

S/056/62/042/005/007/050  
B125/B108

AUTHORS: Bryukhanov, V. A., Delyagin, N. N., Shpinel', V. S.

TITLE: Magnetic moment of the 23.8-kev excited state of the  $\text{Sn}^{119}$  nucleus

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 42, no. 5, 1962, 1183 - 1185

TEXT: The nuclear Zeeman effect on  $\text{Sn}^{119}$  was investigated by the method of Moessbauer absorption, using  $\text{SnO}_2$  as a gamma source, and tin-iron as well as tin-manganese ( $\text{Mn}_2\text{Sn}$ ) alloys as absorbers. Resonance absorption spectra with well-resolved components of magnetic splitting were obtained for  $\text{Mn}_2\text{Sn}$  and also for tin-iron alloys with a tin content of up to 10%. The magnetic moment was measured on tin-iron alloys containing 1.7% tin (enriched up to 75% with  $\text{Sn}^{119}$ ), while cooling the absorber with liquid nitrogen. All six spectral components were well resolved; their intensities agreed with those expected for an unpolarized absorber. It follows from the data collected in the table:  $\mu_0 H = 2.80 \pm 0.06 \text{ mm/sec}$  and

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S/056/62/043/002/C11/053  
B102/B104

AUTHORS: Bryukhanov, V. A., Delyagin, N. N., Opalenko, A. A.,  
Shpinel', V. S.

TITLE: Some characteristics of the spectra of resonance absorption of  
23.8-kev gamma rays by  $\text{Sn}^{119}$  nuclei

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 43,  
no. 2(8), 1962, 432-437

TEXT: This paper gives some new results on the Mössbauer effect on  $\text{Sn}^{119}$  nuclei contained in crystalline compounds and also qualitative interpretations of the resonance absorption spectra.  $\text{Sn}^{119\text{m}}$  introduced into  $\text{SnO}_2$  served as a gamma source (thickness  $\sim 5\text{mg/cm}^2$ ). The 23.8-kev  $\gamma$ -quanta absorption probability without recoil energy losses was measured at 77 and 300°K. Some of the compounds show a very weak temperature dependence of this probability. The most important regularities pertaining to the magnitude of the chemical isomer shifts and of quadrupole interaction can be interpreted qualitatively by simple assumptions on the chemical bond in the compounds. These regularities are: (1) The isomer

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Some characteristics of the spectra...

S/056/62/043/002/011/053  
B102/B104

shift in tetravalent tin compounds increases from  $\text{SnO}_2$  to  $\text{SnI}_4$  with decreasing electro-negativity of the element (sequence: F, O, Cl, Br, S, I). (2) The isomer shift of the bivalent compounds is much larger than that of the tetravalent ones. (3) A quadrupole line splitting was only observed with the bivalent tin compounds. (4) The quadrupole interaction decreases with decreasing electro-negativity of the element connected with the tin. The following compounds were investigated:  $\text{CaSnO}_3$ ,  $\text{SrSnO}_3$ ,  $\text{BaSnO}_3$ ,  $\text{SnO}_2$ ,  $\text{SnS}_2$ ,  $\text{SnO}$ ,  $(\text{NH}_4)_2\text{SnCl}_6$ ,  $\text{SnF}_2$ ,  $\beta\text{-Sn}$ ,  $\text{SnCl}_4 \cdot 5\text{H}_2\text{O}$ ,  $\text{SnCl}_2 \cdot 2\text{H}_2\text{O}$ ,  $\text{SnI}_4$ ,  $\text{SnBr}_2$ , and  $\text{Sn}(\text{C}_6\text{H}_5)_4$ . The gamma-quantum absorption probability ratios  $f'(77^\circ\text{K})/f'(300^\circ\text{K})$  were as follows (same sequence):  $\sim 1$ ,  $\sim 1$ ,  $\sim 1$ , 1.25, 2.8, 2.9, 5.7, 8.5, 6.0, 26, -, -, -, -. The interpretation of the results confirms the assumption that the  $\text{Sn}^{119}$  nuclear excitation raises the effective radius of the charge distribution (ZhETF, 41, 1767, 1961). There are 2 figures and 3 tables.

