOZDEV, A.A., prof.

Stability of thin shells.  Bet. i zhel.-bet. no.10:441-445 0
'61.
(MIRA 14:12)

1.  Deystvitel'nyy chlen Akademii stroitel'stva i arkhitektury
SSSR.

(Roofs, Shell)

MULININ, N.M., kand.tekhn.nauk; DMITRIYEV, S.A., kand.tekhn.nauk;
KRASOVSKAYA,G.M., inzh.; GVOZDEV, A.A., doktor tekhn.nauk,prof.;
KLIMOVA, G.D., red.izd-va; RUDAKOVA, N.I., tekhn. red

[Temporary instructions on the use of thermally strengthened ribbed
cable in prestressed concrete elements] Vremennye ukazaniia po pri-
meneniiu termicheski uprochnennoi katanki periodicheskogo profilia
v predvaritel'no napriazhennykh zhelezobetonnykh konstruktsiiakh.
Moskva, Gosstroiizdat, 1962. 11 p.          (MIRA 15:6)

1. Akademiya stroitel'stva i arkhitektury SSSR. Institut betona i
zhelezobetona, Perovo.2. Deystvitel'nyy chlen Akademii stroitel'stva
i arkhitektury SSSR (for Gvozdev).
                (Concrete reinforcement)

GVOZDEV, A. A.

"A Survey of the Results of Scientific Research of  Pre-stressed Reinforced
Concrete."
report presented at the Intl. Federation of Prestressing, 4th Intl. Congress,
Rome and Naples, 27 May - 2 June 1962.

GVOZDEV, A.A., doktor tekhn.nauk, prof.; DMITRIYEV, S.A., kand.tekhn.nauk;
NEMIROVSKIY, Ya.M., kand.tekhn.nauk

Calculation of the displacements (deflections) of reinforced
concrete elements according to the draft of the new standards
(SNiP 2-V.1-62).  Bet. i zhel.-bet. 8 no.6:245-250 Je '62.

(Precast concrete)
(Flexure)

GVOZDEV, A.A.

Basic objectives of the theory of reinforced concrete for the next twenty years. Izv.ASiA 4 no.4:3-8 '62.     (MIRA 16:1)

1. Deystvitel'nyy chlen Akademii stroitel'stva i arkhitektury SSSR.

(Reinforced concrete construction)
(Building research)

GVOZDEV, A.A., doktor tekhn.nauk, prof., red.; ZUBKOVA, M.S., red.
izd-va; GOL'BERG, T.M., tekhn. red.

[Experimental and theoretical research on reinforced concrete
structures] Eksperimental'no-teoreticheskie issledovaniia zhe-
lezobetonnykh konstruktsii. Pod red. A.A.Gvozdeva. Moskva,
Gosstroiizdat, 1963.  253 p.                      (MIRA 16:7)

1. Akademiya stroitel'stva i arkhitektury SSSR. Institut betona
i zhelezobetona, Perovo. 2. Deystvitel'nyy chlen Akademii
stroitel'stva i arkhitektury SSSR (for Gvozdev).
(Reinforced concrete construction)

GVOZDEV, A.A., prof.

"Physical bases for the theory of the strength of concrete and reinforced concrete" by O.IA. Berg.  Reviewed by A.A.Gvozdev.
Bet. i zhel.-bet.  9  no.2:92  F  '63.                    (MIRA 16:5)

1. Deystvitel'nyy chlen Akademii stroitel'stva i arkhitektury SSSR.
            (Concrete--Testing)  (Berg, O.IA.)

TEMKIN, L.Ye., inzh., red.; GVOZDEV, A.A., doktor tekhn. nauk,
prof., red.; SHITOVA, L.N., red.izd-va; RODIONOVA, V.M.,
tekhn. red.

[Construction specifications and regulations] Stroitel'nye
normy i pravila. Moskva, Gosstroiizdat. Pt.2. Sec.V. ch.1.
[Specifications for the design of concrete and reinforced-
concrete structures] Betonnye i zhelezobetonnye konstruktsii;
normy proektirovaniia (SNiP II-V. 1-62). 1962. 100 p.
(MIRA 16:12)

1. Russia (1923- U.S.S.R.) Gosudarstvennyy komitet po delam
stroitel'stva. 2. Gosudarstvennyy komitet Soveta Ministrov
SSSR po delam stroitel'stva (for Temkin). 3. Nauchno-
issledovatel'skiy institut betona i zhelezobetona Akademii
stroitel'stva i arkhitektury SSSR (for Gvozdev).
(Concrete construction)
(Reinforced concrete construction)

GVOZDEV, A.A. (Moscow):

"Creep of concrete".

report presented  at the All-Union Congress on Theoretical and Applied
Mechanics, Moscow, 29 Jan - 5 Feb 64.

KLYACHKO, A.L., inzh.; ODINOV, M.I., inzh.; GLUKHOVSKIY, K.A.,
kand. tekhn. nauk, inzh., red.; GVOZDEV, A.A., doktor
tekhn. nauk, prof., red.; GORENSHTEYN, B.V., kand.
tekhn. nauk, red.; KOSTYUKOVSKIY, M.G., kand. tekhn.
nauk, red.; KRYLOV, N.A. doktor tekhn. nauk, red.;
KUREK, N.M., kand. tekhn. nauk, red.; LEVINSKIY, L.G.,
inzh., red.; LOBANOV, N.D., inzh., red.; MOROZOV, A.P.,
inzh., red.; ONIASHVILI, O.D., doktor tekhn. nauk, prof.,
red.; SAKHNOVSKIY, K.V., doktor tekhn. nauk, prof., red.;
FILIN, A.P., doktor tekhn. nauk, prof., red.; YEFIMOV,
A.D., inzh., nauchn. red.

[Three-dimensional structural elements in the U.S.S.R.;
materials of the All-Union Conference on Precast
Reinforced Concrete Three-Dimensional Elements held in
November 13-17, 1962 in Leningrad] Prostranstvennye kon-
struktsii v SSSR; po materialam pervogo Vsesoiuznogo so-
veshchaniia po sbornym zhelezobetonnym prostranstvennym
konstruktsiiam, sostoiavshegosia 13-17 noiabria 1962 g.
v Leningrade. Leningrad, Stroiizdat, 1964.  461 p.
(MIRA 17:11)

1. Nauchno-tekhnicheskoye obshchestvo stroitel'noy indu-
strii SSSR. Leningradskoye otdeleniye.

GVOZDEV, A.A., doktor tekhn. nauk, prof., red.; GORYACHEVA, T.V., red.

[Calculating and building reinforced concrete structural
elements; materials on the justification and explanation
of new regulation norms for designing concrete and re-
inforced concrete elements SNiP II-V. 1-62] Raschet i
konstruirovanie elementov zhelezobetonnykh konstruktsii;
materialy po obosnovaniiu i raz"iasneniiu novykh polozhe-
nii norm proektirovaniia betonnykh i zhelezobetonnykh
konstruktsii SNiP II-V. 1-62. Moskva, Stroiizdat, 1964.
214 p.                                        (MIRA 17:11)

TAL', K.E., kand. tekh. nauk; LESSIG, N.N., kand. tekhn. nauk; Prinimali
uchastiye: GVOZDEV, A.A.; ALEKSANDROVSKIY, S.V.; BORISHANSKIY,
M.S.; DMITRIYEV, S.A.; KRILOV, S.M.; MIKHAYLOV, K.V.; MULIN, N.M.;
NEMIROVSKIY, Ya.M.; CHISTYAKOV, Ye.A.; VASIL'YEV, B.F.; BOGATKIN,
I.L.; ZALESOV, A.S.; NIKITIN, I.K.

New standards SNiP II-V. 1-62 for the design of concrete and
reinforced concrete elements. Bet. i zhel.-bet. 9 no.3:97-102
Mr. '63. (MIRA 16:4)

1. Nauchno-issledovatel'skiy institut betona i zhelezobetona
Akademii stroitel'stva i arkhitektury SSSR (for all except
Vasil'yev, Bogatkin, Zalesov, Nikitin). 2. Gosudarstvennyy
institut tipovogo proyektirovaniya i tekhnicheskikh issledovaniy
(for Vasil'yev, Bogatkin, Zalesov, Nikitin).

GVOZDEV, A.A., doktor tekhn. nauk, prof., red.

[Crack resistance and deformability of normal and pre-
stressed concrete elements] Treshchinostoikost' i de-
formativnost' obychnykh i predvaritel'no napriazhennykh
zhelezobetonnykh konstruktsii. Moskva, Stroiizdat, 1965.
281 p.                                    (MIRA 18:8)

GVOZDEV, A.A.

