ACC NR: AP7005864   SOURCE CODE: UR/0181/66/008/012/3652/3654

AUTHOR: Postnikov, V. S.; Yel'kin, Yu. M.; Meshkov, S. I.

ORG: Voronezh Polytechnic Institute (Voronezhskiy politekhnicheskiy institut)

TITLE: Internal friction in face-centered cubic metals during the course of stretching

SOURCE: Fizika tverdogo tela, v. 8, no. 12, 1966, 3652-3654

TOPIC TAGS: internal friction, metal deformation, tensile stress, cubic crystal, crystal lattice structure

ABSTRACT: This is a continuation of earlier work (in: Issledovaniya staley i splavov [Research in Steels and Alloys], p. 376, Nauka, M. 1964), dealing with internal friction in samples stretched at a constant rate. The present article is devoted to the calculation of the second component of internal friction, which takes into account the additional energy dissipation as a function of the rate of deformation. A solution of the differential equations for the deformation as a function of the time shows that the actual deformation consists of the linear part on which an elliptical hysteresis loop is superimposed, and the effect of this loop on the friction is evaluated. Numerical examples are given for aluminum by way of illustration. Orig. art. has: 2 figures and 8 formulas.

SUB CODE: 20, 11/   SUBM DATE: 13Jun66/   ORIG REF: 001/   OTH REF: 005

Card 1/1

SHILOVA, Ye.I. (Moskva); MESHKOVA, O.V. (Moskva); NIKITAYEVA, O.G. (Moskva);
YELKINA, A.G. (Moskva)

Effect of grain size in D16 and D19 alloys on crack formation
and the strength of welded joints. Avtom. svar. 15 no.8:14-20
Ag '62.   (MIRA 15:7)
(Nonferrous alloys—Metallography)
(Sheet metal—Welding)

KOZLOVSKAYA, V.A. (Moskva); MESHKOVA, O.V. (Moskva); YELKINA, A.G. (Moskva)

Effect of the composition of D20-type alloys on their properties and weldability. Avtom. svar. 15 no.9:57-62 S '62.

(MIRA 15:9)

(Aluminum alloys—Welding)

PODGAYSKAYA, M.O.; YEL'KINA, A.P.

Accelerated diagnosis of diphtheria by means of fluorescence micro-
scopy. Lab. delo 7 no.5:51-53 My '61.   (MIRA 14:5)

1. Permskiy institut vaktsin i syvorotok.
        (FLUORESCENCE MICROSCOPY)   (DIPHTHERIA)

USSR/Human and Animal Physiology. Digestion.   V

Abs Jour: Ref. Zhur-Biol., No 6, 1958, 26990.

Author : A.V. Yel'kina.
Inst   : The University of Tomsk.
Title   : The Mechanism of the Disturbances in Gastric
          Secretion.Associated with Cronic Loss of Bile.

Orig Pub: Tr. Tomskogo un-ta, 1956, 143, 237-242.

Abstract: Gastric secretion in response to histamine and
          ingestion of bread, meat and milk was studied
          in dogs with denervated gastric pouches prepared
          by Ivy's method. A month after superimposition
          of a biliary fistula and ligation of the common
          bile duct, an increase was seen in the secretory
          volume, acidity and digestive activity of the

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USSR/Human and Animal Physiology. Digestion.   V

Abs Jour: Ref. Zhur-Biol., No 6, 1958, 26990.

      gastric juice, while after 4 to 7 months they had
      fallen below the initial level. The chronic loss
      of bile altered the humoral regulation of gastric
      secretion and was accompanied by trophic disturb-
      ances (ulceration of the skin, alopecia) which led
      to the death of the animals.

Card   : 2/2

PETROV, K.A.; SHEVCHENKO, V.B.; TIMOSHEV, V.G.; MAKLYAYEV, F.A.; FOKIN,
    A.V.; RODIONOV, A.V.; BALANDINA, V.V.; YEL'KINA, A.V.; NAGNIBEDA,
    Z.I.; VOLKOVA, A.A.

Alkyl phosphonates, diphosphonates, and phosphine oxides as
extracting agents. Zhur.neorg.khim. 5 no.2:498-502
F '60.   (MIRA 13:6)
          (Phosphonic acid) (Phosphine oxide)
                (Extraction(Chemistry))

TIMOSHEV, V.G.; PETROV, K.A.; RODIONOV, A.V.; BALANDINA, V.V.; VOJKOVA, A.A.;
YEL'KINA, A.V.; NAGNIBEDA, Z.I.

Extraction capacity of neutral, oxygen-containing organic substances.
Radiokhimiia 2 no.4:419-425 '60.   (MIRA 13:9)
                    (Extraction (Chemistry))

YEL'KINA, A.V., kand.med.nauk (Tomsk)

Motility of the bile excretion apparatus of the liver in para-
thyroid gland insufficiency. Probl.endok.i gorm. 7 no.3:32-37
'61.
(MIRA 14:9)

1. Iz kafedry normal'noy fiziologii (zav. - prof. Ye.F. Lapin)
Tomskogo meditsinskogo instituta.
(PARATHYROID GLANDS--DISEASES) (LIVER) (BILE)

KOCHUROVA, A.L.; KULIKOVA, P.Ye.; YEL'KINA, A.V.

Effectiveness of treating erosion of the cervix uteri with
irrigations iodine-bromine water at the Ust'-Kachka Health Resort.
Vop: kur., fizioter. i leoh. fiz. kul't. 26 no.3:205-206 My-Je '61.
(MIRA 14:7)

1. Iz kurorta Ust'-Kachka (direktor V.N.Shukin).
            (UTERUS--DISEASES)   (UST'-KACHKA--MINERAL WATERS)

YEI'KINA, A.V.

S/830/62/000/001/002/012
E111/E192

AUTHORS: Timoshev, V.G., Petrov, K.A., Rodionov, A.V., Balandina, V.V., Volkova, A.A., Yel'kina, A.V., and Nagnibeda, Z.I.

TITLE: Importance of the structure and physical state of extraction-solvent molecules

SOURCE: Ekstraktsiya; teoriya, primeneniye, apparatura. Ed. by A.P. Zefirov and M.M. Senyavin. Moscow, Gosatomizdat, 1962. 88-103.

TEXT: Taking the criterion of extraction ability as the distribution coefficient, and the ratio β (the number of hydrogen to the number of carbon atoms in the solvent), the authors study the distribution of uranyl, plutonium (IV), zirconium and niobium nitrates. The feed comprised 0.5 - 1 or 2 N aq. nitric acid solution. Extracting with orthoformates and phosphates the extractive ability falls with decreasing β values - steric hindrance playing an important part. With phosphonates the opposite relation holds - the water solubility of the lower homologues and their polymerization being important factors.

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Importance of the structure and ...   S/830/62/000/001/002/012
                                           E111/E192

The extractive ability of phosphonates increases at the same time
as the alkyl radicals become less electrophilic and the solvents
less soluble; however, when the radicals become comparatively
large, steric hindrances become decisive and extractive ability
falls sharply in spite of reduced solubility. The same holds for
phosphine oxides and amines. Further work to generalize these
relations is contemplated.
There are 15 figures.

Card 2/2

NORKINA, S.P.; OREKHOVSKAYA, Ye.P.; RUGACHEVA, P.U.; YEL'KINA, G.A.;
MARSHUNOVA, G.N.

Development of Azotobacter in Chernozem soils. Trudy Vses. inst.
sel'khoz. mikrobiol. no.14:49-62 '58.   (MIRA 15:4)
  (Karabalynskiy District—Chernozem soils) (Azotobacter)

YELKINA, G.G.; YAROSHENKO, P.D.

Carotene content of some plants in the Maritime Province and
the Amur Valley in connection with germination conditions and
phases of development; preliminary report. Soob.DVFAN SSSR
no.9:136-142 '58.   (MIRA 12:4)
(Maritime Province--Plants) (Amur Valley--Plants) (Carotene)

YELKINA, G.G.; YAROSHENKO, P.D.

Chemistry of meadow and pasture grasses in the Maritime Territory.
Soob.DVFAN SSSR no.13:57-63 '60.   (MIRA 14:3)

1. Dal'nevostochnyy filial im. V.L.Komarova Sibirskogo otdeleniya
AN SSSR.
            (Maritime Territory--Grasses)

YEL'KINA, G.M.; TSVETKOVA, Ye.n.; ZHUKOV, G.V.

Tertian malaria with prolonged incubation period in Samarkand. Med.
paraz. i paraz. bol. no.4:350-351 O-D '54.   (MIRA 8:2)

1. Iz Samarkandskoy gorodskoy protivomalyariynoy stantsii.
      (MALARIA, epidemiology.
          in Russia, tertian malaria with prolonged incubation
          period)

BELOUSOVA, L.M.; DANILOV, O.P.; YEL'KINA, I.A.

Optimum operating conditions of an optical quantum generator on a neon-helium mixture. Zhur. eksp. i teor. fiz. 44 no.3:1111-1113 Mr '63.   (MIRA 16:3)

1. Gosudarstvennyy opticheskiy institut.
         (Masers)   (Neon)   (Helium)

YELKINA, K.