ASSOCIATION: Institut yadernoy fiziki Moskovskogo gosudarstvennogo universiteta (Institute of Nuclear Physics of the Moscow State University)

SUBMITTED: March 15, 1962  
Card 2/2

S/056/62/043/002/013/053  
B102/3104

AUTHORS: Bryukhanov, V. A., Gol'danskiy, V. I., Delyagin, N. K.,  
Korytko, L. A., Makarov, Ye. F., Suzdalev, I. P., Shpinel', V. S.

TITLE: Peculiarities of Mossbauer spectra of organo-tin compounds  
and the role of the nearest chemical bonds in the Mossbauer  
effect

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 43,  
no. 2(8), 1962, 448-452

TEXT: In continuation of their studies on the Mossbauer effect in  
organo-tin compounds (ZhETF, 42, 637, 1962), the authors determined  
a Mossbauer effect in the resonance absorption of 23.8-kev gamma-quanta by  
 $\text{Sn}^{119}$  nuclei. Many examples, e.g.  $\text{Sn}(\text{C}_6\text{H}_5)_4$ ,  $\text{SnCl}_4$  on the one hand, and  
 $\text{Sn}(\text{C}_6\text{H}_5)_i\text{Cl}_{4-i}$  ( $i=1,2,3$ ) on the other, show that in compounds with four  
identical substituted groups the Mossbauer lines appear as the usual  
singlet, whereas with different substituted groups ( $\text{R}_i\text{SnX}_{4-i}$ ) a distinct  
doublet occurs. The two lines differ in width and intensity, depending  
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Peculiarities of Mössbauer spectra...

S/056/62/003/002/013/053  
B102/B104

on the ratio of R to X. In amorphous media, e.g. in stanniferous glass, the Mössbauer effect was observed for the first time. The glass composition was the following:  $\text{SnO}_2$ -9.1%;  $\text{SiO}_2$ -61.3%;  $\text{B}_2\text{O}_3$ -18.5%;  $\text{Al}_2\text{O}_3$ -5.2%;  $\text{Na}_2\text{O}$ -7.9%. The spectra of crystalline  $\text{Sn}(\text{C}_6\text{H}_5)_4$  and its solid solution in polymethylmethacrylate and of crystalline  $\text{Sn}(\text{C}_2\text{H}_5)_2\text{Cl}_2$  and of its 20 % solution in dichloroethane are identical. Some of the data obtained indicate that the decisive factor determining the shape of the Mössbauer spectra (isomer shift and quadrupole splitting) are the molecular bonds closest to the tin nucleus. There are 5 figures and 1 table. ✓

ASSOCIATION: Institut khimicheskoy fiziki Akademii nauk SSSR (Institute of Chemical Physics of the Academy of Sciences USSR)

SUBMITTED: April 12, 1962

Card 2/2

S/056/62/043/004/018/061  
B102/B180

AUTHORS: Aleksandrov, A. Yu., Delyagin, N. N., Mitrofanov, K. P.,  
Polak, L. S., Shpinel', V. S.

TITLE: Quadrupole interaction and isomeric shifts of 23.8-kev gamma  
transition of  $\text{Sn}^{119}$  nucleus in organo-tin compounds

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 43,  
no. 4(10), 1962, 1242 - 1247

TEXT: In continuation of earlier studies (ZhETF, 42, 637, 1962; 43, 448, 1962) on the Mossbauer resonance absorption spectra of 23.8-kev  $\gamma$ -quanta by  $\text{Sn}^{119}$ , this work deals with the effect of substituting certain atomic groups in organic compounds of the  $(\text{C}_4\text{H}_9)_2\text{SnX}_n$  type, and  $\text{SnX}_4$  by others on the isomeric shift  $\delta$ , and the quadrupole interaction; X is an element or a group of atoms,  $n = 1, 2$ . The resonance absorption spectra were recorded with a) an absorber whose velocity was varied linearly with time and b) one of constant velocity, the thicknesses varying from 30 - 100 mg/cm<sup>2</sup>. The latter method yielded more accurate spectra since the device used had Card 1/12

Quadrupole interaction ...