Direction of displacements in a longitudinal wave propagating
along the free boundary of an elastic medium. Izv. AN SSSR.
Fiz. zem. no.2:65-68  '65.                        (MIRA 18:6)

1. Institut fiziki Zemli AN SSSR.

L 00350-66    EWT(m)

ACCESSION NR: AP5018153                     UR/0097/65/000/007/0001/0008
                                            666.97.017:539.374

AUTHORS: Gvozdev, A. A. (Doctor of technical sciences, Professor);
Aleksandrovskiy, S. V. (Candidate of technical sciences); Bagriy, E. Ia. (Engineer)

TITLE: Creep of concrete under time-varying stresses

SOURCE: Beton i zhelezobeton, no. 7, 1965, 1-8

TOPIC TAGS: concrete, creep characteristic, creep mechanism, construction material

ABSTRACT: A study is made of creep in concrete under time-varying stresses, for
example, stresses due to temperature and humidity fluctuations. Special experi-
ments were set up by the author while working in the Tsentral'naya laboratoriya
teorii zhelezobetona NIIZhB, Gosstroya SSSR (Central Laboratory of Reinforced
Concrete Theory, NIIZhB, Gosstroy SSSR), and the results of these tests are re-
ported. Creep was studied under conditions of centered compression of vibrated
concrete of weight content 1:1.9:4.4 with a water-cement ratio of 0.65. The ori-
gin and content of the cement and aggregates are given (no special analysis was
made of the water). Sample specimens were made in the form of prisms of

Card 1/2

L 00350-66
ACCESSION NR: AP5018153

dimensions 7 x 7 x 60 cm.  The specimens were sealed in paraffin, petroleum jelly, and polyethylene film after a 72-hour cure.  A special lever apparatus was developed for use in loading and unloading the concrete specimens.  Brief descriptions of instrumentation and temperature-humidity control devices are given.  The modulus of elasticity of the concrete under compression obeys the equation

$$E(\tau) = 3.3\left(1 - 0.575\, e^{-0.072\tau}\right) 10^5 \; \kappa\Gamma/c\kappa\iota^2 \, ,$$

where $E(\tau)$ is in kg/cm$^2$ and $\tau$ is the compressive stress.  Several specimens were exposed to constant loading only in order to provide experimental control.  A review is made of certain theoretical creep equations, and experimental measurements are compared with theory.  Empirical parameters for certain creep equations are estimated on the basis of experimental observations.  The authors conclude that the applicability of the theory of an elastically creeping body depends upon accurate selection of the analytic expressions for the "hereditary" functions of the theory.  Orig. art. has:  7 figures and 7 equations.
ASSOCIATION:  none

SUBMITTED:  00                    ENCL:  00                    SUB CODE:  MT

NO REF SOV:  010                  OTHER:  001

Card 2/2

LEVANOV, Nikolay Mikhaylovich, prof., doktor tekhn. nauk;
    GOVORKIN, Dmitriy Grigor'yevich, dots., kand. tekhn.
    nauk; KUZNETSOV, G.F., prof., doktor tekhn. nauk;
    GVOZDEV, A.A., prof., doktor tekhn. nauk

    [Reinforced concrete elements] Zhelezobetonnye kon-
    struktsii. Moskva, Vysshaia shkola, 1965.   871 p.
                                    (MIRA 18:10)

GVOZDEV, A.F., otv. za vypusk

[Report to the Fifth World Congress of Trade Unions on the
activities of the World Federation of Trade Unions] Otchet
V Vsemirnomu kongressu profsoiuzov o deiatel'nosti Vse-
mirnoi federatsii profsoiuzov, 1957-1961. n.p.  Profizdat,
1961.  674 p.                                    (MIRA 15:6)

1. World Federation of Trade Unions.
        (Trade unions)

S/148/60/000/002/008/008

/2.7520

AUTHORS:     Minkevich, A.N., Gvozdev, A.G.

TITLE:       Titanizing of Steel in a Molten Salt Bath

PERIODICAL:  Izvestiya vysshikh uchebnykh zavedeniy, Chernaya metallurgiya, 1960, Nr 2, pp 151 - 156

TEXT:          Information is given on results of experiments on titanizing of 08 and 50 grade steels in a molten salt bath. Titanizing was successfully performed at 950° and 1,100°C during 0.5 - 2 hours in a bath containing 80 - 90% molten sodium chloride and 10 - 20% fine granulated $TiO_x$ alloy (containing about 10% (at.) $O_2$). Melting and utilization of the bath was conducted under an argon shield. It is desirable in further experiments to investigate the possible utilization of the bath without a shielding gas. It is also recommended to check the possibility of replacing the powder of a specially molten titanium alloy with oxygen by titanium powder contaminated with oxygen to about the required concentration. Without the indicated experiments the recommendation of an extended use of the aforementioned bath will be premature. The titanized layer formed on 08 steel in the bath consists of a

Card 1/2

Titanizing of Steel in a Molten Salt Bath          S/148/60/000/002/008/008

thick layer of columnar grains separated from the core by a boundary line,
and of a thin harder external zone. The columnar grains are solid solutions
of titanium in $\alpha$ -iron. In a part of this zone, adjacent to the external
thin zone, sometimes the separation of excessive titanides, precipitating
during slow cooling, was observed. Data of spectral analysis, carried out
under the supervision of V.G. Koritskiy, show that the external zone contains
about 30% titanium. According to data from X-ray analysis, the external zone
of the layer on 08 grade steel is $FeTi_2$ titanide; on 50 grade steel it is
titanium carbide, TiC. The titanized layer formed on the steel in the in-
vestigated bath has high corrosion and acid resistance.
There are: 4 graphs, 2 sets of microphots, 1 table and 7 references, 2 of
which are Soviet and 5 English.

ASSOCIATION: Moskovskiy institut stali (Moscow Steel Institute)

SUBMITTED:    October 6, 1958

Card 2/2

AVRAAMOV, Yu.S.; GVOZDEV, A.G.; LIVSHITS, B.G.

Surface energy of single crystals of the Fe - 3% Si alloy.
Izv. vys. ucheb. zav.; chern. met. 8 no.9:142-145 '65.

(MIRA 18:9)

1. Moskovskiy institut stali i splavov.

AVRAAMOV, Yu.S.; CHUDAKOV, A.G.; LIVSHITS, B.G.

Diffusive creep of a single crystal of transformer steel.
Izv. vys. ucheb. zav.; chern. met. 8 no.11:103-104 '65.
(MIRA 18.11)

1. Moskovskiy institut stali i splavov.

L 12015-66    EWT(1)/EWT(m)/EWA(d)/T/EWP(t)/EWP(z)/EWT(b)/EWA(c)    IJP(c)   JD
ACC NR: AP5028278              SOURCE CODE:  UR/0020/65/165/002/0316/0318

AUTHORS:  Avraamov, Yu. S.; Gvozdev, A. G.; Livshits, B. G.

ORG:  Institute of Steel and Alloys (Institut stali i splavov)

TITLE:  Concerning the role of the limiting and surface energy in secondary recrystallization

SOURCE:  AN SSSR. Doklady, v. 165, no. 2, 1965, 316-318

TOPIC TAGS:  crystal growth, surface property, recrystallization

ABSTRACT:  The authors have attempted to determine more accurately the ratio of the grain-boundary and surface contribution to the crystal-growth moving force during different stages of secondary recrystallization, without taking into account the retarding action of inclusions and thermal-etching grooves.  The uniform growth of a two-dimensional grain from a stabilized matrix is analyzed to derive the grain-growth moving force.  It is shown that the main contribution to the moving force is made by the surface energy when $R \leq 1.5\ r$ ($R$ -- radius of the growing grain, $r$ -- radius of the matrix grains), and that when $R > 1.5r$ the contribution of the boundary energy is larger.  At the end of the secondary recrystallization, the fractions due to the surface and

Card  1/2                    UDC: 532.614

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ACC NR: AP5028278                                                                    /·

boundary energies amount to 24 and 76 per cent respectively if Δσ, the
difference of the surface energy of the growing grain and of the matrix
grains is assumed to be 3 per cent of the surface energy ($\sigma$). This
compares with values of 88 and 12 per cent estimated by Dunn and Walter
(Acta met., v. 8, 497, 1960), and with 37 and 63 per cent obtained by
the authors in the case of grain oriented transformer steel (Izv. vyssh.
uchebn. zaved, Chernaya metallurgiya, No. 9, 1965). This report was
presented by G. V. Kurdyumov. Orig. art. has: 3 figures and 4 formulas.

SUB CODE: 20/   SUBM DATE: 08May65/   NR REF SOV: 001/   OTH REF: 007

Card    2/2

LARIONOV, K.A., doktor ekonom. nauk, prof.; GVOZDEV, A.M., kand. ekonom. nauk,
    ILYUKHINA, N.A., kand. ekonom. nauk; KOGAY, A.V., kand. ekonom. nauk;
    NIKOLAYEV, N.I., kand. ekonom. nauk; TSAPKIN, N.V., kand. ekonom. nauk,
    dots.; VASYUTIN, V.F., prof., red.; KOKOSHKO, A.G., red.; NAUMOV, K.M.,
    tekhn. red.

[Planning the local economy and cultural development of a region] Pla-
nirovanie mestnogo khoziaistva i kul'turnogo stroitel'stva raiona;
uchebnoe posobie. Moskva, Izd-vo VPSh i AON pri TsK KPSS, 1961. 382 p.
                                                    (MIRA 14:11)
1. Kommunisticheskaya partiya Sovetskogo Soyuza. Vysshaya shkola.
2. Kafedra sovetskoy ekonomiki Leningradskoy Vysshey partiynoy shkoly
(for Larionov, Gvozdev, Ilyukhina, Kogay, Nikolayev, TSapkin).
    (Russia--Economic policy)   (Russia--Culture)

FAYNBERG, A.I.; REZNIK, A.I.; GVOZDEV, A.M.; FILATOV, N.L.;
    USHENKO, V.S., red.; SALAZKOV, N.P., tekhn. red.

[Problems on the methodology for planned calculations and
analysis of administrative operations in communal housing and
services]Sbornik zadach po metodike planovykh raschetov i ana-
lizu khoziaistvennoi deiatel'nosti v kommunal'nom khoziaistve.
[By] A.I.Fainberg i dr. Moskva, Izd-vo M-va kommun. khoz.
RSFSR, 1962. 233 p.                         (MIRA 15:12)
    (Housing management--Accounting)
    (Municipal services--Accounting)

GVOZDEV, A.P.

Methods of determining the economic efficiency of underground coal gasification. Podzem.gaz.ugl. no.1:72-74  '58.       (MIRA 11:4)

1. Glavpodzemgaz.
        (Coal gasification, Underground--Accounting)

GVOZDEV, A.; SHAPIRO, M.

Natural gas as turbine fuel. Tekh.mol. 26 no.2:19 '58.