New technique of knitting socks with patterns. Prom.koop. no.12:
32 D '55.   (MLRA 9:5)

1. Zamestitel' presedatelya pravleniya Lengorshveytrikotazhprom-
soyuza.
                              (Hosiery)

GOKHMAN, I.S.; YELKINA, L.A.; ZAVIRYUKHA, N.I.

Analysis of technical and economic indices of oxygen-blown
converter steel production at the plant A for 1963. Stor.
trud. TSNIICHM no.45:75-84 '65.   (MIRA 18:9)

YELKINA, L.G., inzhener.

Stakhanovites successfully operate vacuum evaporator with a low
level of glycerine water. Masl.zhir.prom. 17 no.1:30 Ja '52.
(MLRA 10:9)

1. Zavod "Novyy Kylovar."
             (Glycerol)   (Evaporating appliances)

DERYABINA, A.Ye., inzh.; YELKINA, L.G., inzh.

Utilization of soap alkali wastes in the national economy.
Masl.-zhir. prom. 29 no.3:37-38 Mr '63.   (MIRA 16:4)

1. Moskovskiy zavod "Novyy mylovar".
                (Soap industry—By-products)

AUTHORS: Neymark, Yu.I., Maklakov, Yu.K. and Yelkina, L.P.

TITLE: The Circulation of Pulses in a Highly Non-linear System Having a Delayed Feedback With Losses (Tsirkulyatsiya impul'sov v sil'nonelineynoy sisteme s zapazdyvayushchey obratnoy svyaz'yu, obladayushchey dispersiyey)

PERIODICAL: Radiotekhnika i Elektronika, 1958, Vol 3, Nr 11, pp 1348 - 1360 (USSR)

ABSTRACT: The generators with a delayed feedback have a certain practical interest in radio engineering. A generator of this type (Figure 1) consists of the following elements: 1) a non-linear circuit which can be described by a non-linear function $f(u)$ such that the input signal can be expressed by

$$x(t) = f\left[u\left(t\right)\right] \qquad (1) ;$$

2) a linear circuit with constant parameters which can be described by a linear response $\varphi(t)$ so that the relationship between its input signal and its output is expressed by:

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The Circulation of Pulses in a Highly Non-linear System Having a Delayed Feedback With Losses

$$y(t) = \int_{-\infty}^{t} \dot{\varphi}(t - \xi)x(\xi)d\xi \qquad (3)$$

and 3) a delay circuit which is described by:

$$u(t) = y(t - \alpha) \qquad (4)$$

where α denotes the delay time. Eq (4) does not take the dispersion (losses) into account but, together, Eqs (1), (3) and (4) can be used to describe also a lossy system having a delayed feedback. The solution of a number of problems relating to the generator of Figure 1 can be effected by employing the method developed by one of the authors (Refs 12, 13, 14 and 15). For the purpose of analysis, it is assumed that the characteristic of the non-linear element of the generator is of the Z-type, such as shown in Figure 2. This means that for any input signal $u(t)$, the output signal $x(t)$ will be in the form of a train of rectangular

Card2/6 pulses. Consequently, the output signal can be expressed

The Circulation of Pulses in a Highly Non-linear System Having a
Delayed Feedback With Losses

by Eq (6), where t_j are the time instants at which $u(t)$
reaches a value δ and at which $x(t)$ changes abruptly
from "zero" to "one" or from "one" to "zero". The signal at the
output of the linear element can be expressed by Eq (7) and
the output signal is given by Eq (8). The above equations
can be used to analyse the operation of various generator
systems. In particular, when each operating cycle of the
system consists of 1 pulse (this is shown in Figure 5),
the basic formulae are given by Eqs (9) and (10). In these,
t_1^n and t_2^n denote the instants of the commencement and
the termination of a pulse corresponding to the n-th
cycle. Eq (9) shows that the leading edges of the pulses
have a repetition period, as expressed by Eq (11).
Eq (10) determines the duration of the n-th pulse in
terms of the duration of (n-1)-th pulse. Eq (10) can be
written as Eq (14), where τ^n denotes the duration of the
n-th pulse. This can further be written as Eq (15). On
the basis of the theory of oscillations and the problem
Card3/6   of iterations (Refs 16, 17 and 18), it follows that the

SOV/109-3-11-2/13

The Circulation of Pulses in a Highly Non-linear System Having a Delayed Feedback With Losses

solution of Eq (15) is stable provided the conditions expressed by Eqs (17) and (19) are fulfilled. If the system contains multi-pulse cycles, the relationships for the inception instant and the termination of the i-th pulse are expressed by Eqs (22) and (23). These instants for the n-th cycle (consisting of m pulses) can also be expressed by Eqs (24). If $r_m = t_{2m-1} - t_{2m-2}$ and $\tau_m = t_{2m} - t_{2m-1}$, where r_m denotes distance between m-1 and m-th pulses and τ_m is the duration of the m-th pulse, Eqs (22) and (23) can be written in the form of Eqs (27) and (28). In order to determine the cycle, it is necessary to find the solution of these equations for the case:

$$\tau_m^n = \tau_m^{n-1} = \tau_{mnp} \quad , \quad r_m^n = r_m^{n-1} = r_{mnp} \quad ,$$

where the subscripts np relate to the threshold values.

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This leads to Eqs (29) and (30). The stability of the system is therefore described by Eqs (31) and (32). The above equations can be used to construct the so-called cyclic function for single-pulse and multi-pulse cycles for various values of δ. The function is represented graphically in Figure 7, where the duration of the n-th pulse is expressed by (n-1)-th pulse. From the figure, it is seen that for $\delta \geqslant 0.5$, each pulse introduced into the system gradually becomes smaller and finally disappears. On the other hand, for values of $\delta < 0.5$ it is possible to obtain a stable, single-pulse cycle. The above theoretical findings were verified experimentally. The non-linear element in the investigated system was in the form of a cut-off tube, type 6P9, whose characteristic is as shown in Figure 9; this was sufficiently close to the required Z-type characteristic. The delay line in the system was a coaxial cable having a total delay of 2.5 µs. The losses of the line did not introduce any particular complications. The experimental results obtained are illustrated by the oscillograms of Figures 10, 11, 12 and 13.

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The Circulation of Pulses in a Highly Non-linear System Having a
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> The oscillograms of Figure 10 show the transient processes
> in a single pulse system, while those of Figure 12 illus-
> trate the transients in a two-pulse system. It was also
> possible to obtain three-pulse cycles such as shown in
> Figure 13 but there were practical difficulties in
> obtaining the cycles containing a large number of pulses
> (more than 3). There are 13 figures and 20 references, 18
> of which are Soviet, 1 English and 1 French.

ASSOCIATION: Institut radiotekhniki i elektroniki AN SSSR
              (Institute of Radio Engineering and Electronics
              of the Ac.Sc.USSR)

SUBMITTED: March 19, 1957

Card 6/6

81409

5.3200

AUTHORS: Kuznetsov, B. A., Yelkina, N. D.

TITLE: The Mechanism of the Heterogeneous Exchange of Acetone and Water in the Gaseous Phase

PERIODICAL: Doklady Akademii nauk SSSR, 1960, Vol. 132, No. 6, pp. 1344- 1347

TEXT: In a previous paper (Ref. 1), the authors investigated the exchange of acetone and HBr in the gaseous phase, and derived a reaction scheme for this process. To check this scheme and to clarify the general rules governing the exchange between compounds having an undivided electron pair and an active hydrogen atom, the kinetics of the isotope exchange between acetone and water, acetone and ammonia, was investigated. With respect to the latter process, the authors only state that no exchange occurred when using the method described in Ref. 1. The exchange of acetone and water was studied by means of tritium. At a specific activity q_{HTO} = 4.52.10^6 imp/min.mm, a very slow exchange was observed, the kinetics of

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The Mechanism of the Heterogeneous Exchange   S/020/60/132/06/34/068
of Acetone and Water in the Gaseous Phase   B004/B005

which was studied. The acetone-water mixture was added into the experimen-
tal apparatus, the acetone was separated from the water after the reaction.
The T content in acetone was determined by means of a counter, the T con-
tent in water by measuring the activity of the hydrogen obtained by reduc-
tion of HTO via magnesium at 470°C. The experimental results are shown in
Fig. 1 (dependence of the exchange rate on the pressure of acetone) and
Fig. 2 (dependence of the exchange rate on temperature). The experiments
were carried out in part in an empty quartz vessel, in part in a quartz
vessel filled with quartz splinters. In the latter case, the surface was
16 times larger, the reaction rate 100 times higher than with the empty
vessel. From this fact the authors conclude that the acetone-water exchange
occurs via the hydroxyl groups of the quartz surface. The authors measured
the exchange of acetone and water with the hydroxyl groups (Fig. 3). These
results lead to the conclusion that the acetone-water exchange occurs via
acetone compounds chemically adsorbed on the quartz under action of the
hydroxyl groups of the quartz surface and the adsorbed water. There are
3 figures and 5 references: 5 Soviet and 1 German.