S/056/62/043/004/018/061  
B102/B180

selective sensitivity to 23.8-keV  $\gamma$ -quanta. 5 mg/cm<sup>2</sup> SnO<sub>2</sub> containing Sn<sup>119m</sup> was used as a  $\gamma$ -quantum source. The organo-tin compounds investigated had no impurities which affected the shape of the spectrum. In all measurements the source was kept at room temperature and the absorber at liquid-nitrogen temperature. The values obtained for  $\delta$  and for the quadrupole splitting constant  $\Delta$  vary regularly for the compounds for which the electronegativity of the X atoms varies. Double bonds, and also atoms with high electronegativity not directly bonded with the tin atoms, were found to exert a strong effect on the electric field strength acting on the tin nucleus. This can be qualitatively explained by the molecular structure. There are 3 figures and 1 table. ✓

ASSOCIATION: Institut yadernoy fiziki Moskovskogo gosudarstvennogo universiteta (Institute of Nuclear Physics of Moscow State University). Institut neftekhimicheskogo sinteza Akademii nauk SSSR (Institute of Petrochemical Synthesis of the Academy of Sciences USSR)

SUBMITTED: May 18, 1962  
Card 2/72

S/056/62/043/006/018/067  
B102/B104

AUTHORS: Aleksandrov, A. Yu., Delyagin, N. N., Mitrofanov, K. P.,  
Polak, L. S., Shpinei', V. S.

TITLE: Influence of gamma irradiation on the shape of Mössbauer  
resonance absorption spectra of organo-tin compounds

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 43,  
no. 6(12), 1962, 2074 - 2076

TEXT: The spectra of Mössbauer resonance absorption of 23.8-keV gamma  
quanta by  $\text{Sn}^{119}$  in organo-tin compounds depends on the valency of the ab-  
sorbing atom, on the molecular structure and on peculiarities of the bonds  
of the tin atom (ZhETF, 43, 448, 1962; 43, 1242, 1962). This dependence  
could be used to draw conclusions on irradiation-induced changes of a  
material from changes in the Mössbauer resonance absorption characteristics.  
In order to study these possibilities, the Mössbauer resonance absorption  
spectra of  $(\text{C}_4\text{H}_9)_2\text{SnSO}_4$  (I) and  $[(\text{C}_4\text{H}_9)_2\text{Sn}(\text{OCOCCH}_2\text{CH}_2)_2]_n$ , irradiated at  
25-35°C by  $\text{Co}^{60}$   $\gamma$ -rays with doses between  $4 \cdot 10^{20}$  and  $3 \cdot 10^{22}$   $\text{ev/cm}^3$  were  
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Influence of gamma ...

S/056/62/043/006/018/067  
B102/B104

investigated. The spectrum of non-irradiated I shows a symmetric doublet, the peaks corresponding to the velocities  $-0.6$  and  $+4.2$  mm/sec. Irradiation with maximum dose led to a distinct change in the spectrum: two lines with an intensity ratio 1:3 arose, corresponding to the velocities  $-0.3$  mm/sec and  $4$  mm/sec. indicating a disintegration of I into  $C_4H_9$  and  $SnSO_4$ . In a few cases only one oxygen atom was split off from I. On irradiating I in the presence of oxygen only one line appeared, its peak corresponding to zero velocity. This spectrum is interpreted as due to the presence of  $SnO_2$  or a similar oxide formed in oxidation by  $O_3$  produced on irradiation. The spectrum of the polymer irradiated with a dose of  $11.2$  Mr shows two lines of almost equal width and intensity at  $-0.15$  and  $2.85$  mm/sec. When the dose is increased to  $160$  Mr both lines broaden, the latter doing so more rapidly but reducing its height at the same time. When the dose has reached  $250$  Mr, the line at  $-0.15$  mm/sec has remained almost unchanged (width  $1.5$  mm/sec) but the  $2.85$  mm/sec line shows a splitting into several flat poorly resolved components. This asymmetry can be explained by assuming an intramolecular magnetic field whose energy of

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Influence of gamma ...

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interaction with the  $\text{Sn}^{119}$  nucleus is weaker than that of quadrupole interaction. It cannot be attributed to any certain chemical structure. There is 1 figure.