(MIRA 11:2)

1.Zamestitel' nachal'nika Glavpodzemgaza (for Gvozdev). 2.Starshiy inzhener Glavpodzemgaza (for Shapiro).

(Gas turbines)

GVOZDEV, Anatoliy Petrovich ; CHERNYAVSKIY, Leonid Merkur'yevich;
SMIRNOV, O.S., red.; STRYZHKOVA, N.I., red.; GALAKTIONOVA,
Ye.N., tekhn. red.

[Organizing a centralized operation service]Organizatsiia
tsentralizovannoi ekspluatatsionnoi sluzhby. Moskva, Avto-
transizdat, 1962.  79 p.     .               (MIRA 15:9)
          (Transportation, Automotive)

S/270/63/000/002/011/020
A001/A101

AUTHORS:     Obiralov, A. I., Gvozdev, A. V.

TITLE:       The effect of changing temperature of instruments in the differentiated method on the precision of stereoscopic processing of aerial photosurvey data

PERIODICAL:  Referativnyy zhurnal, Geodeziya, no. 2, 1963, 24 - 25, abstract 2.52.172 ("Tr. Mosk. in-ta inzh. zemleustroystva", 1962, no. 16, 59 - 66)

TEXT:        The error magnitudes $\delta_p$ depend on the conditions of photograph illumination (upper, lower), power and disposition of lamps, etc. In order to secure high-precision measurements, it is necessary, during the period of instrument warming, to specify the initial reading by the parallactic screw after definite time intervals. The stabilization of measurement results corresponds to the instant of temperature stabilization of individual instrument parts, after which p magnitudes will be measured on another scale with a constant error eliminated in forming differences of longitudinal parallaxes. Changes in tem-

Card 1/2

The effect of changing temperature of...

S/270/63/000/002/011/020
A001/A101

perature of the instrument do not markedly affect the accuracy of measuring the magnitudes of transverse parallaxes q.

I. Mityachkin

[Abstracter's note:  Complete translation]

Card 2/2

BABUSHKIN, A.A.; GVOZDEV, B.A.; GLAZUNOV, P.Ya.

Spectrophotometric equipment for continuous absorption analysis and for recording gas concentrations. Fiz. sbor. no.3:360-363 '57.

(MIRA 11:8)

1. Institut fizicheskoy khimii AN SSSR.

(Spectrophotometer)

GVOZDEV, B. A., SHUBIN, V. N.

"The Effect of Accelerated Electrons on Solutions of $KMnO_4$" p.73

Trudy Transactions of the First Conference on Radioaction Chemistry, Moscow,
Izd-vo AN SSSR, 1958. · 330pp.
Conference -25-30 March 1957, Moscow

GVOZDEV, B. A.

Akademiya nauk SSSR. Otdeleniye khimicheskikh nauk

Deystviye ioniziruyushchikh izlucheniy na neorganicheskiye i organicheskiye
    sistemy (Effect of Ionizing Radiation on Inorganic and Organic Systems)
    Moscow. Izd-vo AN SSSR, 1958. 416 p. 7,000 copies printed.

Resp. Ed.: Pshezhetskiy, S. Ya.; Ed. of Publishing House: Bugayenko, L.T.;
    Tech. Ed.; Prusakova, T. A.

PURPOSE: This publication is for scientists working in the field of radiochemistry.

COVERAGE: This collection of articles represents contributions of Soviet scientists
    in the field of radiochemistry. The papers are concerned with the effect of
    ionizing radiation on organic and inorganic substances in solutions and in the
    solid phase. These papers were completed in the years 1951 - 1956 at the
    Institute of Physical Chemistry, AS USSR, the Institute of Physics and
    Chemistry imeni L. Ya. Karpov, the Moscow State University, and other scientific
    institutions. Most of these works are a continuation of those published in
    "Sbornik rabot po radiatsionnoy khimii" published in 1955. Ts. I. Zalkind
    and Yu. M. Malinskiy cooperated in the editing of this symposium.

Card 1/ 31

Effect of Ionizing Radiation (Cont.)          790

TABLE OF CONTENTS:

PART 1.  REACTIONS IN AQUEOUS SOLUTIONS
AND RADIATION AND ELECTRO-CHEMICAL PROCESSES

Preface

Duzhenkov, V.I., Dolin, P.I.  Effect of X-ray Irradiation on Aqueous          7
Alkali Solutions Saturated With Oxygen
     The kinetics of accumulation of molecular products formed in the
radiolysis of water are studied in this paper.  These products
are:  hydrogen peroxide and hydrogen.  The absorption of oxygen
in high-purity alkali solutions saturated with oxygen was also
taken into consideration.  It was determined that the initial
yield of hydrogen depends on the concentration of the irradiated
KOH solution only for concentrations up to 0.6 - 0.7 N KOH.  The
same relation was found for $H_2O_2$ .  The material balance of the
molecular products showed a strong deviation towards excessive
absorption of oxygen.  This fact was explained as the formation of
higher peroxides, probably $HO_2$ or the complex $H_2O_2 \cdot HO_2$ .

Card 2/ 31

Effect of Ionizing Radiation (Cont.)                    790

There are 4 figures and 8 references, of which 6 are Soviet and 2 English.

Gvozdev, B.A., Shubin, V.N.  Effect of Accelerated Electrons on Potassium       12
Permanganate Solutions
        The reduction of aqueous $KMnO_4$ solutions by accelerated electrons in
the concentration range of $10^{-3}$ to $3 \cdot 10^{-1}$ M is discussed in this paper.
The yield of the reaction $Mn(VII) \longrightarrow Mn(IV)$ is determined from the
relation between the amount of reduced permanganate and the amount of
energy absorbed by the solution.  The authors explain the effect of the
acidity of the solution (in the range pH = 0.4 to 12) on the rate of
reduction.  The maximum yield was observed for pH = 2.05.  It was
determined that the yield of reaction does not depend on the dosage rate
in the range from $\sim 10^{17}$ to $\sim 10^{20}$ eV/ml·sec for electron energies from
0.1 to 0.7 Mev.  There are 8 figures, 3 tables, and 7 references, of which
4 are Soviet, 2 English, and 1 Polish.


Card 3/31

Effect of Ionizing Radiation (Cont.)                790

Sidorova, L.P., Zimin, A.V., Proskurin, M.A.  Effect of $Co^{60}$ $\gamma$- Radiation         22
on Aqueous Solutions of Salts of Tin
    The article deals with the effect of irradiation on $SnCl_2$ and
$SnCl_4$ solutions, and the role of the salts as acceptors of the
products of water radiolysis.  Experimental data show that the
irradiation of $1 \cdot 10^{-2}$ M solutions of $Sn^{2+}$ in 4N HCl and in
1N NaOH results in a hydrogen yield equal to the yield of
bivalent tin oxidation.  The yield of hydrogen is 0.53 - 0.60
molecules/100 ev of absorbed energy.  The hydrogen yield does
not change with the increase of dosage in an acid medium, and
decreases in an alkaline medium.  The presence of bivalent tin
in alkaline solutions increases the hydrogen yield, while it
does not show an essential effect in an acid medium.  The
oxidation of $Sn^{2+} \longrightarrow Sn^{4+}$ in acid and alkaline media is
apparently conditioned by the interaction of $Sn^{2+}$ with $H_2O_2$
molecules.  There are 3 tables, 1 figure, and 14 references,
of which 6 are Soviet, and 8 English.

Card 4/31

Effect of Ionizing Radiation (Cont.)                790

Chernova, A.I., Orekhov, V.D., Proskurin, M.A.   Oxygen Compounds of        29
Iron Ions and Their Conversion During Radiolysis of Aqueous Solutions
   This is a study of iron peroxide compounds and their behavior under
   $\gamma$- and ultraviolet irradiation. Variable-valence ions are con-
   sidered to be carriers of the oxidizing components in radiochemical
   oxidation. The peroxide iron complex which forms during the irradia-
   tion of a Mohr salt solution in 4N sulfuric acid decomposes in the
   presence of $Fe^{3+}$ to form bivalent ions. This process is intensified
   with the increase of the $Fe^{3+}$ concentration in the solution. It was
   determined that the peroxide iron complex can be formed also in Mohr
   salt solutions in 0.8N acid when an excess of $Fe^{3+}$ is present. Addition
   of $MnSO_4$, $TlNO_3$, NaCl, KBr, KI, $Ce(NO_3)_3$  and CuSO to the irradiated
   solutions of the Mohr salt in 0.8 and 4N sulfuric acid leads to an
   increased yield of $Fe^{3+}$ ions. The effect is due to the presence of
   bromide and iodide ions as well as $Ce^{3+}$ and $Cu^{2+}$. There are 6 figures
   and 11 references, of which 4 are Soviet, 4 English, and 3 German.


Card 5/31

Effect of Ionizing Radiation (Cont.)                790

Sharpatyy, V.A., Orekhov, V.D., Proskurin, M.A. Sensitization of the
Radiolytic Conversion of Sodium Nitrate in Aqueous Alkaline Solutions                37
   The subject of this paper is the effect of the temperature of the
solution on the yield of radiolytic conversion of nitrate in aqueous
alkaline solutions at temperatures from 20° to 90°. The same process
was studied with glycerin as acceptor of OH radicals. An increase
from 20° to 40° in 1M $NaNO_3$ / 1M KOH causes a sharp increase of the
nitrate yield: from $\sim$ 3.0 to $\sim$ 6.5 eqiv./100ev. The increase in
yield reaches its limit value at 80° and equals about 8 equiv./100ev.
The sensitizing effect of glycerin is apparent only when its concen-
tration is $\sim$ $5.10^{-4}$ M and remains constant for concentrations up to
$10^{-1}$M. The presence of molecular oxygen (air) inhibits this effect.
There are 5 figures and 10 references, of which 6 are Soviet and 4
English.