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81409

The Mechanism of the Heterogeneous Exchange   S/020/60/132/06/34/068
of Acetone and Water in the Gaseous Phase   B004/B005

ASSOCIATION: Moskovskiy gosudarstvennyy universitet im. M. V. Lomonosova
              (Moscow State University imeni M. V. Lomonosov)

PRESENTED: February 24, 1960, by V. N. Kondrat'yev, Academician

SUBMITTED: February 19, 1960

Card 3/3

YELKINA, N.I.

Mineral metabolism in the bone tissue of rabbits exposed to chronic
gamma irradiation. Radiobiologiia 1 no.6:874-877 '61. (MIRA 15:2)
                (GAMMA RAYS—PHYSIOLOGICAL EFFECT)
                      (MINERAL METABOLISM)

28243
S/581/61/000/000/014/020
D299/D304

27.1130

AUTHOR: Yelkina, N.I.

TITLE: Change in the mineral metabolism and nitrogen content in
the bone tissue of rats depending on age

SOURCE: Lebedinskiy, A.V. and Moskalev, Yu.I., eds. Biologiches-
koye deystviye radiatsii i voprosy raspredeleniya radio-
aktivnykh izotopov; sbornik rabot. Moscow, Gosatomizdat,
1961, 128-135

TEXT: Previous research on the effects of age on the chemical
composition and metabolism processes in human and animal bones usu-
ally did not distinguish between the tubular and the compact parts
of bones. Studies on the different age groups of animals, however,
have shown that the tubular and compact parts differ considerably
in the intensity of metabolism and their content of mineral and
nitrous substances. The author therefore made a study of the miner-
al metabolism and nitrogen content in various portions of tubular

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Change in the mineral metabolism...

bones over a longer period of the animals' lives than was the case
in previous investigations. It was thought that the study would
be of interest in assessing the changes induced in the metabolism
of the epiphysical and diaphysical sections of tubular bones affect-
ed by incorporated plutonium. The tests were run on rats aged 30-
630 days and fed a diet containing 0.43% calcium and 0.44% phosphor-
us. To study the rate of Ca^{45} and P^{32} inclusion, they were injected
intraabdominally with a solution of a radioactive mixture at 0.1 c
$P32$ and $0.05 \mu c$ Ca^{45} per gram of the animal's weight. All results
were computed per gram of dry tissue and expressed as mean values
and mean quadratic errors. The mean indices of the various groups
were compared by calculating the error of difference. The calcium
content in the rats' period of life from 30 to 630 days rose by
23% in the diaphysis and by 33% in the epiphysis; the nitrogen
content dropped by 33 and 46% respectively. The phosphorus content
dropped somewhat in the 30-270 days period but rose between the
270th and 630th day. The specific activity of calcium-45 in both
epiphysis and diaphysis by the 630th day dropped by an average of

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Change in the mineral metabolism...

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72% and that of phosphorus-32 by 93% compared with the readings on
the 30th day. Between the 30th and 630th day the activity of the
alkaline and the acid phosphatases dropped by 75 and 87% respective-
ly. The most marked metabolism changes were noted in the period
between the 30th and the 270th day. The total nitrogen content,
enzyme activity and intensity of Ca^{45} and P^{32} inclusion were higher
in the epiphysis than in the diaphysis, while the calcium and phos-
phorus contents were lower for all age groups. The author concludes
that the metabolism changes due to the action of incorporated pluto-
nium are similar to the symptoms of natural aging. The author was
guided in her work by P.Ye. Libinzon, while N.I. Andreyeva assisted
with the spectral studies. There are 2 figures, 2 tables and 18
references: 7 Soviet-bloc and 11 non-Soviet-bloc. The 4 most recent
references to English-language publications read as follows: S.H.
Cohn, J.K. Gong, Amer. J. Physiol., 173, 115 (1953); H.J. Kogers,
S.M. Weidmann and A. Parkinson, Biochem. J., 50, 537 (1952); R.O.
Thomas and oth. Amer. J. Physiol., 169, 568 (1952); L. Singer,
W.D. Armstrong and M.L. Premer, Proc. Soc. Exper. Biol. Med., 80,
643 (1952).

Card 3/3

YELKINA, N.I.

Age-related changes in the mineral metabolism and nitrogen content
of bone tissues in rats. Biokhimiia 26 no.2:212-216 Mr-Ap '61.
(MIRA 14:5)

(BONES)   (NITROGEN IN THE BODY)   (MINERAL METABOLISM)
              (AGING)

32749
S/205/61/001/006/009/022
D268/D305

27, 1220   also 2209

AUTHOR: Yelkina, N.I.

TITLE: Mineral metabolism in bony tissue in rabbits under
               the chronic action of gamma-rays

PERIODICAL: Radiobiologiya, v. 1, no. 6, 1961, 874 – 877

TEXT: The Ca, P, and N content, P^{32} incorporation intensity and
alkaline phosphatase activity in the epiphysitic and diaphysitic
parts of long bones of 22 5 – 6 month-old chinchilla rabbits of
both sexes were studied following protracted irradiation with Co^{60}
gamma-rays with a rate of 0.7 r/min. at a daily dose of 30 r, 6 ti-
mes per week. During the experiment no rabbits died, but there was
some loss of weight. Slaughtering was by air embolism with total
doses of 900, 1,410, 1,920 and 2,490 r. The quantity of Ca, P, and
N, alkaline phosphatase activity and P^{32} incorporation intensity
was studied in crushed bone, removed immediately following slaught-
ering with separation of the epiphysitic and diaphysitic parts. Al-
kaline phosphatase activity was also studied in the blood serum.
Results showed that the Ca content scarcely changed though there

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Mineral metabolism in bony tissue ...   D268/D305

was some tendency to increase in the epiphysis. There was some in-
crease in P content at a total dose of 900 r, but with subsequent
irradiation it remained normal. The P^{32} incorporation intensity in
subjects irradiated at 2,490 r fell by 39 % in the diaphysis and
29,4 % in the epiphysis, otherwise remaining normal. At 900 r the
N content fell by 16 % in the diaphysis and by 11 % in the epiphy-
sis, otherwise there was little difference in irradiated and non-
irradiated rabbits. At total doses of 1,920 and 2,490 r alkaline
phosphatase activity declined by 55 and 33 % respectively as against
the control, but no change was noted in it in the blood serum. It
is suggested that the reduction in alkaline phosphatase activity
may be due to destruction of osteoblasts which produce it. There
are 1 table and 14 references: 5 Soviet-bloc and 9 non-Soviet-bloc.
The 4 most recent references to the English-language publications
read as follows: C.W. Wilson, Brit. J. Radiol., 29, 85, 1956; Idem,
29, 571, 1956; A. Zuppinger and W. Minder, Proc. of the Second Uni-
ted Nat. Intern. Conf. Peac. Uses of Atomic Energy, Geneva, 22, 247
1958; H.R. Perkins, Biochem. J., 57, 15, 1954.

SUBMITTED: April 15, 1961
Card 2/2

YELKINA, N.I.; TSEVELEVA, I.A.

Mineral and protein metabolis_ in the bone tissue in rats
after plutonium injury. Med.rad. 6 no.3:58-63 '61.
(MIRA 14:5)

(BONES) (NITROGEN METABOLISM) (MINERALS IN THE BODY)
(PLUTONIUM—TOXICOLOGY)

44059.

8/742/62/000/000/001/021

I015/I215

27.1220

AUTHORS: Belyayev, Yu.A., Konstantinova, V.V., and Yelkina, N.I.

TITLE: Distribution of plutonium in rabbits

SOURCE: Plutoniy-239; raspredeleniye, biologicheskoye deystviye,
             uskoreniye vyvedeniya. Ed. by A.V. Lebedinskiy and
             Yu.I. Moskalev. Moscow, Fedgiz, 1962, 7-11

TEXT: Most of the earlier studies on the distribution and
excretion of plutonium were carried out on small laboratory animals.
Present experiments were carried out on rabbits, male and female,
weighing 2.5-3.0 kg. Plutonium nitrate (pH=2) was injected i.v. at
doses of 2-7 μCu/kg, and the animals were sacrificed 1, 7, 14 days,
and 1,3,4,5,6,9, 12 months after injection. Yu.A. Belyayev's method
was used in order to determine the amount of plutonium in the bones,
liver, kidneys, spleen, lungs, muscles, bone marrow and gastro-intes-
tinal tract. The excretion from the liver where it was concentrated

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S/742/62/000/000/001/012
I015/I215

Distribution of plutonium...

up to 70% occurred very slowly - 43% of the plutonium was still pre-
sent after 6 months, and 21.7% after one year. The initial concen-
tration in the bones was 20-30%, but reached a   value of 43%
after 6 months. The plutonium concentrated in the spongy more than
in compact bones, and settled in the marrow when administered in the
form of $Pu(NO_3)_4$. There are 1 figure and 3 tables.

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44061

S/742/62/000/00/003/021
I015/I215

27.3520
27.1220

AUTHORS: Belyayev, Yu.A., Yelkina, N.I., Konstantinova, V.V.,
           and Tseveleva, I.A.