ASSOCIATION: Institut yadernoy fiziki Moskovskogo gosudarstvennogo universiteta (Institute of Nuclear Physics of Moscow State University); Institut neftekhimicheskogo sinteza Akademii nauk SSSR (Institute of Petrochemical Synthesis of the Academy of Sciences USSR) ✓

SUBMITTED: July 20, 1962

Card 3/3

S/020/63/148/001/027/032  
B101/B186

AUTHORS: Aleksandrov, A. Yu., Delyagin, N.N., Mitrcfanov, K.P.,  
Polak, L.S., Shpinel', V.S.

TITLE: Investigation of organo-tin compounds by Mössbauer resonance  
absorption of gamma quanta

PERIODICAL: Akademiya nauk SSSR. Doklady, v. 148, no. 1, 1963, 126-128

TEXT: The 23.8 kev gamma absorption spectra by  $\text{Sn}^{119}$  nuclei were investigated for 22 organo-tin compounds.  $\text{Sn}^{119}\text{mO}_2$  was used as gamma source, and the absorbers were cooled to nitrogen temperature. The isomeric shift  $\delta$  and the amount  $\Delta$  of the quadrupole splitting were measured. Results: (1) In the compounds  $\text{SnR}_4$ , where  $\text{R} = \text{C}_2\text{H}_5$ ,  $\text{C}_6\text{H}_5$ ,  $\text{C}_3\text{H}_7$ ,  $\text{C}_4\text{H}_9$ , or  $\text{CH}_2\text{CH}_2\text{CN}$ ,  $\delta$  was  $\sim 1.3$  mm/sec, corresponding to the electron density caused by 4 Sn-C bonds on the Sn nucleus. The atoms not bound to Sn had no effect on  $\delta$ . (2) In the compounds  $(\text{C}_4\text{H}_9)_2(\text{C}_{n2n+1}\text{COO})_2$ ,  $n = 1, 7$ , or  $17$ ,  $\delta$  was  $1.45 \pm 0.10$  mm/sec, and  $\Delta$  was  $3.45 \pm 0.20$  mm/sec. n

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Investigation of organo-tin compounds ...

S/020/63/148/001/027/032  
B101/3186

had no effect on the electron distribution in the Sn-O bond. (3) The highly electronegative chlorine affected  $\delta$ , even if it was not bound to Sn. Data found for  $(C_4H_9)_2Sn(CH_2ClCOO)_2$ :  $\delta = 1.60 \pm 0.10$ ,  $\Delta = 3.65 \pm 0.10$ , and for  $(C_4H_9)_2Sn(CCl_3COOH)_2$ :  $\delta = 1.65 \pm 0.10$ ,  $\Delta = 3.80 \pm 0.10$ . (4) For  $FSn(CH_2CH_2CN)_3$  and  $(C_2H_5)_3SnOH$ , the doublet formed by quadrupole interaction was found to be asymmetric. It is assumed that the quadrupole interaction is accompanied by a magnetic interaction affected by  $m$ . If an internal magnetic field exists in the molecule perpendicularly to the electric field the component of the quadrupole splitting is affected by whether the transition occurs from the  $m = \pm 3/2$  or from the  $m = \pm 1/2$  sublevel. There are 1 figure and 1 table. ✓

ASSOCIATION: Institut neftekhimicheskogo sinteza Akademii nauk SSSR (Institute of Petrochemical Synthesis of the Academy of Sciences USSR); Institut yadernoy fiziki Moskovskogo gosudarstvennogo universiteta im. M.V. Lomonosova (Institute of Nuclear Physics of the Moscow State University imeni M.V. Lomonosov)

Card 2/3

Investigation of organo-tin compounds ...

S/020/63/148/001/027/032  
B101/B186

PRESENTED: July 21, 1962 by A.P. Vinogradov, Academician

SUBMITTED: July 21, 1962

Card 3/3

BRYUKHANOV, V.A.; GOL'DANSKIY, V.I.; DELYAGIN, N.N.; KORYTKO, L.A.;  
MAKAROV, Ye.F.; SUZDALEV, I.P.; SHPINEL', V.S.

Characteristics of Mössbauer spectra of tin organic compounds and  
the role of the nearest chemical bonds in the Mössbauer effect.  
Zhur. eksp. i teor. fiz. 43 no.2:443-452 Ag '62. (MIRA 16:6)

1. Institut khimicheskoy fiziki AN SSSR.  
(Mössbauer effect) (Tin compounds)

ALEKSANDROV, A.Yu.; DELYAGIN, N.N.; MITROFANOV, K.P.; POLAK, L.S.;  
SHPINEL', V.S.