Sharpatyy, V.A., Orekhov, V.D., Proskurin, M.A. Radiolytic Reduction of
Sodium Nitrate in Concentrated Aqueous Solutions                43
   This paper considers the radiolytic reduction of nitrate solutions in a
wide range of concentrations. Concentrations of $NaNO_3$ above 1M in the
presence of an inert gas (nitrogen) resulted in a yield of 8 to 9 equiv./
100ev $NO_2^-$. It was found that molecular oxygen inhibits the reduction

Card 6/31

Effect of Ionizing Radiation (Cont.)                790

process, which is evident in lower results as compared to the process
in an inert atmosphere. There are 2 figures and 6 references of which
3 are Soviet and 3 English.

Chernykh, V.Ya., Pshezhetskiy, S.Ya., Tyurikov, G.S.   Kinetics of the
Decomposition of Hydrogen Peroxide Under the Action of $\gamma$ - Radiation        48
    The authors studied the kinetics of $H_2O_2$ decomposition in a wide
    range of concentrations:  1.78 - 92.2 mol.%, in $\gamma$ and ultraviolet
    radiation. The rate of the thermal reaction was also taken into
    consideration. The rate of the radiation reaction is proportional
    to the square root of $\gamma$-radiation intensity. The activation energy
    equals $6.5 \pm 1.0$ kcal/M. The activation energy of the photochemical
    reaction is 8 - 9 kcal/M. The efficiency of the $\gamma$-radiation reaction
    is 21 (at $-4°$) to 230 molecules of $H_2O_2$ (at $50°$) per 100ev dosage rate
    of $1.84 \cdot 10^{18}$ ev/l. sec. It is a chain reaction. The kinetics of the
    radiation, photo, and thermal reactions can be clarified by assuming
    electrolytic dissociation of the $HO_2$ radical, the rate of which depends
    on the concentration of the solution. There are 20 figures, 4 tables, and

Card 7/31

Effect of Ionizing Radiation (Cont.)                    790

22 references of which 3 are Soviet, 16 English, and 3 German.

Zalkind, Ts.I., Veselovskiy, V.I.  Mechanism of Radiochemical Formation
of Stationary Potential Differences in Aqueous Solutions                    66
    The stationary potential difference of $\sim$ 0.9 is formed in the
    system Pt/$H_2SO_4$ saturated with nitrogen/Au and irradiated with $Co^{60}$
    $\gamma$ - radiation. It was shown that the formation of a positive
    potential at the Au electrode is connected with the radiolytic for-
    mation of the OH radical. The oxidation of the electrode during
    heating facilitates the formation of the positive potential at the
    Au electrode. The rate of reduction is determined by the rate of the
    electrode reaction, i.e., the electrochemical discharge stage. There
    are 6 figures, and 6 references of which 5 are Soviet and 1 English.

Zalkind, Ts.I., Veselovskiy, V.I.  Photoelectrochemical and Radiation
Electrochemical Processes in Aqueous Solutions of Uranium Salts            74
    Uranium salts were irradiated with radon and $Co^{60}$. It was shown
    that the hexavalent uranium salts show reduction of uranyl ions
    to pentavalent uranium ions. Due to the ease of oxidation -
    reduction transitions in the system U(VI / U(V)), the increase of
    the uranyl ion concentration is followed by a decrease in the amount

Card 8/31

Effect of Ionizing Radiation (Cont.)                790

of the formed $H_2O_2$ , uranium peroxide compounds, and in the oxidation
of U(IV) and oxalic acid. Irradiation of the system U(IV) / U(VI) and
U(III) / U(IV) results in a shift of equilibrium and the formation of
more oxidized forms. There are 14 figures, 7 tables, and 18 references
of which 8 are Soviet, 7 English, and 3 German.

Miller, I.B., Veselovskiy, V.I.   Radiation Electrochemical Processes in
Aqueous Solutions of Uranyl Salts                                          93
    This is a study of the electrochemical nature of the redox components
in the radiolysis of uranyl salt solutions. Certain conditions were
established for the formation of the "hydrogen" and "oxygen" poten-
tials in this system. A stationary potential of the Pt electrode develops
during $\gamma$ -irradiation due to the emergence of nonequilibrium concen-
trations of U(V). The stationary potential at the Au electrode in uranyl
sulfate solutions is $\sim$ 1.1v, while at the Pt electrode it shifts towards
negative values. There are 9 figures and 12 references, of which 6 are
Soviet and 6 English.

Card 9/31

Effect of Ionizing Radiation (Cont.)                790

Rozenfeld, I.L., Oshe, Ye.K.  Mechanism of Activation of Electrodes          103
of Local Cells During Irradiation
     This paper discusses the effect of radiation on the properties of
semiconducting oxide films of the electrodes.  It was determined
that only irradiation of the cathode intensifies the corrosion of
metals in electrolytes.  This is due to the sharp increase in the
cathode efficiency resulting from "radiation conductivity" in the
protective film which is regarded as a semiconductor.  The radia-
tion dependence of the corrosion current is expressed by:

$$I_k = I_k^o + A\sqrt{I} \, ,$$

where A is the constant for the given pair of electrodes.  Candidate
of physical and mathematical sciences V.B. Sandomirskiy participated in
this work.  There are 10 figures and 6 references of which 1 is Soviet,
3 English, 1 French and 1 Czech.

Card 10/31

Effect of Ionizing Radiation (Cont.)        790

Duzhenkov, V.I., Dolin, P.I.   Effect of X-rays on Diluted Aqueous     114
Solutions of Organic Substances
     The effect of organic additives on the yield of molecular products
from the radiolysis of water is studied in solutions of varying
acidity. It was determined that the initial yield of $H_2$ and
$H_2O_2$ increases, and their fixed concentrations are lowered. This
appears to be due to the fact that the radical products of radioly-
sis: H, OH, $HO_2$ react with the organic molecules more vigorously
than the molecules $H_2$ and $H_2O_2$. There are 3 figures, 2
tables, and 9 references, of which 3 are Soviet and 6 English.

Chernov, A.I., Orekhov, V.D., Proskurin, M.A.   Sensitization and Inhibition     120
of Radiolytic Reduction of the Uranyl Ion in Aqueous Solutions
     The radiolytic reduction of uranyl ions was sensitized with glucose
and glycerin, and inhibited with methylene blue. The reduction of
$UO_2^{2+}$ does not exceed 0.5 molecules/100 ev for low concentrations of
the uranyl ion ($5 \cdot 10^{-3}$ M) and of glucose or glycerin ($5 \cdot 10^{-3}$ M).
Concentration of 0.5 M glycerin leads to reduction of 5 molecules/
100 ev. The inhibiting effect of methylene blue is modified by the
ratio of concentrations of two substances reacting with H,

Card 11/31

Effect of Ionizing Radiation (Cont.)          790

the product of radiolysis:  for $C_{UO_2^{2+}}$  :  $C_{dye}$ = 1:1 the dosage of inhibition of the dye reaches $10^{18}$ ev/ml and decreases with the increase of this ratio.  The participation of ionized and excited molecules of water in these processes is taken into consideration.  $Co^{60}$ $\gamma$ - radiation was used for irradiation.  There are 3 figures and 19 references of which 8 are Soviet and 11 English.

### PART 2.  REACTIONS OF INORGANIC SUBSTANCES

Buneeyev, N.A., Myasnikov, I.A., Pshezhetskiy, Formation of Ozone in Liquid Oxygen Due to $\gamma$-Radiation                                          129
The formation of ozone in LOX due to $Co^{60}$ radiation was studied with respect to duration and intensity of irradiation.  It was found that the yield of ozone is 13.6 molecules per 100 ev of the absorbed $\gamma$-radiation energy.  There are 4 tables, 3 figures, and 3 Soviet references.

Card 12/31

Effect of Ionizing Radiation (Cont.)                790

Buneyev, N.A., Pshezhetskiy, S.Ya., Myasnikov, I.A.  Formation of Ozone
in Gaseous Oxygen Due to Fast Electrons                                       133
        The effect of electrons on oxygen was studied at room temperature
    and atmospheric pressure, under dynamic and static conditions.  The
    determined stationary concentration of ozone equals 0.1 - 0.2 per
    cent for 200 Kev electrons and current of 50 - 100 $\mu$a.  This is
    4 to 8 times less than for LOX under analogous conditions.  The
    efficiency of the reaction is   $\sim$ 1.5 molecules per 100 ev.
    There are 9 figures, 5 tables, and 10 references, of which 3 are
    Soviet, 4 English, 2 German and 1 Belgian.

Dmitriyev, M.T., Pshezhetskiy, S.Ya.  Radiation Oxidation of Nitrogen.
Part 1.  Kinetics of the Nitrogen Oxidation Reaction due to Electron
        Impact and the Effect of Ionization Processes                         145
    This paper deals with kinetics of ionization and oxidation of
    nitrogen due to the impact of 0 - 400ev electrons at pressures
    up to 0.1 mm Hg.  The reaction rate is defined by an equation of
    the second order and the activation energy of the reaction equals
    7.4 $\pm$ 1 kcal/M.  The obtained data show that ionization of molecular
    nitrogen is the primary elementary process leading to oxidation of
    nitrogen, and that it is followed by direct interaction of the molec-
    ular nitrogen ion with a molecule of oxygen and the interaction
Card 13/31

Effect of Ionizing Radiation (Cont.)            790

of oxygen with products of the dissociation of the molecular nitrogen
ion. There are 18 figures, 12 tables, and 27 references of which 4
are Soviet, 19 English, 3 German, and 1 Belgian.