TITLE: The toxicologic characteristics of sodium-plutonyl-
           triacetate and its distribution in rats

SOURCE: Plutoniy-239; raspredeleniye, biologicheskoye
           deystviye, uskoreniye vyvedeniya. Ed. by A.V.
           Lebedinskiy and Yu.I. Moskalev. Moscow, Medgiz,
           1962, 19-22

TEXT: This plutonium salt has been studied little. Experiments
were carried out on 260 rats and 49 control animals weighing 120-150 g.
The doses of freshly prepared, i.p. injected plutonium salt (pH = 6.5)
were 21,11,6.3,3.3 and 1.6 μCu/kg b.w. Three animals from each dose
group were sacrificed at various time-intervals after injection and

Card 1/2

S/742/62/000/000/003/021
I015/I215

The toxicologic characteristics...

their organs were examined for the presence of plutonium. The results
of the histologic examination are reported by A.P. Nifatov in a sepa-
rate article. The blood picture was studied in 10 animals of each
group on the 1st, 2nd and 3rd week and 1st, 2nd, 3rd and 6th month
after injection. The determination of plutonium in the organs was
carried out by Yu.A. Belyayev's method. It was found that the dis-
tribution of $NaPuO_2(CH_3COO)_3$ in the various organs was very much the
same as that of other plutonium compounds. The deposits in the bones
of the plutonium compound studied accounted for 50-60% of the injected
dose, but decreased gradually down to 27% 18 months after the injec-
tion. The distribution of Pu in organism was independent of the dose.
The doses of 3.3 and 1.6 μCu/kg b.w. were the most carcinogenic, where-
as the latter dose did not affect the average life-span of the rats.
There are 3 tables.

Card 2/2

44067

8/742/62/000/000/009/021
I015/I215

27 1220

AUTHORS: Yelkina, N.I., Tseveleva, I.A.

TITLE: Effect of plutonium on mineral and protein metabolism in bone tissue of rats

SOURCE: Plutoniy-239; raspredoleniye, biologicheskoye deystviye, uskoroniye vyvedeniya. Ed. by A.V. Lebedinskiy and Yu.I. Moskalev. Moscow, Medgiz, 1962, 56-62

TEXT: This is the continuation of a previous study. Experiments were carried out on 86 female albino rats weighing 120-160g and on 74 control animals. One group of animals received $20.0 \mu Cu/kg$ b.w. of plutonium (in the form of nitrate or citrate complex, pH = 6.0), and another group received $1.9 \mu Cu/kg$ b.w. Subacute damage developed

Card 1/3

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I015/I215

Effect of plutonium on mineral...

following the administration of the larger dose, and 20-25% of the
animals died within a period of 2 months after the administration.
This group was examined on the 60th-70th day. The group of animals
which received the smaller dose was examined 1-1½ years after the
administration of the radioactive substance. The minerals and the
nitrogen-containing substances were investigated separately in the
spongy and compact bones (epiphysis and metaphysis, and diaphysis,
respectively). The bones were washed off the bone marrow with phy-
siological solution and their calcium and phosphorus determined per-
manganometrically and by the method of Fiske-Subarrow, after minerali-
zation with suphuric acid, respectively. The metabolic processes in
the bones were studied with P^{32}, Ca^{45} and glycine-1-C^{14}. The simul-
taneous measuring of Pu^{239} and C^{14} was carried out by the method of
R.V. Semov. It was found that the P, Ca and nitrogen-containing sub-

Card 2/3

S/742/62/000/000/009/021
I015/I215

Effect of plutonium on mineral...

stances were present in the same amounts following both doses of Pu.
There was a decrease in the alkaline phosphatase activity in the epi-
and diaphysis in cases of chronic injury – of 25% after one year, and
of 50% after 18 months. The rate of P^{32} and particularly of Ca^{45} in-
corporation into the epiphysis of the experimental animals was consi-
derably lower than in the controls. The rate of incorporation of
glycine-1-C^{14} into the epiphysis in cases of chronic injury was about
one half of that in the controls. There are 5 figures and 1 table.

Card 3/3

YELKINA, N.I.

Phosphatase activity and calcium, phosphorus and nitrogen
content of the bone tissue of rabbits injured by plutonium-
239. Radiobiologiia 3 no.3:351-354 '63.   (MIRA 17:2)

YELKINA, N.I.; TOKARSKAYA, Z.B.

Pathochemistry of the liver in poisoning with plutonium-239.
Vop. med. khim. 9 no.2:154-160 Mr-Ap '63.   (MIRA 17:8)

ACC NR: AP5025918   SOURCE CODE: UR/0205/65/005/005/0662/0666

AUTHOR: Yelkina, N. I.; Libinzon, R. Ye.

ORG: None

TITLE: Adenosine and adenylic acid desaminase activity in tissues of irradiated rabbits

SOURCE: Radiobiologiya, v. 5, no. 5, 1965, 662-666

TOPIC TAGS: experiment animal, irradiation effect, enzyme, nucleic acid, tissue physiology, spectrophotometric analysis

ABSTRACT: Twenty-nine rabbits weighing 2 to 2.5 kg were gamma-irradiated (cobalt-60, 15 r/min) with a 1000 r dose and then groups of 3 to 6 animals were killed 15 min, 4, 12, and 24 hrs later to determine adenosine and adenylic acid desaminase activity during the first 24 hrs. Fifteen animals served as control. Aqueous tissue homogenates were prepared from the small intestine mucosa, spleen, appendix, bone marrow, skeletal muscles, and liver. Adenosine was added to a tissue homogenate in a 0.1 M glycine buffer (pH7.4) after the temperature of the reacting mixture reached 23° to determine adenosine desaminase activity. Adenylic acid was added to a tissue homogenate in a 0.07M succinate buffer (pH 6.0) at a 27° temperature to determine adenylic

Card 1/2   UDC: 612.014.48

ACC NR: AP5025918

acid desaminase activity. Enzyme activity was measured by H. M. Calcar's spectrophotometric method and by initial reaction rates according to methods of M. Dixon, E. Webb, and E. J. Conway. Findings show that following a 1000 r dose adenosine desaminase activity increases in appendix lymph tissue by 55% after 15 min and by 65% after 4 hrs, increases less markedly in small intestine mucosa and bone marrow, and barely changes in the liver and spleen. Adenylic acid desaminase activity decreases in the skeletal muscles by 30% after 24 hrs, increases slightly in appendix lymph tissue after 15 min and 4 hrs, and decreases slightly in the spleen after 24 hrs. The authors suggest that the enzyme activity reaction differences to irradiation are related to certain physiological properties of the investigated tissues, but do not draw any conclusions. Orig. art. has: 2 figures.and 2 tables.

SUB CODE: 06/ SUBM DATE: 06Sep63/ ORIG REF: 002/ OTH REF: 008

nw

Card 2/2

L 14641-66   EWT(m)/EWP(j)/T/ETC(m)-6   WH/RM
SOURCE CODE: UR/0020/66/166/002/0378/0380

ACC NR: AP6004093
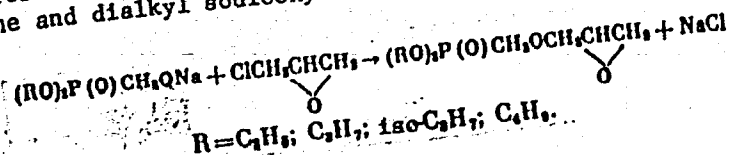
AUTHOR: Orlov, N. F.; Viktorov, O. F.; Yelkina, N. S.

ORG: Leningrad Institute of the Textile and Light Industry im. S. M. Kirov (Leningradskiy institut tekstil'noy i legkoy promyshlennosti)

TITLE: Synthesis of dialkyl glycidyloxymethylphosphonates

SOURCE: AN SSSR. Doklady, v. 166, no. 2, 1966, 378-380

TOPIC TAGS: polymer, phosphonate ester, catalysis, plasticizer

ABSTRACT: Epoxidic organophosphorus compounds are of practical interest as plasticizers, fire-resistance imparting additives, poly(vinyl chloride) stabilizers, etc. This work reports the preparation of new dialkyl glycidyloxymethylphosphonates from epichlorohydrine and dialkyl sodiooxymethylphosphonates according to the following reaction:

$$(RO)_2P(O)CH_2ONa + ClCH_2CHCH_2 \rightarrow (RO)_2P(O)CH_2OCH_2CHCH_2 + NaCl$$

$$R = C_2H_5;\ C_3H_7;\ iso\text{-}C_3H_7;\ C_4H_9.$$

The best yields are obtained by using excess epichlorohydrine in the presence of

UDC: 547.419+547.631.1.07

Card 1/2

L 14641-66
ACC NR: AP6004093

quaternary ammonium catalysts. It was shown that acidic catalysts such as boron
trifluoride etherate promote polymerization of the obtained glycidyloxymethylphospho-
nates; this is accompanied by cleavage of the epoxide ring. Orig. art. has: 1 table

[VS]

SUB CODE: 11,07/ SUBM DATE: 28Apr65/ ORIG REF: 006/ OTH REF: 001/ ATD PRESS:
4198

Card 2/2

Relation between the porous structure of pyrite and its conditions of formation. M. A. Kazaik, A. S. Shur, and N. T. El'kina. Doklady Akad. Nauk S.S.R. 93, 1045-8 (1953).—The porosity distribution in pyrite, characterized by the ultra- and microporosity of the samples, does not depend on the aggregate structure but on the relative age and on the temp. and pressure conditions during the mineralization. The pyrite d. decreases regularly during the

deposition of granular aggregates and also during the growth of the individual crystals. The zonal d. of the crystals affects in some way the zonal reactions of compn. changes, which depend also on a no. of other factors, such as the phys. and chem. nonuniformity of the actual crystals of the minerals and on the different conditions of mineral-formation process in the silicate contact zone.   W. M. S.