Effect of gamma-radiation on the shape of Mossbauer resonance  
absorption spectra in tin-organic compounds. Zhur. eksp. i teor.  
fiz. 43 no.6:2074-2076 D '62. (MIRA 16:1)

1. Institut yadernoy fiziki Moskovskogo gosudarstvennogo  
universiteta i Institut neftekhimicheskogo sinteza AN SSSR.  
(Mossabauer effect) (Tin compounds--Spectra)  
(Polymers, Effect of radiation on)

DELYAGIN, N. N., KAGAN, YU. M., BRYUKHANOV, V. A.,

"The Mossbauer Effect of  $\text{Sn}^{119}$  in Vanadium, Gold, Platinum and Thallium,"

report presented at the 3rd Intl. Conf. on the Mossbauer Effect, Cornell, Univ.,  
New York, 4-7 Sep 63.



BRYUKHANOV, V.A.; DELYAGIN, N.N.; KAGAN, Yu.

Mossbauer effect on  $\text{Sn}^{119}$  nuclei in a vanadium matrix. Zhur.  
eksp. i teor. fiz. 45 no.5:1372-1377 N '63. (MIRA 17:1)

1. Institut yadernoy fiziki Moskovskogo gosudarstvennogo universiteta.

ACCESSION NR: AP4012533

S/0056/64/046/001/0137/0141

AUTHORS: Bryukhanov, V. A.; Delyagin, N. N.; Kuz'min, R. N.

TITLE: Resonance absorption of gamma quanta in magnesium stannide.  
23.8-keV absorption line with natural line width

SOURCE: Zhurnal eksper. i teoret. fiz., v. 46, no. 1, 1964, 137-141

TOPIC TAGS: Mossbauer effect, photon absorption, resonance photon absorption, magnesium stannide, recoilless gamma quantum absorption, magnesium stannide chemical bond, recoilless resonance absorption probability, tin 119, absorption line, absorption line width, natural line width

ABSTRACT: Continuing earlier Mossbauer-effect studies of tin oxides (ZhETF v. 40, 713, 1961 and v. 43, 432, 1962), the authors investigated resonance absorption of 23.8-keV gamma quanta by  $\text{Sn}^{119}$  nuclei over a temperature range from 77 to 290K in  $\text{Mg}_2\text{Sn}$ , which has a struc-

Cord -1/3

ACCESSION NR: AP4012533

ture of high symmetry, so that the electric field gradient at the tin nucleus should be zero. The experiments were also aimed at finding a source of 23.8-keV gamma rays with natural line width. The probability of recoilless absorption of the gamma quanta was found to be 0.77 and 0.28 at 77K and at room temperature, respectively. The width obtained for the absorption line in  $Mg_2Sn$  was  $0.32 \pm 0.02$  mm/sec, which agrees well with the value obtained from the lifetime of the 23.8 keV excited state. In view of the predominant role played in  $Mg_2Sn$  by the interaction between the tin and magnesium atoms, the contribution of the optical vibration is considerably reduced for the heavy tin nucleus. In this connection, interest is attached to the study of compounds with structure isomorphic to fluorite ( $PtSn_2$  or  $IrSb_2$ ), with metallic bonds, where an increased effect of the optical vibrations for the tin atoms is expected. "The authors thank Yu. Kagan for interesting discussions of

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ACCESSION NR: AP4012533

the results." Orig. art. has: 4 figures and 2 formulas.

ASSOCIATION: Institut yadernoy fiziki Moskovskogo gosudarstvennogo universiteta (Nuclear Physics Institute, Moscow State University)

SUBMITTED: 18Jul63

DATE ACQ: 26Feb64

ENCL: 00

SUB CODE: PH

NO RZF SOV: 007

OTHER: 003

Card 3/3

ACCESSION NR: AP4025912

S/0056/64/046/003/0825/0828

AUTHOR: Bryukhanov, V. A.; Delyagin, N. N.; Kagan, Yu.