Dmitriyev, M.T., Pshezhetskiy, S.Ya. Radiation Oxidation of Nitrogen.
Part 2. Kinetics of the Oxidation of Nitrogen Due to Fast Electrons            171
The oxidation of nitrogen due to fast electrons is studied in the
gaseous phase and at atmospheric pressure. The reaction kinetics
are defined by an equation of the second order. The reaction rate
is proportionate to the electron flux and to the ratio of gas
layer thickness to the maximum electron path in gas. At the tem-
perature of 40° the yield is 1.3 atoms of bound nitrogen for air,
and 2 atoms for a 1 : 1 gas mixture per 100 ev of absorbed energy.
The differences in the absolute values of reaction rate constants
are interpreted as the result of variations in the recombination
of ions. There are 10 figures, 2 tables, and 9 references of which
7 are Soviet and 2 English.

Card 14/31

Effect of Ionizing Radiation (Cont.)            790

Bol'shun, Ye.V., Pshezhetskiy, S.Ya., Myasnikov, I.A.  Formation of
Hydrazine in Liquid Ammonia Due to Fast Electrons                    182
   The formation of hydrazine due to fast electrons leads to a
   stationary hydrazine concentration conditioned by the balancing
   of the rates of direct and inverse reactions. The reaction
   efficiency is 1 - 1.2 molecules of hydrazine per 100 ev. There
   are 2 tables, 1 figure, and 6 references of which 3 are Soviet
   and 3 English.

Baberkin, A.S., Proskurnin, M.A., Orekhov, V.D.  The Effect of
$\gamma$ —Radiation on Solid Potassium Nitrate                       186
   The $\gamma$-irradiation of potassium nitrate leads to evolution of
   gas and nitrite formation. The irradiated salt shows a sharp
   increase of gas evolution when heated to $\sim$ 129°. A decrease in
   the amount of initially formed nitrite is observed when the tem-
   perature rises above 122° (temperature of lattice destruction for
   $KNO_3$ ). The decrease in the nitrite yield is connected with the
   inverse reaction of nitrate formation which occurs due to the
   presence of atomic oxygen or free radicals in the irradiated salt.

Card 15/31

Effect of Ionizing Radiation (Cont.)                790

    There are 4 figures and 12 references of which 2 are Soviet, 9 English, and 1 German.

Baberkin, A.S., Proskurnin, M.A., Orekhov, V.D.  Effect of $\gamma$-            193
Radiation on Solid Potassium Perchlorate and Chlorate
    Potassium perchlorate and chlorate powders were subjected to the effect of $Co^{60}$ $\gamma$-radiation in doses up to 10 megaroentgens per 1 g of the salt.  It was established that the conversion of $KClO_4$ at temperatures up to 100° yielded $\sim$ 1.1 molecules of $KClO_3$ /100 ev and no other products.  At temperatures up to 200° the yield of the chlorate drops, the chloride appears and gas evolution occurs.  At temperatures above 320° the yield of the chlorate drops to 0.7, and the amount of the other products increases. The irradiated $KClO_3$ yields 0.4 molecules of KCl and 1.2 molecules of $KClO_2$ per 100 ev.  At elevated temperatures the yield of the chlorite drops to zero.  It is assumed that the thermal decomposition of irradiated salts has a radical character facilitating the conversion of the intermediate products: $ClO_4$, $ClO_3$, O, and K. Doses not exceeding 10 megaroentgens per 1 g cause coloration of the salts.  This is connected with the formation of coloration centers in the crystal lattice which disappear at temperatures above 100°.

Card 16/31

Effect of Ionizing Radiation (Cont.)       790

There are 7 figures and 10 references of which 3 are Soviet, 6 English, and 1 German.

PART 3.   REACTIONS OF ORGANIC SUBSTANCES

Krongauz, V.A., Bagdasar'yan, Kh.S.   Energy Transfer in the Radiolysis of Benzoyl Peroxide Solutions      205

This paper considers the radiolysis of benzoyl peroxide solutions in benzene, cyclohexane, and ethyl acetate. In the benzene solution of peroxide, the transfer of excitation energy is from the solvent to the solute. This effect was not detected in cyclohexane or ethyl acetate solutions, in which the radiation decomposition of peroxide shows a chain mechanism. The authors determined yields of radicals for the solvents and the peroxide. Small additions of anthracene and phenanthrene to benzene inhibit the decomposition of peroxide. There are 7 figures, 4 tables, and 15 references of which 2 are Soviet, 11 English, and 2 German.

Card 17/31     -

Effect of Ionizing Radiation (Cont.)                790

Mikhaylov, B.M., Tarasova, L.V., Bogdanov, V.S.  Radiochemical Conversion
of Organic Substances.  Part 1.  Conversion of Gaseous Aliphatic Hydro-
carbons Due to Fast Electrons                                                      218
     Methane, ethane, propane, and n-butane were irradiated with a 90 Kev
     electron beam.  Dehydrocondensation is the basic process of radiolysis.
     Liquid hydrocarbons constitute 50 percent of the conversion products
     of methane, and 70 - 90 percent of the conversion products of ethane,
     propane, and n-butane.  There are 3 tables, 2 figures, and 7 English
     references.

Mikhaylov, B.M., Kumova, M.Ye., Bogdanov, V.S.  Radiochemical Conversion
of Organic Substances.  Part 2.  Oxidation of Methane with Oxygen Due to
Fast Electrons                                                                     223
     A mixture of methane and oxygen ($CH_4$ : $O_2$ = 4 : 1 and 1 : 1)
     was irradiated with fast electrons.  $CO$, $CO_2$, $H_2$, and $H_2O$ were found
     in the reaction products.  About 50 percent of the methane was con-
     verted to the liquid phase.  The rate of oxidation increases with
     methane content (50 - 80%), and with increased pressure (190 - 760 mm
     Hg).  The mechanism of the reaction is regarded as radical.

Card 18/31

Effect of Ionizing Radiation (Cont.)                790

There are 9 figures, 4 tables, and 19 references of which
8 are Soviet, 10 English, and 1 German.

Vereshchinskiy, I.V., Bakh, N.A.  Oxidation of Organic Compounds
with Molecular Oxygen Due to Ionizing Radiation.  Part 5.  Effect of
Radiation From a Nuclear Reactor on Benzene and Cyclohexane in Presence
of Molecular Oxygen                                                    234
    Liquid benzene and cyclohexane were subjected to radiation from a
    nuclear reactor (recoil protons and γ-radiation) in the presence
    and absence of oxygen.  Benzene oxidation products included phenol
    and aldehydes.  Cyclohexanes gave hydroperoxides, disubstituted
    peroxides, cyclohexanone, and acids.  Yields are similar to those
    obtained from low-density ionization.  Gaseous products of benzene
    radiolysis in vacuum contain hydrogen and acetylene.  The amount of
    molecular hydrogen increases in the presence of oxygen.  The radiolysis
    of cyclohexane in vacuum yields hydrogen in amounts equal to number of
    molecules of cyclohexane which take part in polymerization.  The
    presence of oxygen does not increase the hydrogen yield.  There are
    11 figures, 1 table, and 31 references of which 8 are Soviet, and
    23 English.
Card 19/31

Effect of Ionizing Radiation (Cont.)          790

Sarayeva, V.V., Bakh, N.A., Rybin, L.V., Larin, V.A. Oxidation of
Organic Compounds with Molecular Oxygen Due to Ionization Radiation.
Part 6. Identification of Individual Products Obtained From the
Oxidation of N-Heptane and Isooctane                                    248
    This paper discusses the identification of individual carbonyl
    compounds and acids, and the accumulation of alcohols formed during
    the radiolytic oxidation of n-heptane and isooctane. It was shown
    that most of the carbonyls are composed of compounds with the number
    of carbons close to that of the original hydrocarbon molecule.
    There are 15 figures, 7 tables, and 15 references of which 7 are
    Soviet, 7 English and 1 French.

Sarayeva, V.V., Rudenko, B.I. Radiolytic Oxidation of Acetone          263
    Acetone was irradiated with $Co^{60}$ $\gamma$-radiation in doses of
    $2 \times 10^{13}$ and $1 \times 10^{14}$ ev/$cm^3$. sec and with X-rays of $2 \times 10^{16}$
    ev/$cm^3$ sec. in the presence of oxygen and at temperatures of
    $18 - 20°$. Acids and aldehydes were the products of oxidation.
    No peroxides were detected. The amount of aldehydes increased with
    the increase of the dosage rate. The initial aldehyde yield is
    $\sim$ 80 molecules per 100 ev and it is independent of the dosage
    rate. There are 2 figures and 6 references, 3 of which are Soviet
    and 3 English.

Card 20/31

Effect of Ionizing Radiation (Cont.)                    790

Sarayeva, V.V., Kinetics of Interaction of Organic Peroxides With the
Iodide Ion in Acetic Acid and the Determination of Peroxides Obtained
From Radiolytic Oxidation of Hydrocarbons                              266
    This is a study of the rate of interaction of sixteen organic
    peroxides with potassium iodide in glacial acetic acid. It was
    determined that the peroxides differ in rate constants but the
    rate constant for a given type of peroxides varies only slightly
    with changes in the structure of the hydrocarbon chain of the
    peroxide. Radiolytic oxidation yields hydroperoxides and peroxides
    from n-heptane, isooctane and toluene. Cyclohexane and tetralin
    yield only hydroperoxides. There are 6 figures, 2 tables, and
    16 references of which 6 are Soviet, 8 English, and 2 German.

Zimin, A.V., Churmanteyev, S.V. The Effect of $\gamma$-Radiation on Benzene-
- Ammonia Mixture                                                     273
    This paper considers the effect of dosage, temperature, and aggregate
    state on the yield of aniline, hydrogen, and nitrogen. The activity
    of the Co$^{60}$ radiation source was $\sim$ 80 and $\sim$ 700 g-equiv., and
    the period of irradiation was 3 to 256 hours. The basic products of
    radiolysis in the absence of air were aniline, hydrogen, nitrogen, and

Card 21/31

Effect of Ionizing Radiation (Cont.)                790

polymerization products.  Dosage and temperature increases (to +90°)
have no significant effect on the yield of aniline.  The benzene -
ammonia mixture irradiated in the presence of oxygen shows a sixfold
increase in aniline yield.  The greater amount of radicals is due to
decrease in the recombination of primary products of radiolysis, since
atomic hydrogen is bound by molecular oxygen.  There are 4 tables,
2 figures, and 8 references of which 3 are Soviet, 3 English, and
2 French.