YEL'KINA, N T

15-1957-3-3112

Translation from: Referativnyy zhurnal, Geologiya, 1957, Nr 3,
                   p 100 (USSR)

AUTHORS: Ovchinnikov, L. N., Shur, A. S., Yel'kina, N. T.

TITLE: Thermal-Analysis Studies of the Amphiboles in Some Skarn
              Zones of the Urals (Termoanaliticheskoye issledovaniye
              amfibolov nekotorykh skarnovykh zon Urala)

PERIODICAL: Tr. 1-go soveshchaniya po termografii, Kazan', 1953,
              Moscow-Leningrad, Izd-vo AN SSSR, 1955, pp 250-265

ABSTRACT: Fourteen samples of amphibole from various skarns in
              the Urals were examined by X-ray and optical methods, by
              thermal analyses, and by a study of the curves obtained
              for change of weight using the dynamic suspension method.
              It was ascertained that the amphiboles dehydrated in two
              stages, which correspond to two endothermic effects on
              the thermal curves. 1) At 400° to 500° zeolitic water
              is expelled; this water, which constitutes 50% of the
Card 1/2   total in the mineral, is driven off without destruction

15-1957-3-3112

Thermal-Analysis Studies of the Amphiboles in Some Skarn Zones of the Urals

of the crystal lattice of the amphibole and is associated with the oxidation of ferrous iron oxide. During this process O^{-2} substitutes for OH^{-1} and in compensation Fe^{3+} substitutes for Fe^{2+}. 2) At 950° to 1100° the other half of the water is driven off with destruction of the crystal lattice of the amphibole, and clinopyroxene and magnetite are formed. Dehydration of the amphibole is accompanied by intense oxidation of the iron, and this alteration leads to a considerable change in the optical properties of the mineral. The oxidation is effected in the range from 400° to 1000°. The products of reaction in this oxidation are similar to basaltic hornblende.

Card 2/2   Ye. P. V.

15-57-2-1673

Translation from: Referativnyy zhurnal, Geologiya, 1957, Nr 2,
                  p 75 (USSR)

AUTHORS: Ovchinnikov, L. N., Shur, A. S., Yel'kina, N. T.

TITLE: The Nature of the Porosity in Magnetite From Several
             Deposits in the Urals (K kharakteristike poristosti
             magnetita nekotorykh mestorozhdeniy Urala)

PERIODICAL: Tr. Gorno-geol. in-ta Ural'sk. fil. AN SSSR, Nr 26,
             pp 211-217

ABSTRACT: In an earlier work (L. N. Ovchinnikov, A. S. Shur, Tr.
             soveshchaniya po eksperim. mineralogii i petrografii,
             1951, vyp 1) the authors, in studying the porosity of
             magnetite, when they determined the content of ultra-
             pores and micropores, determined the content and size
             of the large pores in magnetite samples from twelve
             deposits in the Urals. In doing this they used the
             method of N. A. Figurovskiy (Zavod. labor., 1949, Nr 4),

Card 1/3

The Nature of the Porosity in Magnetite (Cont.)

based on the kinetics of displacing one fluid by another in the
pores of the samples. Cubes with edges of four to five millimeters
were cut from massive monomineralic magnetite ore, consisting of
granular aggregates and also of individual crystals. These cubes
were boiled in ether during which time they were suspended from a
balance by a basket of fine copper wire. The basket was suspended
in a vessel with ethyl alcohol (the displacing liquid). The vessel
was placed in a thermostatically controlled oven. A change in the
weight on the balance because of displacement of liquid in the pores
of the magnetite was determined by a reading microscope, MIR-1, with
a precision up to 0.02 mm. The time, during which the change of
weight occurred was recorded. A graph was constructed to show the
distribution of pores according to diameter size, and the total
porosity was calcutated from the apparent and true specific gravi-
ties. The total pore volume in the investigated samples ranges from
2.2 to 4.9 percent (in one sample it reaches 7.2 percent) and is
found to have a definite relationship to the mode of formation of
Card 2/3

15-57-2-1673

The Nature of the Porosity in Magnetite (Cont.)

the magnetite.. Magnetite of magmatic origin contains but half the macropore volume, and also less fine pore volume (5μ or less), than magnetite of contact-metasomatic origin. The diameters of the pores range from 2^μ to 15μ (about 80 percent have pores in the range of 2μ to 10μ). Large pores are not present in single crystals of magnetite.

Card 3/3   O. V. K.

Sov/68-59-10-2/24

AUTHOR: Yel'kind, I.S.

TITLE: Beneficiation of the Pechora Coals on the Coal
             Beneficiation Plant of the Cherepovets Metallurgical
             Works

PERIODICAL: Koks i khimiya, 1959, Nr 10, pp 8-11 (USSR)

ABSTRACT   The operation of the coal beneficiation plant on the
             above works and modifications in the plant equipment
             introduced are described.   The main operating
             difficulties were caused by a higher proportion of
             fines (1-0mm) in raw coal (up to 30%) as against the
             plant design figure (15.7%).   There are 2 tables.

ASSOCIATION: Cherepovetskiy metallurgicheskiy zavod
             (Cherepovets Metallurgical Works)

Card 1/1

SHUR, A.S.; OVCHINNIKOV, L.N.; YEL'KINA, N.T.

Porosity of some natural crystals. Trudy Gor.-geol. inst.
UPAN SSSR no. 41:211-218 '59.   (MIRA 14:2)
     (Crystals)   (Porosity)

YEL'KINA, N.T.

        Zonal density of garnet crystal. Trudy Gor.-geol.inst. UFAN
        SSSR no.56:49-52 '61.   (MIRA 15:7)
                         (Garnet crystals)

SHUR, A.S.; YEL'KINA, N.T.; ZNAMENSKIY, N.D.

Ultraporosity and microporosity of microline- perthites.
Trudy Gor.-geol.inst. UFAN SSSR no.56:85-90 '61. (MIRA 15:7)
            (Perthite)   (Microline)

TULEGENOV, T.; YEL'KINA, N.T.

Experimental study of the ultra- and microporosity of primary and
hydrothermally altered rocks in the Saukbulak ore zone (Almalyk,
Central Asia). Uzb. geol. zhur. 8 no.1:19-26 '64.

(MIRA 18:5)

1. Institut geologii Ural'skogo filiala AN SSSR i Institut geologii
i geofiziki im. Kh.M. Abdullayeva AN UzSSR.

YELKINA, O.G.

15

Azotobacter as an indicator of available phosphoric acid in the soils of Central Asia. O. G. Elkina, Nauch. Byull. Vsesoyuz. Nauch.-Issledovatel. Inst. Khlopko. (SoyuzNIKhI) No. 4 [25], 04-77(in English 04) (1961).--Azotobacter tests by the Winogradskii method may serve as indicators of the need of soils in P₂O₅.

J. S. Joffe

METALLURGICAL LITERATURE CLASSIFICATION

YELKINA, O.G.

Dynamics of the microbiological processes in the soil of rice fields. O. G. Elkina. *Microbiology* (U. S. S. R.) 6, 1230-51(1937); *Chem. Zentr.* 1938, II, 730. For 3 months after the spring flooding of the rice fields the desulfurizing and the denitrifying bacteria show their greatest growth; then they disappear suddenly. The nitrifiers, on the other hand, are repressed during the first 2 months and then recover and develop in spite of the excessive moisture in the soil. Azotobacter are always represented in large nos. in the rice fields.   W. A. Moore

YELKINA, O.O., dotsent, kandidat biologicheskikh nauk.

Denitrification agents in water meadow soils of of Central Asia.
Biul. SAGU no.28:29-43 '49.   (MLRA 9:5)
                    (Soviet Central Asia--Bacteria, Denitrifying)

YELKINA, O.G.

Effect of decomposing root remains on denitrification agents in
soils planted to cotton. Trudy SAGU no.18:89-102 '50. (MLRA 9:5)
           (Nitrification) (Cotton)

YELKINA, O.G.

Effect of decomposing plant residues on the microflora of exces-
sively moist soils under rice cultivation. Trudy SAGU no.25:
35-50 '51.   (MLRA 9:5)
            (Soil micro-organisms) (Humus)

YELKINA, O.G.

Studying the microflora of soil walls. Trudy no.60:21-32 '54.
     (Soil micro-organisms)   (MLRA 9:11)

YELKINA, O.G.