TITLE: The Mossbauer effect on Sn-119 nuclei in gold, platinum, and thallium matrices

SOURCE: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 46, no. 3, 1964, 325-328

TOPIC TAGS: Mossbauer effect, tin 119, gold matrix, platinum matrix, thallium matrix, light Mossbauer atom, vibration spectrum, discrete frequency, recoilless resonant absorption, absorption probability, force constant, alloy concentration effect

ABSTRACT: Following an earlier similar investigation of the Mossbauer effect on Sn<sup>119</sup> in a vanadium matrix, (ZhETF v. 45, 1372, 1963), the present study was undertaken for the purpose of an absolute comparison of theory and experiment in the case of a light Mossbauer atom, when there are no discrete frequencies in the vibration spectrum. To this end, the probability for recoilless resonant absorption of 23.8-keV gamma rays by Sn<sup>119</sup> was measured in matrices of gold, platinum, and thallium over a wide range of temperatures. The measurements were made in solid solutions of tin in gold (1.7 and 3.2 at% tin), platinum (1.5 at% tin) and thallium

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ACCESSION NR: AP4025912

(3.6 and 9.2 at% tin). The experimental data were compared with the theoretical results of Yu. Kagan and Ya. A. Iosilevskiy (ZhETF v. 42, 259, 1962), which were obtained under the assumption that a force constant remain unchanged. The agreement obtained for the probability of the effect between the experimental and the theoretical values extends over a whole range of temperatures and is the same, within experimental error, for alloys with different concentrations. Orig. art. has: 1 figure and 1 formula.

ASSOCIATION: Institut yadernoy fiziki Moskovskogo gosudarstvennogo universiteta (Nuclear Physics Institute, Moscow State University)

SUBMITTED: 18Jul63

DATE ACQ: 16Apr64

ENCL: 01

SUB CODE: PH

NO REF SOV: 004

OTHER: 000

Cord 2/3

ACCESSION NR: AP4042558

S/0056/64/046/006/1996/2002

AUTHORS: Bryukhanov, V. A.; Delyagin, N. N.; Kuz'min, R. N.; Shpinel', V. S.

TITLE: Mossbauer effect in binary compounds of tin

SOURCE: Zh. eksper. i teor. fiz., v. 46, no. 6, 1964, 1996-2002

TOPIC TAGS: Mossbauer effect, tin, tin compound, resonance absorption, phonon, lattice parameter, lattice constant

ABSTRACT: To provide a simple interpretation of the decrease of the effective Debye temperature  $\Theta$ , which is used to characterize the probability of the Mossbauer effect, with decreasing temperature, in analogy with the explanation of the increase in  $\Theta$  with decreasing temperature presented by the authors earlier (ZhETF v. 40, 713, 1961), the authors investigated resonance absorption of  $\gamma$  radiation by  $\text{Sn}^{119}$  nuclei in the binary compounds  $\text{SnAs}$ ,  $\text{SnSb}$ ,  $\text{SnTe}$ , and  $\text{SnPt}$  over a

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wide range of temperatures. A simple model of the phonon spectrum, constructed by superposing the Debye and the Einstein spectra, was used in the analysis. The probability of recoil-free absorption and its temperature dependence for all four compounds cannot be described by a single parameter in the Debye approximation. This result is attributed to the influence of the optical branches of the phonon spectrum. The measurements of the absorption line widths, quadrupole interactions, and chemical isomeric shifts are used to analyze the properties of the chemical bonds and the structures of the investigated compounds. The structure and parameters of the lattices were determined by x-ray analysis. Although the experimental results agreed qualitatively with the model, there was no quantitative agreement and the observed temperature dependence of  $\Theta$  exceeded the predictions based on the considered phonon-spectrum model. "The authors thank A. I. Firov for his assistance." Orig. art. has: 3 figures, 3 formulas and 1 table.