Zimin, A.V., Verina, A.D.  The Effect of $\gamma$-Radiation on the Mixture of
Benzene With Carbon Tetrachloride                                         280
        The mixture was irradiated with $Co^{60}$ $\gamma$-radiation (activity 80, 130,
    and 1450 g-equiv.).  The authors studied the effect of the dosage
    and molar ratio of components on the yield of HCl and of the non-
    volatile residue.  Variation of the dosage had no effect and the
    ratio variation of $C_6H_6$ : $CCl_4$  from 4 : 1 to 1 : 4  only slightly
    changed the results.  The nonvolatile residue contains 70 percent
    of condensation products, $\sim$ 20 percent of high boiling fractions,
    and  $\sim$ 10 percent of benzene.  The most probable products of the
    high boiling fractions are monochlorobenzotrichloride isomers with
    a yield of $\sim$ 0.7 molecules per 100 ev.  There are 3 tables and

Card 22/31

Effect of Ionizing Radiation (Cont.)          790

   3 references of which 1 is Soviet and 2 German.

Vereshchinskiy, I.V., Karpushkin, L.T.   Effect of $\gamma$-Radiation on the
Synthesis of Indophenol                                                    285
   The synthesis of indophenol from an irradiated mixture of
   a-naphthol and n-phenylene diamine was studied. The radiochemical
   yield of indophenol is 4.7 molecules per 100 ev, and the yield of
   the leuco form from the dye solution in vacuum is $\sim$ 1.8 molecules
   per 100 ev. It was shown that the formation of the dye is a two-stage
   process. The first stage is the formation of the leuco form. It does
   not require the presence of molecular oxygen. The second stage is the
   conversion of the leuco form into the dye. This stage occurs only in
   the presence of molecular oxygen. Irradiation considerably accelerates
   the conversion of the leuco form. There are 9 figures and 12 references
   of which 4 are Soviet, 6 German, 1 English, and 1 French.

          PART 4.   EFFECT OF RADIATION ON POLYMERS

Slovokhotova, N.A.   Infrared Spectroscopic Study of Chemical Changes Occurring
in Polytetrafluoroethylene (Teflon) Due to Innizing Radiation              295
   The infrared spectra of Teflon indicated that the conjugate

Card 23/31

Effect of Ionizing Radiation (Cont.)          790

C $=$ C double bonds form during irradiation with fast electrons and with $Co^{60}$ $\gamma$-radiation. Irradiation in air leads to the inter-action of teflon with water vapor with the formation of C $=$ 0, OH, and CH groups. Irradiation converts crystalline teflon into amorphous teflon and possibly causes the formation of perfluorocyclobutene rings. There are 7 figures and 30 references, of which 3 are Soviet, 26 English, and 1 French.

Taubman, A.B., Yanova, L.P. Study of the Radiation Stability of High Polymers. Part 1. Effect of Radiation on Diffusion Permeability          307
The effect of radiation on diffusive permeability of high-polymer films is conditioned by the physical state and structure of the polymers. Vitreous polyvinylmethacrylate with low permeability to gases shows a sharp increase in permeability after relatively small radiation doses. This is explained by the radiational instability of the densely packed macromolecules. The coefficients of permeability and diffusion through polyvinyl chloride and polyethylene were com-puted for hydrogen chloride. There are 3 figures, 2 tables and 9 references of which 3 are Soviet and 6 English.

Card 24/31

Effect of Ionizing Radiation (Cont.)                790

Yanova, L.P., Taubman, A.B.  Study of the Radiation Stability of High
Polymers.  Part 2.  Role of Gas Formation in the Destruction of Polymers     314
  The role of gas formation was studied in the destruction of poly-
  tetrafluorethylene, polymethylmethacrylate and polyethylene due to
  electron irradiation.  The intensity of the process of formation of
  gaseous destruction products increases sharply in a narrow temperature
  range of polymer fusion or transition to visco-fluid state.  It was
  shown that the destruction should be regarded as a reversible process:
  destruction ⇌ recombination of free radicals.  The equilibrium shifts
  to the left with transition of the polymer into the fluid state.  Changes
  in the mechanical properties of polymers and finally their destruction,
  are determined by the ratio of decomposition rates to gas formation rates,
  and, therefore, depends on the permeability to gases of the sample subjected
  to fast-electron irradiation.  Crack formation in the polymer due to irradi-
  ation is traced to gas formation and emanation.  There are 8 figures, 3 tables,
  and 9 references of which 6 are Soviet, and 3 English.

Kargin, V.A., Taubman, A.B., Yanova, L.P., Belyayeva, Z.F.  Effect of
Ionizing Radiation on the Properties of Vinyl Chloride and Vinylidene
Chloride Copolymers                                                          325
  The effect of irradiation on gas permeability and mechanical
Card 25/31

Effect of Ionizing Radiation (Cont.)                790

properties of the copolymers is connected with changes in the mixed
amorphous - crystalline states and microstructure of the copolymers.
The presence of crystallizing components increase the microdefects
which results in increased permeability to gases. A reverse process
can be observed for a specific range of small doses when the crysta-
lline component undergoes fusion and the material becomes amorphous.
Therefore, the curves for the permeability coefficient as a function
of dosage have a maximum and a minimum. There are 8 figures, 2
tables, and 7 references of which 6 are Soviet, and 1 French.

Nikitina, T.S., Kuz'minskiy, A.S., Karpov, V.L. Radiation Vulcanization
of Rubber                                                          333
This is a study of radiation vulcanization of pure rubbers:
natural rubber (NK), butadiene-styrene rubber (SKS-30) butadiene
rubber (SKB) and butadiene-nitryl rubber (SKN-26). The tensile
strength of the radiation vulcanizates of NK does not exceed
30kg/cm. Sulfur and certain sulfur compounds (tetramethylthiuram-
disulfide) lower the rate of the vulcanization. Compounds containing
heavy atoms (zinc oxide, kaolin, chalk) accelerate the vulcanization
only when X-rays are used. Gas and lamp blacks are very active fillers.

. .-1 25/31

Effect of Ionizing Radiation (Cont.)            790

> The effect of carbon blacks is modified by their degree of oxidation.
> There are 8 figures, 1 table, and 17 references of which 7 are
> Soviet, 8 English, 1 French, and 1 German.

Tsetlin, B.L., Sibirskaya, G.K.  Effect of Ionizing Radiation on the
Thermomechanical Properties of Polyethylene                          344

> Polyethylene undergoes vulcanization when irradiated with electrons
> and X-rays.  At a temperature corresponding to the melting point of
> the initial polymer, the irradiated substance converts to a highly
> elastic state the modulus of which is proportional to the dosage,.
> In the range of $10^{16}$ - $10^{19}$ ev/cm sec vulcanization effectiveness
> follows the principle of equivalent effect of equal doses.  The
> thermal stability of polyethylene increases with increased dosage.
> The mechanism of radiation vulcanization is related to the recom-
> bination of the $R_1 \cdot \overset{\bullet}{C}H \cdot R_2$ radicals which result from primary
> rupture of the C - H bonds.  There are 4 figures, 1 table, and
> 22 references of which 14 are Soviet, 7 English, and 1 French.

Card 27/31

Effect of Ionizing Radiation (Cont.)                    790

Tsetlin, B.L., Yanova, L.P., Sibirskaya, G.K., Korbut, V.M.
Effect of Ionizing Radiation on the Mechanical Properties of
Polyvinyl Chloride and Its Plastics                                      354
    Polyvinyl chloride undergoes vulcanization due to the effect
    of hard radiation. The changes in mechanical properties
    result from the formation of a three-dimensional lattice and
    the occurrence of multiple inner micro-defects (due to gas
    formation). Polyvinyl chloride base plastics also undergo
    radiation vulcanization. The rate of the process decreases
    with the increase of the plasticizer content. There are 5
    figures, 1 table, and 16 references of which 10 are Soviet,
    3 German, and 3 English.

Tsetlin, B.L., Zaytseva, N.G., Korbut, V.M., Kargin, V.A.
Effect of Ionizing Radiation on Vitreous Polymers                        362
    This paper reports an experimental study of radiational
    destruction of vitreous polymers: changes in the thermo-
    chemical properties, gas formation, dendritic fissures.
    The modifying factors are: the stabilizing effect of
    aromatic groups, greater probability of bond rupture in the
    main chains of macromolecules due to the presence of tertiary

Card 28/31

Effect of Ionizing Radiation (Cont.)                790

carbon atoms in them, decrease in the rate of radiation destruction
of polymethylmethacrylate and its analogs with increase in the size
of side groups, intensification of the destruction process in the
presence of low molecular weight plasticizers. The fissure forma-
tion is interpreted as having an adsorption-type mechanism. The
process of radiochemical conversion of plexiglass is regarded as
irreversible. There are 8 figures, and 27 references of which 11
are Soviet, 14 English, and 2 French.