Characteristics of mineralization processes in virgin Sierozem
soils. Trudy SAGU no.60:45-68 '54.   (MLRA 9:11)
    (Sierozem soils) (Minerals in soil)

New synthesis of irones. L. K. Sarycheva, G. A. Vorob'.
eva, A. S. Vasilenko, G. G. Vinokurova, S. A. Elkina, and
N. A. Preobrazhenskii. J. Gen. Chem. U.S.S.R. 25, 1723-
33(1955)(Engl. translation).—See C. A. 50, 7009d.
B. M. R.

SARYCHEVA, I.K.; VOROB'YEVA, G.A.; VASILENKO, A.S.; VINOKUROVA, G.G.;
YELKINA, S.A.; PREOBRAZHENSKIY, N.A.

New synthesis of irones. Zhur.ob.khim. 25 no.9:1775-1781 S
'55.
(MIRA 9:2)

1.Moskovski, institut tonkoy khimicheskoy tekhnologii imeni
M.V.Lomonosova.
(Irone)

YELKINA, S. I.

SOV/16-59-9-15/17

AUTHORS: Sisyshkina, M.M., Gorbunova, K.P., Lazareva, L.A., Svetlova, A.K., Starovarova, O.S., and Yelkina, S.I.

TITLE: A Comparative Study of the Microflora Found in Acute and Chronic Pneumonia in Infants

PERIODICAL: Zurnal mikrobiologii, epidemiologii i immunobiologii, 1959, Nr 9, pp 67-70 (USSR)

ABSTRACT: At the I Moskovskiy meditsinskiy institut (I Moscow Medical Institute) the authors made a study of the sputum microflora in infants with acute or chronic pneumonia and determined its sensitivity to various antibiotics. No essential differences were noted in the microflora of chronic cases isolated from acute pneumonia cases and the microflora of chronic cases. Because of the early and wide use of antibiotics administered to the children, the microflora could not be studied in its pristine form, which perhaps accounts for the comparatively low rate of isolation of pneumococci (5-7%). Pneumococci were isolated, however, which had lost their virulent properties and proved non-pathogenic to mice. In this case the normal method of detection by intraperitoneal infection of mice is useless and the Pneumococci can best be identified by a bacteriologic-

Card 1/2

ASSOCIATION: I Moskovskiy meditsinskiy institut imeni Sechenova (I Moscow Medical Institute imeni Sechenov)

SUBMITTED: July 28, 1958

Card 2/2

YEIKINA, T. A.

"Hysteresis in Rotating Magnetic Fields." Sub 26 Mar 47, Moscow Order of Lenin State U imeni M. V. Lomonosov

Dissertations presented for degrees in science and engineering in Moscow in 1947

SO: Sum No. 457, 18 Apr 55

M A

*On the Theory of Hysteresis Losses |of Cobalt| in Rotating
Fields. N. S. Akulov and T. A. Kikina (Doklady Akad.
Nauk S.S.S.R., 1948, 59, (6), 1083 1088. - [In Russian].
According to A.'s theory ("Ferromagnetism", Moscow 1939),
hysteresis losses in uni-axial ferromagnetic metals in fields
of const. magnetic field intensity, H, rotating with respect
to the specimen are 2.36 times larger than the losses in
const.-direction alternating intensity magnetic fields with an
amplitude H, but also ∝ H². Hysteresis losses were measured
with the aid of a specially developed magnetometer on two
specimens with identical magnetic properties (within
2%): (a) a 15 mm. dia., 0.5 mm.-thick disc, in 2.7 Oe
rotating const. intensity fields, and (b) a 15 mm. long bar
of 0.5 mm.² cross-sectional area, in alternating fields of 1 10
Oe. amplitude. In accordance with Rayleigh's laws, sus-
ceptibility was found to vary linearly with H (χ = χ₀ + b.H,
where χ₀ = 1.0 and b = 0.165), and losses in alternating
fields were found to follow Rayleigh's formula H'ₐ = b.H³,
where b = b.... Losses in weak rotating fields also followed the
formula H... = b.H³. The ratio b/b was found to be equal to
2.4 (± 0.2), thus confirming Akulov's prediction. 10 ref.—A. G.*

YELKINA, T. A.

15;T68

USSR/Physics - Hysteresis Loss   Jan 50
                    Ferromagnetics

"Hysteresis in Rotating Magnetic Fields," T. A.
Yelkina, Moscow State U, 7 pp

"Zhur Eksper i Teoret Fiz" Vol XX, No 1

Calculates hysteresis losses of rotation in re-
gion of Rayleigh magnetic fields for single-
axis ferromagnetic materials. Establishes rela-
tion between loss in rotation and loss in remag-
netization and compares calculated values with
experimental values. Submitted 15 Apr 49.

155T68

YELKINA, T. A.

USSR/Physics - Magnetization, Hysteresis   Aug 52
                    Losses

"The Relation Between Hysteresis Losses in Rotat-
ing and Sign Changing Magnetic Fields of Weak and
Medium Magnitude," T. A. Yelkina, Moscow State
Univ, Chair of Magnetism

Vest Mos Univ, Ser Fizikomat i Yest Nauk, No 5,
pp 95-104

Analyzes action of magnetic field on polycrystalline
sample of ferromagnetic material with three or more

                                        275T106

axes of weak magnetization. Computes hysteresis
losses for steels U-3, U-10 and for cobalt and
presents results in graphs. Received 25 Jan 52.

1. YELKINA, T. A.

2. USS^R (600)

4. Hysteresis

7. Connection between hysteresis losses in rotating and charge-alternating magnetic
fields of weak and medium strength. Vest. Mosk. un. 7, no. 8, 1952.

9. Monthly List of Russian Accessions, Library of Congress, March 1953. Unclassified.

YELKINA, T. A.

USSR/Physics - Coercive Strength,   21 Mar 52 .
Magnetism

"Certain New Laws Relating the Magnitude of Loss
to the Coercive Force," N.S. Akulov, Act Mem,
Acad Sci Belorussian SSR, T.A. Yelkina

"Dok Ak Nauk SSSR" Vol 83, No 3, PP 377-379

Shows that one can establish for the region of
inversion a new and more general law which con-
nects loss with other magnetic characteristics.
States that earlier Rayleigh had established
empirical laws for magnetism and hysteresis in
weak magnetic fields, these laws being theoreti-
cally founded on modern representations

concerning the nature of magnetism. Later other
connections were established; e.g., with hys-
teresis. Submitted 22 Jan 1952.

227T66

227T66

U S S R :

YELKINA, T. A.

USSR/Physics - Magnetism

Card 1/1   Pub. 129-6/20   FD-2166

Author   : Yelkina, T. A., and Parsanov, A. P.

Title   : Influence of elastic stresses upon magnetization in weak magnetic fields

Periodical : Vest. Mosk. Un., Ser. fizikomat. i yest. nauk, 10, No 2, 41-48, Mar 1955

Abstract   : The authors discuss their experimental work conducted in order to verify
               the theory of Brown (Phys. Rev., 75, 147, 1949) and Liboutry (Ann. de
               phys., 6, 731, 1951). The measurements were carried out with a vertical
               astatic magnetometer by the null method; the samples were placed in the
               center of the magnetizing coil in a uniform field. Seven references;
               e.g. S. V. Vonsovskiy and Ya. S. Shur, Ferromagnetizm, 1948.

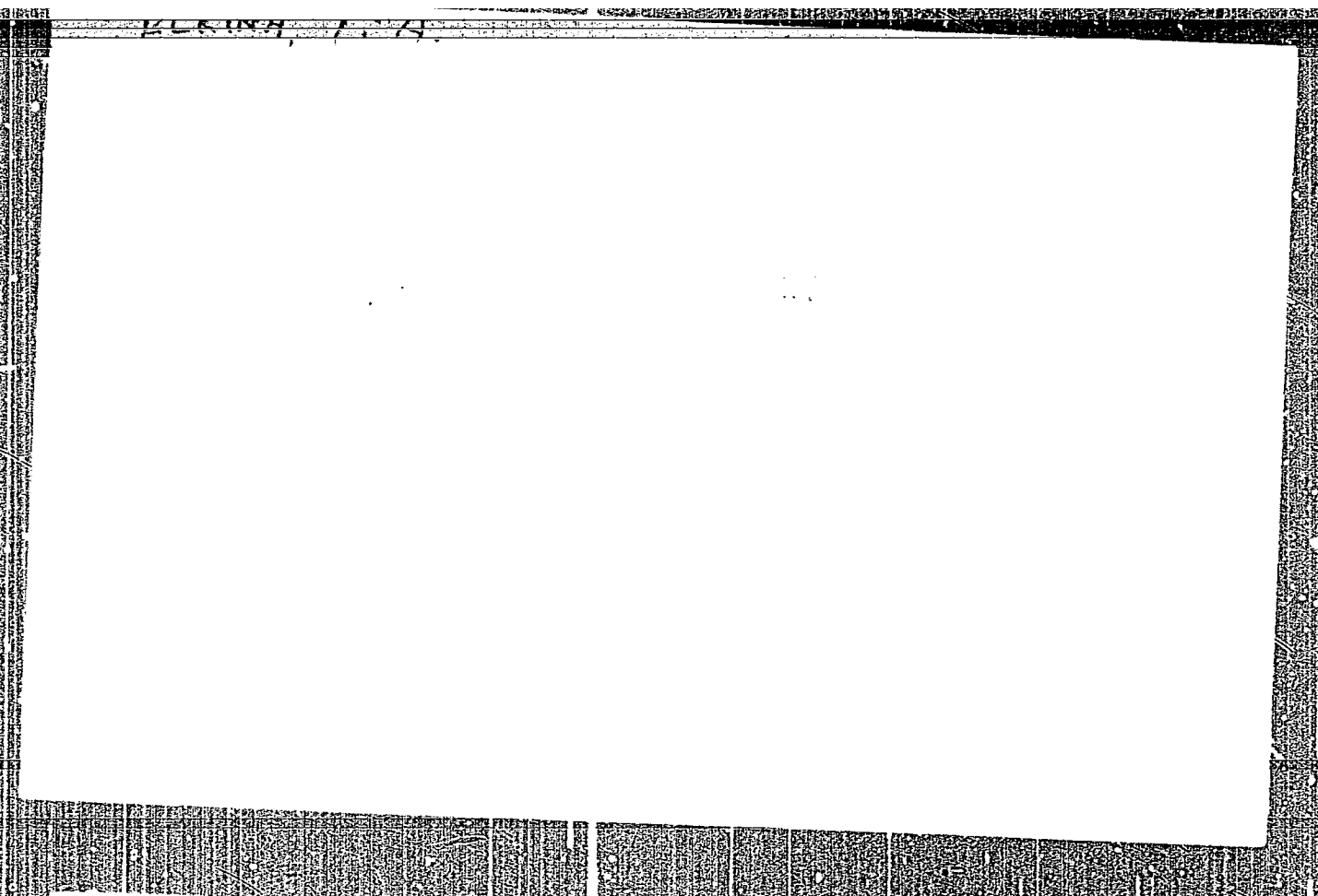Institution : Chair of Magnetism

Submitted   : June 11, 1954

YELKINA, T. A., BOLSHOVA, K. M., and BELOV, K. P., (Moscow)

"The Study of Magnetization of Ferrites in the Region of the Curie Point," a paper submitted at the International Conference on Physics of Magnetic Phenomena, Sverdlovsk, 23-31 May 56.

AUTHORS: Belov, K.P., Bol'shova, K.M., Yelkina, T.A.   48-8-2/25

TITLE: Investigation of Ferrites in the Vicinity of the
              Curie-Point (Issledovaniye namagnichivaniya ferritov v oblasti
              tochki Kyuri)

ABSTRACT: The paper under consideration deals with the magnetization pro-
              cesses of some ferrites in order to determine the temperature
              change on spontaneous magnetization near to the Curie point. It
              is maintained here, that such data are missing in literature,
              although they are of great importance, because the mechanism of
              ferromagnetic phenomena in ferrites are different from ferromag-
              netic metals. The sections of the paper are headed:
              1.) Samples and methods: 7 samples of Mn-Zn ferrites with a
              varying MnO content (20 ÷ 40 %) and 2 ferrites of Co-Zn alloy
              were selected. The measuring of the magnetization curves was
              executed according to the ballistic method. The samples were
              magnetized in a solenoid with a field strength of 2500 Oe. A
              ballistic differential winding, consisting of two sections of

Card 1/3

48-8-2/25

Investigations of Ferrites in the Vicinity of the Curie-Point

4500 spires each on an ebonite body, was mounted on the electric furnace containing the sample. For calibration a one-layer winding of thin wire was prepared, which was wound on a body of the identical form and size as the sample. By introducing this winding instead of the sample calibration was effected. 2.) The curves of actual magnetization of ferrites near the Curie point: Here it is established, that in this case the well-known thermodynamical equation

$$\alpha + \beta \sigma^2 = -\frac{H}{\sigma}$$ is applicable, σ denoting

the specific magnetization and α, β thermodynamical coefficients. The conclusion is drawn, that the sequence of the values of the para-processes of ferrites under investigation corresponds to the sequence of ferromagnetic metals. The theoretic relation between the intensity of the paraprocess and the value of the Curie point is stated here as follows: The lower the Curie point, the weaker is the interaction and the higher the effect of the excitation of the external field, implying a higher intensity of the paraprocesses. 3.) The reaction of Mn-Zn ferrites in weak fields near to the Curie point: Here the magnetic anomalies are described, of which allegedly no data are to be found in literature. These data consist of the fact, that the final magnetiza-

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tionbf the above-mentioned Mn-Zn ferrites, starting from low temperatures, first decreases at the approach of the Curie point, starts to grow just before reaching the Curie point, and finally falls off after reaching a certain maximum. The coercive force behaves similarly, which, in some cases, shows a very accentuated rise from the minimum to the maximum. These anomalies can be re- produced also, if the samples are isolated from the influence of air. No anomalies of this kind were found in Co-Zn ferrites. There are 9 figures, 1 table and 7 references, 5 of which are Slavic.

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AVAILABLE: Library of Congress

Card 3/3

AUTHORS: Belov, K. P., Bol'shova, K. M.,   SOV/48-22-10-23/23
                Yelkina, T. A., Zaytseva, M. A.

TITLE: On Magnetic Properties of Ferrites Exhibiting a Compensation
                Point (O magnitnykh svoystvakh ferritov s tochkoy
                kompensatsii)

PERIODICAL: Izvestiya Akademii nauk SSSR. Seriya fizicheskaya, 1958,
                Vol 22, Nr 10, pp 1282 - 1292 (USSR)

ABSTRACT: In the present paper the authors performed exact measure-
                ments of the magnetic properties of mixed lithium chromite
                ferrites (which were annealed and hardened) in the case of
                different annealing after hardening. For the investigation
                a system of ferromagnetic lithium spinels that contained
                chromium of the common formula

                $Li_2O \cdot (5 - 2a) Fe_2O_3 \cdot 2 a Cr_2O_3$ (for a = 1,25; 1,5; 1,6; 1,7)
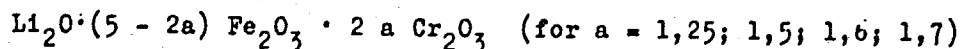
                was synthetized. The following magnetic characteristics
                were investigated: 1) Temperature dependence of the spontan-
                eous magnetization of $\sigma_s(T)$; 2) magnetic moments of the atoms
                (the measurements were carried out by A. V. Ped'ko);
Card 1/4   3) temperature dependence of the residual magnetization of

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the limiting cycle in the temperature range of from $-30°$ to
about 10 to $20°$ above the compensation point (by the astatic
magnetometer);   4) temperature dependence of the paramagnetic
sensitivity (according to the ponderomotive method).   The
measuring results showed that the ferromagnetic spinels
Li FeCr in a certain range of solution exhibit an anomalous
shape of the curve $\sigma_s(T)$ with a compensation point. This
has been predicted by Neel.   In contrast to the theory it
was found that the compensation never was perfect.   The
phenomenon of an imperfect compensation may be explained by
the heterogeneity of the samples.   An other considerably
greater difference is that the value of the absolute satura-
tion computed (according to Neel) from the distribution of
the cations does not agree at all with data found experimentally
(Table 2, column 3 and 5).   The modification of Neel's
theory suggested by Yafet and Kittel (Ref 8) is capable of
explaining this discrepancy qualitatively.   The explanation
is as follows: As the measured value of the magnetic value
in these ferrites is lower than the value computed according
to Neel's theory and $M_B \searrow M_A$, in this case the negative exchange

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interaction within the sublattice B compared with the inter-
action between the sublattices A and B must not be neglected.
The measurements showed that the value of the absolute
saturation in the system LiFeCr-ferrites becomes higher
in the case of hardening. In technical publications there
are data on the influence of hardening upon σ_0 of various
simple and composed ferrites (Refs 10 and 11) and theories
(Refs 12 - 14) explaining the results of the papers (Refs
10 and 11). According to this σ_0 depends on the distribu-
tion of the cations on A and B. This distribution, however,
depends on the temperature. In the present case the problem
became more complicated as apart from the cation distribu-
tion also the variation of the angles between the magnetic
moments in sublattices was possible. The possible influence
of these two factors excludes a comparison of the experimental
values found of saturation in hardening with respective
theories. The question of the influence of these factors
probably might be answered by means of radiographic and
especially neutronographic investigations. The authors
Card 3/4   express their gratitude to K. G. Khomyakov and T. I. Bulgakova

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for valuable suggestions. There are 10 figures, 3 tables,
and 14 references, 4 of which are Soviet.

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Card 4/4   USCOMM-DC-60,966

24.2200

AUTHORS: Bol'shova, K. M., Yelkina, T. A.