## PART 5. EXPERIMENTAL METHODS

Breger, A.Kh., Belynskiy, V.A., Karpov, V.L., Prokudin, S.D. Equipment
for Radiochemical Research. Part 2. Equipment Supplying Doses of up
to 300 Roentgen/Sec in 30 ml and up to 100 Roentgen/Sec in 1 Liter,
From a $Co^{60}$ $\gamma$-Radiation Source With an Activity of 1400 Radium Gram-
Equivalent                                                              380

The first part of this paper gives general considerations on the
features of units with $Co^{60}$ $\gamma$-radiation sources used in radio-
chemical research. Further, details are given on the new unit
K-1400 (improved K-300) which supplies doses of 300 roentgen/sec
in 30 ml and 100 roentgen/sec in 1 liter using three standard $Co^{60}$

Card 29/31

Effect of Ionizing Radiation (Cont.)                    790

    sources with a total activity of 1440 radium Gram-equiv. A method
    was developed for safe, "dry" assembling of powerful sources from
    smaller standard cobalt charges. The K-1400 proved itself efficient
    safe during one year of operation. There are 6 figures and 22 ref-
    erences of which 9 are Soviet, and 13 English.

Glazunov, P.Ya., Radziyevskiy, G.B. Equipment for the Application of 1
Mev Accelerated Electrons in Radiochemical, Radiobiological, and Other
Research Work                                                             395
    This paper describes some instrumentation developed and used in the
    laboratory for working with 1 Mev electrons and X-rays. The accele-
    rator generates continuous and pulsed electron and hard X-ray radia-
    tion. The electron flux is measured by means of an ionization
    chamber (fig. 2). The distribution of electron-flux density is
    determined by means of densitometers (fig. 7). Directional control
    of the beam for vertical or horizontal irradiation is achieved by
    means of a magnetic system (fig. 8) and automatic stabilizing device
    (fig. 9). Pulse technique with given duration and intervals was
    achieved with the aid of a pulse regulator (fig. 10).

Card 30/31

Effect of Ionizing Radiation (Cont.)                790

Generation of single pulses of relatively long duration is done
by means of a rotating shutter (fig. 12) efficient in the range
from 10 millisec. to 2 sec. Wider versatility of the high-vol-
tage electron accelerator tube was gained by the introduction of
a gold target for the generation of hard bremsstrahlung (fig. 13).
The X-ray radiation is measured by means of an ionization chamber
made of a plastic and lined with aluminum foil. There are 13
figures, and 4 references, 1 Soviet and 3 English.

Zatulovskiy, V.I., Naryadchikov, D.I. X-ray Equipment as Radiation
Source for Radiochemical Research
    The Laboratory of Radiochemistry at the Institute of Physical                406
Chemistry of the USSR (IFKh AN SSSR) developed two types of X-ray
apparatus for research purposes. The apparatus and control in-
struments are described in this paper. The units are: ARKh -90
- 200 (fig.1) and ARKh - 100 - 20 (fig. 5). There are 7 figures
and no references.

AVAILABLE: Library of Congress

Card 51/31

                                    TM/mas
                                    1-30-59

KIRGINTSEV, A.N.; GVOZDEV, B.A.

Cocrystallization of strontium and potassium chromates. Zhur.
neorg. khim. 5 no.10:2374-2376 O '60.                    (MIRA 13:10)

1. Institut fizicheskoy khimii Akademii nauk SSSR.
        (Strontium chromate)          (Potassium chromate)
                    (Crystallization)

PERELYGIN, V.P.;ALMAZOVA, S.P.; GVOZDEV, B.A.; CHUBURKOV, Yu.T.

[Spontaneous fission with an anomalously short period]
Spontannoe delenie s anaomal'no korotkim periodom. Dubna,
Ob"edinennyi in-t iadernykh issl. Vol.2. 1962.  7 p.
                    (Nuclear fission)                (MIRA 15:1)

DONETS, Ye.D.; KARNAUKHOV, V.A.; KUMPF, G.; GVOZDEV, B.A.; CHUBURKOV, Yu.T.; SARANTSEVA, V.R., tekhn. red.

[Study of the nuclear reaction $Th^{232}_{90}(Ne^{22}_{10}, 4n)Fm^{250}_{100}$] Izuchenie iadernoi reaktsii $Th^{232}_{90}(Ne^{22}_{10}, 4n)Fm^{250}_{100}$. Dubna, Ob"edinennyi in-t iadernykh issl., 1962. 10 p.                     (MIRA 15:4)

(Nuclear reactions)

38856

S/056/62/042/006/008/047
B104/B102

24.6600    (2806)

AUTHORS:    Perelygin, V. P., Almazova, S. P., Gvozdev, B. A.,
Chuburkov, Yu. T.

TITLE:    Spontaneous fission with anomalously short per od.  II.

PERIODICAL:    Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 42,
no. 6, 1962, 1472 - 1474

TEXT:  Fission fragments of the spontaneous fission resulting from the
interaction of 135 Mev $Ne^{22}$ ions with $U^{238}$ in an ionization chamber were
studied using T-1 (T-1) and П-8 (P-8) photographic plates.  The $U^{238}$
target, 1 mg/cm$^2$ thick, was exposed for a few hours to an ion current of
~1 µa from the internal beam of the OIYaI cyclotron.  A strong γ back-
ground as well as a background of α particles were detected.  60 tracks of
spontaneous fission fragments were found.  The registration efficiency of
the events was 50%.  The half-life of the unknown isotope is 17 ± 7 milli-
sec; the production cross section on an interaction of 135 Mev $Ne^{22}$ with

Card 1/2

39661
S/056/62/043/001/003/056
B181/B102

$2\mathcal{V}$ $(600$

AUTHORS:      Donets, Ye. D., Karnaukhov, V. A., Kumpf, G., Gvozdev, B. A.,
              Chuburkov, Yu. T.

TITLE:        The nuclear reaction $_{90}Th^{232}(_{10}Ne^{22},4n)_{100}Fm^{250}$

PERIODICAL:   Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 43,
              no. 1(7), 1962, 11 - 15

TEXT:   Measurements were made of the dependence of the
$_{90}Th^{232}(_{10}Ne^{22},4n)_{100}Fm^{250}$   reaction cross section on the energy of the
bombarding ions.  The ions were extracted from the 300 cm cyclotron of
the OIYaI.  A thorium foil, 2 - 2.6 mg/cm$^2$ thick, served as a target and
a 3 μ thick silver foil chemically prepared with tenoiltrifluoro acetone,
was used to collect the recoil nuclei.  Fermium (yield 50 %) was separated
from the organic phase by anodic precipitation.  $Fm^{250}$ was identified
from its 7.43 Mev α-emission.  The 7.65 Mev line of $Po^{214}$ was found to
interfere.  The reaction cross section has its maximum of $\sim 2.5 \cdot 10^{-31}$ cm$^2$
Card 1/2

The nuclear reaction ...

S/056/62/043/001/003/056
B181/B102

at an ion energy of 107 Mev, and has a half-width of about 11 Mev. The cross section of the reaction $_{92}U^{238}(_8O^{16},4n)_{100}Fm^{250}$, which was investigated earlier (T. Sikkeland, S. G. Thompson, A. Ghiorso, Phys. Rev., 112, 543, 1958; V. P. Perelygin, Ye. D. Donets, G. N. Flerov, ZhETF, 37, 1558, 1959), reached a maximum of $10^{-30}$ $cm^2$, that of the reaction $_{94}Pu^{241}(_6C^{13},4n)_{100}Fm^{250}$ one of $6 \cdot 10^{-30}$ $cm^2$. The experiments showed that the maximum cross section decreases much faster with increasing mass of the bombarding particles than is predicted by the theory. This is explained as follows: Either the nucleus is deformed in a collision so that the Coulomb barrier increases, or the system of the two nuclei is excited to perform vibrations so that the probability of fission prior to emission of the first neutron increases. There are 3 figures and 1 table.

ASSOCIATION:    Ob"yedinennyy institut yadernykh issledovaniy (Joint
                Institute of Nuclear Research)

SUBMITTED:    January 24, 1962
Card 2/2

ACCESSION NR:  AP4009948                    S/0186/63/005/006/0712/0715

AUTHOR:  Gvozdev, B. A.; Chuburkov, Yu. T.

TITLE:  Producing oxide layers of Th, U, Pu and rare-earth elements by electrolytic precipitation from organic solutions

SOURCE:  Radiokhimiya, v. 5, no. 6, 1963, 712-715

TOPIC TAGS:  heavy ions, metal foil, irradiation targets, thorium oxides, plutonium oxides, uranium oxides, electrolytic precipitation, acetone, methyl ethyl ketone, isobutyl alcohol

ABSTRACT:  Layers of lanthanide and similar elements were spread on thin metal foil and used as targets in the study of the nuclear reactions produced by heavy ion irradiation.  A new method has been suggested for the production of Th, U, Pu, Am, rare earth and certain other elements on thin aluminum foil (3-6 microns) by electrolytic precipitation from organic media.  Salt solutions in acetone, methyl ethyl ketone or isobutyl alcohol are used as electrolytes.  The five micron-thick aluminum foil targets with oxides of a number of differ-

Card 1/2

ACCESSION NR: AP4009948

ent elements were able to withstand prolonged irradiation by intensive beams ($\sim$5 microampere/cm$^2$) of accelerated heavy ions. A method has been developed for producing oxide layers of lanthanide and certain other elements by electrolytic precipitation from an organic medium. Targets have been developed for a cyclotron of multicharge ions on thin (5 micron) aluminum foil with an area of 5 cm$^2$ consisting of thorium, uranium, plutonium and numerous other oxides. "In conclusion, the authors express their sincere gratitude to V. V. Volkov, group leader and senior scientist, for his constant interest in the work." Orig. art. has: 4 figures.

ASSOCIATION: none

SUBMITTED: 09Jun62          DATE ACQ: 07Feb64          ENCL: 00

SUB CODE: EL, NS          NO REF SOV: 003          OTHER: 003

Card 2/2

BREDEL', V.V., V.V.; GVOZDEV, B.A.; FOMICHEV, V.A. [deceased]

Relation of the cross sections of formation of $Sc^{44}$, $Sc^{44m}$ isomer pairs in reactions involving heavy ions. Zhur. eksp. i teor. fiz. 45 no.4:904-909  O '63.                (MIRA 16:11)

1. Ob"yedinennyy institut yadernykh issledovaniy.

ACCESSION NR: AP4042561                S/0056/64/046/006/2017/2022

AUTHORS: Fomichev, V. A. (deceased); Gvozdev, B. A.; Bredel', V. V.