69004
S/055/59/000/04/008/026
B014/B005

TITLE: The Anomaly of the Coercive Force of Ferrites in the Compensation Point

PERIODICAL: Vestnik Moskovskogo universiteta. Seriya matematiki, mekhaniki, astronomii, fiziki, khimii, 1959, Nr 4, pp 85 - 90 (USSR)

ABSTRACT: Ferromagnetic spinels of the composition $Li_2O(5 - 2a)Fe_2O_3 \cdot 2aCr_2O_3$

with $1 \leq d \leq 2$ have the characteristic property that their sponta-
neous magnetization changes to zero not only at Curie temperature
but also at lower temperatures. This temperature is called
compensation point in which an equilibrium of magnetic moments
of the sublattice may be observed. Experiments carried out by
the authors (Ref 3) showed that an anomalous change of the coercive
force of these ferrites is found in the temperature range of the
compensation point and of Curie temperature. The authors give two
reasons for the fact that a slight spontaneous magnetization can
be ascertained at compensation point: 1) Slight fluctuations in
the chemical composition. 2) Heterogeneous cation distribution in
the spinel lattice. A discussion of the possible causes of the turn

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about of spontaneous magnetization leads to the conclusion that the
coercive force increases with increasing approach of the temperature
to compensation point, reaching a maximum at this point. To check
this assumption, the authors carried out experiments to determine
the temperature dependence of coercive force, of spontaneous
magnetization, and of remanent magnetization. In all compositions
and heat treatments it was shown that the coercive force passes a
distinct maximum in the range of the compensation point which seems
to confirm the original assumption of an anomalous temperature
course of the coercive force in the range of the compensation point.
An analysis of the data obtained (which are to clarify the causes
of the anomalous behavior of coercive force) shows that with the
approach of temperature to the compensation point the magnetization
curve flattens more and more, which suggests an increasing influence
of the rotary mechanism on the magnetization of ferrites. Table 2
shows that in hardened ferrites the difference between Curie and
compensation temperature becomes smaller, which suggests that
hardened ferrites have a lower anisotropic constant than annealed
ferrites. There are 5 figures, 2 tables and 6 references, 4 of which
are Soviet.

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ASSOCIATION: Kafedra obshchey fiziki (Chair of General Physics)

SUBMITTED: October 27, 1958

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SOV/126-8-3-24/33

AUTHORS: Bol'shova, K.M. and Yelkina, T.A.

TITLE: Increase in Coercive Force of Mixed Cast Ferrites and Chromites in the Compensation Temperature Range

PERIODICAL: Fizika metallov i metallovedeniye, 1959, Vol 8, Nr 3, pp 461-463 (USSR)

ABSTRACT: Ferro-magnetic spinels, the composition of which is described by the formula $Li_2O \times (5-2a)Fe_2O_3 \times 2aCr_2O_3$, in the range of $a = 1$ to $a = 2$, are characterized by the fact that their spontaneous magnetization is reduced to zero not only at the Curie temperature but also at a lower temperature at the so-called compensation point (Ref 1 and 2). The authors have carried out a thorough experimental investigation of the temperature course of spontaneous magnetization of the above materials in the compensation and Curie temperature range (Ref 3). An analysis of these results has led to the conclusion that an increase in H_c of these ferrites must occur in the compensation range T_k, which is associated with a sharp decrease in magnetization as the testing temperature approached T_k. The figure on p 462 shows the temperature dependence of the magnetic properties of the ferrite

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Increase in Coercive Force of Mixed Cast Ferrites and Chromites in the Compensation Temperature Range

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$Li_2O \times 2.5Fe_2O_3 \times 2.5Cr_2O_3$ in the compensation temperature range: 1 - temperature dependence of the coercive force; 2 - temperature dependence of the spontaneous magnetization $\sigma_s(t)$; 3 - temperature dependence of residual magnetism created at any given temperature $\sigma_r^!(t)$; 4 - temperature dependence of residual magnetism created at room temperature $\sigma_r(t)$. Earlier obtained magnetization curves for ferrites of the system LiFeCr become more sloping as the compensation temperature is approached, which points to the gain in prominence of the role of the mechanism of rotation in ferrite magnetization processes. There are 1 figure and 4 references, 2 of which are Soviet and 2 Western.

ASSOCIATION: Moskovskiy gosudarstvennyy universitet imeni M.V.Lomonosova (Moscow State University imeni M.V.Lomonosov)

SUBMITTED: October 10, 1958

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24.2200 (1137, 1144, 1164)
15.2660

30078
S/048/61/025/011/024/031
B117/B102

AUTHORS: Bol'shova, K. M., and Yelkina, T. A.

TITLE: Viscosity and hysteresis properties of ferrites due to electron diffusion

PERIODICAL: Akademiya nauk SSSR. Izvestiya. Seriya fizicheskaya, v. 25, no. 11, 1961, 1407-1410

TEXT: The following ferrites were examined: no. 1) $Mn_{1.4}Fe_{1.6}O_4$; no. 2) $Mn_{1.35}Co_{0.05}Fe_{1.6}O_4$; no. 3) $Mn_{1.8}Fe_{1.2}O_4$; no. 4) $Mn_{1.75}Co_{0.05}Fe_{1.2}O_4$. Magnetic viscosity which appears between 1 and 250 oe was measured in static magnetic fields between +20 and -200°C. In some cases magnetic viscosity exerted a strong effect upon magnetic reversal: Though field direction was changed, the ferrite remained magnetized for several hours in the former direction. This effect, up to now unknown, was found to be particularly strong in a certain low-temperature range as well as in weak and medium magnetic fields. Specimen no. 4 displayed the greatest delay of magnetic reversal. For no. 1 and no. 3 viscosity was lower and

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appeared also in weaker fields. In such fields, a-c hysteresis loops (50 cps) were recorded by an oscilloscope. No loop forms in weak fields in which magnetic reversal takes a long time. With increasing field strength a perminvar loop appeared first, followed by a normal and finally by a rectangular loop. The loop shape was changed in this way if the specimen is demagnetized at room temperature. When B is reversed at measured temperatures the oblique line changes in a jump-like manner to a distinct rectangular loop ($I_r/I_s \sim 0.98$), with increasing field strength.

An abrupt rise of induction, forming a step in the loop, is observed if the field strength is increased in the temperature range between $-100^\circ C$ and $-150^\circ C$, where viscosity is particularly high. The saturation magneto-striction in a 2500 oe field was measured by means of pickups glued onto them. The effect of viscosity upon magnetostriction was noticeable only in specimens no. 2 and no. 4. Magnetostriction depended largely on the method of demagnetization. As for specimens no. 1 and no. 3 (without cobalt), viscosity was lower, and the degree of magnetostriction did not depend on the method of demagnetization. For the ferrites examined, it was found that a connection must exist between the hysteresis and magnetostriction properties and magnetic viscosity. One and the same

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mechanism is probably responsible for all these properties. Uniaxial anisotropy, which was discovered in these ferrites is probably due to electron diffusion. Ion diffusion is little probable at such low temperatures. The finite diffusion rate depends on temperature and on the magnetic field strength. This explains the limitation of the temperature and field ranges in which the described phenomena are observed. The part played by cobalt has not been clarified. The unclear statement contained in the literature regarding the relationship between the perminvar effect and relaxation according to Richter was substantiated by establishing a direct relationship between the viscosity properties of the examined ferrites in static fields and their hysteresis properties in the same field range. There are 4 figures and 3 references: 1 Soviet-bloc and 2 non-Soviet-bloc.

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24704

S/056/61/040/005/004/019
B102/B201

_94.2100_

AUTHORS: Bol'shova, K. M., Yelkina, T. A.

TITLE: Viscosity and hysteresis properties of manganese-iron ferrites
              with cobalt admixtures at low temperatures

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 40,
              no. 5, 1961, 1299 - 1301

TEXT: A study has been made of the magnetic viscosity, magnetostriction,
and hysteresis properties of polycrystalline ferrite specimens of the
composition $Mn_{1.75}Co_{0.05}Fe_{1.2}O_4$ at low temperatures. Measurements of
the magnetization of this ferrite at low temperatures in static fields
of 4 - 250 oe indicated its enormous magnetic viscosity: magnetization
rises, after the constant field is applied, for 17 hours, and, after the
field polarity is reversed, it is conserved in the old direction for
another hour (in one case, for 174 min). No information has been found
in the literature regarding this effect. Viscosity proved to be highest
at temperatures from -100 to $-150^{\circ}C$ and fields not over 250 oe. On the

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same ferrite, the saturation magnetostriction was measured at 2500 oe;
as a consequence of the high viscosity, magnetostriction was found to
depend strongly on the method of demagnetization of the specimer. The
hysteresis loops were also recorded by an oscilloscope in alternating
fields of 50 cps. Rectangular perminvar loops were obtained in this
range. A comparison of the change of the loop shape in growing alter-
nating fields with the magnetic viscosity in static fields shows that
the character of the shape modification is closely related to the mag-
netic viscosity in static fields. If the time of magnetic reversal is
very long, the hysteresis loop will have the form of a line; if it is
short (which is the case with certain fields and temperatures; e. g.,
at -125°C and 43 oe), that is less than one minute, a perminvar loop is
then obtained. This can be explained by considering that the ferrite
concerned causes in each domain an uniaxial anisotropy under the effect
of the magnetic field (with an axis of slight magnetization in direction
of the vector of magnetization of the domain concerned). The appearance
of uniaxial anisotropy is due to electron diffusion. Most likely, an
electron exchange takes place between Mn^{2+} and Mn ions of a higher valency.

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