TITLE: Ratio of cross sections for the production of the Sc-44, 44m isomer pair in the reactions of direct interaction with heavy ions

SOURCE: Zh. eksper. i teor. fiz., v. 46, no. 6, 1964, 2017-2022

TOPIC TAGS: scandium, isomerism probability, ion interaction, direct interaction, stripping reaction

ABSTRACT: This is a continuation of an earlier investigation (ZhETF, v. 45, 104, 1963) devoted to the energy dependence of the production cross sections of $Sc^{44,44m}$ in heavy-ion reactions proceeding via compound-nucleus formation. To determine the energy dependence of the cross sections for the formation of the isomer pair $Sc^{44,44m}$ in reactions with heavy ions, when complete fusion of the nuclei does

Card   1/3

ACCESSION NR: AP4042561

not occur, the authors measured the $Sc^{44m}/Sc^{44}$ isomer ratio in neutron stripping reactions induced by irradiating Sc with $O^{16}$ or $Ne^{22}$ ions. The irradiation was carried out in the internal beam of the U-300 cyclotron of OIYaI, the targets were thin layers of scandium of varying thickness on various substrates, depending on the bombarding gas. The gamma radiation from the specimen was measured in a scintillation spectrometer with a 100-channel analyzer. The results show that in many-nucleon transfers (3pn), the isomer ratio in the $Al^{27} + Ar^{40} \rightarrow Sc^{44,44m}$ reaction becomes nearly equal to 6.5, i.e., larger than in reactions of complete fusion of nuclei. In the case of one-neutron transfer reactions, the isomer ratio is of order of unity and independent of the energy, being somewhat larger for neon ions than for the oxygen ions. "The authors are grateful to G. N. Flerov, S. M. Polikanov, and Ye. D. Donets for a discussion of this work, and to A. N. Filipson and his crew for operating the cyclotron." Orig. art. has: 7 figures and 2 formulas.

Card 2/3

ACCESSION NR:   AP4042561

ASSOCIATION:   Ob"yedinenny*y institut yaderny*kh issledovaniy (Joint Institute of Nuclear Research)   .

SUBMITTED:   19Jan64          DATE ACQ:                    ENCL:   00

SUB CODE:   NP                 NR REF SOV:   004            OTHER:   003

Card   3/3

TITLE:  Extraction of curium and fermium with thenoyltrifluoroacetone

TOPIC TAGS:  curium compound, fermium compound, complex compound, solvent extraction

ABSTRACT:  The purpose of this work was to study the quantitative extraction of curium and fermium by solutions of thenoyltrifluoroacetone in toluene from acetate solution and solutions of -hydroxyisobutyric acid at different concentrations and pH values and to determine the stability constants of the complexes which are formed.  The distribution of fermium and curium between the organic and the aqueous phase was investigated using $Cm^{242}$ and $Fm^{252}$ isotopes.  Cm and Fm were simultaneously extracted from a 0.1 M solution of acetate buffer at different pH values.. After extraction phases were separated and dried on gold plancheto for measurement of the $\alpha$-activity.  In another series of experiments curium was extracted with a 0.2 M solution of thenoyltrifluoroacetone from 0.1 and 0.4 M solutions of $\alpha$-hydroxy-

Card 1/2

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ACCESSION NR: AP5020304

isobutyric acid. The extraction constants were calculated and also the two phase stability constant $(\beta_z Q_z)$ of curium and fermium complexes with thenoyltrifluoroacetone: $K_{Cm} = (2.2 \pm 0.3) \cdot 10^{-9}$; $K_{Fm} = (2.6 \pm 1.1) \cdot 10^{-8}$; $(\beta_z Q_z)_{Cm} = (2.1 \pm 0.3) \cdot 10^{15}$

$(\beta_z Q_z)_{Fm} = (2.3 \pm 1.0) \cdot 10^{16}$. Assuming that in the investigated concentration and pH range the curium complex with $\alpha$-hydroxyisobutyric acid is of the CmB form, a complete stability constant was calculated for this complex, equal to $(2.3 \pm 0.6) \cdot 10^{-8}$. The authors wish to express their gratitude to I. Stary for valuable comments during the discussion of this work; to Ye. D. Donets and G. Kumpf for permitting the use of their $\alpha$-spectrometer. Orig. art. has: 3 figures and 2 tables.

ASSOCIATION: none

SUBMITTED: 24Dec64                 ENCL: 00                          SUB CODE: IC, GC

NO REF SOV: 001                    OTHER: 007

Card 2/2

L 00037-66   EWT(m)    DIAAP

ACCESSION NR: AP5020306

UR/0186/65/007/004/0453/0461

659.173.4 : 546.799.5.02.241 : 546.799.6.02.242 + 546.799.4.02.242

AUTHOR: Dedov, V. B.; Volkov, V. V.; Gvozdev, B. A.; Yermakov, V. A.; Lebedev, I. A.; Razbitnoy, V. M.; Trukhlyayev, P. S.; Chuburkov, Yu. T.; Yakovlev, G. N.

TITLE: Production of Pu-242 and Cm-242 from neutron-irradiated Am-241

SOURCE: Radiokhimiya, v. 7, no. 4, 1965, 453-461

TOPIC TAGS: plutonium, curium, americium, extraction, neutron irradiation

ABSTRACT: Irradiation of Am-242 with thermal neutrons produces $Pu^{242}$, $Cm^{242}$ and $Am^{243}$ which are of great interest in a number of physical and radiochemical investigations. The synthesis scheme is as follows:
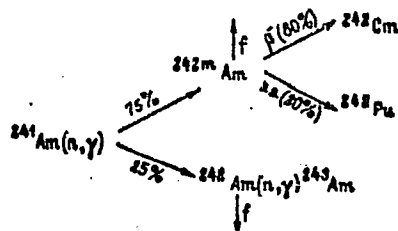


Card 1/2

L 00037-66
ACCESSION NR:  AP5020306                                    $()$

The thermal neutron cross section of $Am^{241}$ is 900 barn, thus even upon short irradiation with a high density thermal-neutron beam a significant amount of the above isotopes may be produced.  It can be seen from the above process that the yield of fission products is small since they are produced mainly during fission of $Am^{242}$. This facilitates the chemical processing of irradiated substances.  Production of $Pu^{242}$ by this process requires much less time than the method which uses $Pu^{239}$ as starting material.  The authors describe the chemical separation of $Pu^{242}$, $Cm^{242}$ and $Am^{243}$ from irradiated $Am^{241}$.  The scheme for the chemical processing was selected to be such that it would produce rapid separation of the products.  The main separation steps involved chromatographic and chemical extraction methods.  Chromatographic separation was made extremely difficult by high $\alpha$-activity due to the presence of $Cm^{242}$.  Chemical processing was carried out in a shielded area on a special stand with remote control of all operations.  The article indicates some properties of curium oxalate, potassium curium sulfate, curium hydroxide and curium carbonate.  Orig. art. has: 5 tables and 3 figures.

ASSOCIATION:  none

SUBMITTED:  18Apr64              ENCL: 00              SUB CODE:  GC, NP

NO REF SOV:  004                OTHER: 005
Card 2/2

L 44420-66   EWT(m)

ACC NR: AP6023080   (AN)    SOURCE CODE: UR/0367/66/003/004/0609/0613

AUTHOR: Belyayev, B. N. ; Gvozdev, B. A. ; Gudov V. I. ; Kalyamin, A. F; Krizhanskiy, L. M.

ORG: none

TITLE: Investigation of the gamma spectrum of $Br^{74}$ isotopes

SOURCE: Yadernaya fizika, v. 3, no. 4, 1966, 609-613

TOPIC TAGS: gamma spectrum, bromine isotope, scintillation spectometer, nuclear energy level, radiation intensity, cyclotron

ABSTRACT: The gamma spectra of Br isotopes, obtained in the reaction of $Cu(C^{12}, xn)Br$, have been investigated with the aid of a scintillation spectometer. Energies and relative intensities have been measured for a number of new $\gamma$-lines in bromine with the decay half-times 36 $\pm$1 and 4 $\pm$1 min. The energies and relative intensities are given for $\gamma$-lines with $T_{1/2}$ = 36 min. The isotope with $T_{1/2}$ = 36 $\pm$1 min was identified as $Br^{74}$. A diagram of the lower energy levels in $Se^{74}$ is given in the original article. The authors thank G. N. Flerov for his

Card   1/2

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Card   2/2

KHODANOVICH, I. Ye.; GVOZDEV, B.P.; MAMAYEV, V.A.

Quantitative correlation between film liquids and liquids with
suspended drops in gas and condensate flow in a pipeline. Trudy
VNIIGAZ no.13:130-134 '61.                            (MIRA 14:12)
                    (Gas, Natural—Pipelines)

GVOZDEV, B.P.; MAMAYEV, V.A.

Method of calculating the height of the settling section of an
oil dust collector.  Trudy VNIIGAZ no.13:135-146 '61. (MIRA 14:12)
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GVOZDEV, B.P.; ZAYTSEV, V.I.; MITROFANOV, I.A.; SHUSHLYAKOV, N.N.;
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Testing a remodelled vertical oil dust collector in the
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'63.                                                      (MIRA 17:4)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut prirodnogo
gaza (for Gvozdev, Zaytsev).  2. Leningradskoye upravleniye
magistral'nykh gazoprovodov (for Mitrofanov, Shushlyakov).
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Similarity criterion for the separation of a drop liquid
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ball-shaped dust collector.  Trudy VNIIGAZ no.21/29:172-182  '64.
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