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ACCESSION NR: AP4042558

ASSOCIATION: Institut yadernoy fiziki Moskovskogo gosudarstvennogo universiteta (Nuclear Physics Institute, Moscow State University)

SUBMITTED: 17Jan64

DATE ACQ:

ENCL: 02

SUB CODE: SS, NP

NR REF SOV: 007

OTHER: 001

Card 3/5

ACCESSION NR: AP4042558

ENCLOSURE: 01

Principal characteristics of the Mossbauer effect

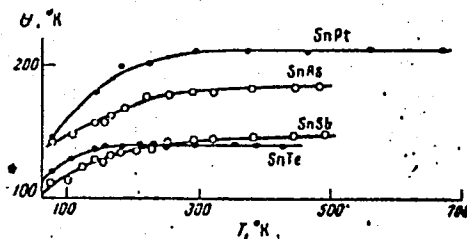
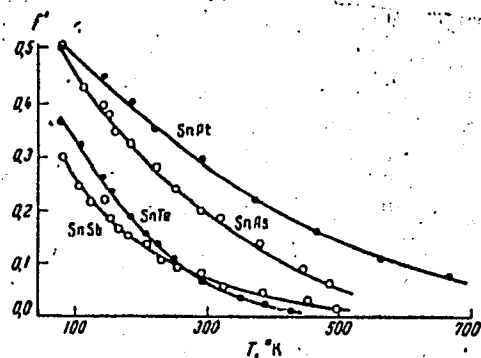
Соедине- ние 1	$\Gamma_0$ , мм/сек 2	$\delta$ , мм/сек		$I'$		$\theta$ , °K	
		77° K	200° K	77° K	200° K	77	200
SnAs	$0,34 \pm 0,02$	$0,67 \pm 0,03$	$0,62 \pm 0,02$	$0,50 \pm 0,05$	$0,20 \pm 0,02$	$145 \pm 15$	$160 \pm 10$
SnSb	$0,42 \pm 0,04$	$0,80 \pm 0,03$	$0,76 \pm 0,03$	$0,31 \pm 0,03$	$0,084 \pm 0,005$	$110 \pm 6$	$144 \pm 3$
SnTe	$0,36 \pm 0,03$	$1,51 \pm 0,02$	$1,43 \pm 0,03$	$0,37 \pm 0,03$	$0,070 \pm 0,006$	$120 \pm 5$	$139 \pm 3$
SnPt	—	$-0,22 \pm 0,02$	$-0,30 \pm 0,02$	$0,50 \pm 0,06$	$0,30 \pm 0,04$	$145 \pm 15$	$210 \pm 10$

1 - Compound, 2 - mm/sec

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ACCESSION NR: AP4042558

ENCLOSURE: 02



Temperature dependence of recoilless absorption probability (left) and of the effective Debye temperature for the compounds SnAs, SnSb, SnTe, and SnPt

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ACCESSION NR: AP4042372

S/0056/64/047/001/0080/0083

AUTHORS: Bryukhanov, V. A.; Delyagin, N. N.; Shpinel', V. S.

TITLE: Connection between the isomer shifts of the 23.8-keV gamma transition of the Sn-119 nucleus in metallic solid solutions and the dynamic properties of the matrix

SOURCE: Zh. eksper. i teor. fiz., v. 47, no. 1, 1964, 80-83

TOPIC TAGS: tin, solid solution, isomeric transition, Mossbauer effect, gamma scattering

ABSTRACT: This is a consequence of earlier measurements by the authors (ZhETF v. 45, 1372, 1963 and v. 46, 825, 1964) of the probability of recoilless absorption of 23.8-keV gamma quanta by Sn<sup>119</sup> nuclei in various metallic matrices, which yielded good agreement with the theory of the Mossbauer effect and showed that the results can be interpreted on the assumption that the force con-

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ACCESSION NR: AP4042372

stants are unchanged. In this investigation, the isomer shifts of the 23.8-keV gamma transition of  $\text{Sn}^{119}$  introduced as an impurity in various metallic matrices were measured. The measurements were made for solid solutions with low tin concentration, (1--3 at. %). The data obtained were compared with a parameter proportional to the effective force constant. A simple and unique connection was established between the electron density at the nucleus of the impurity atom and the dynamic characteristics of the host metal (Encl. 02). It is indicated that an explanation of the observed relation entails difficulties in view of the great variety in the properties of the host metals, but several alternate possible explanations are proposed. "The authors are grateful to Yu. Kagan for valuable discussions and also to P. L. Gruzin in whose laboratory some of the alloys were prepared." Orig. art. has: 1 figure, 2 formulas, and 2 tables.

ASSOCIATION: Institut yadernoy fiziki Moskovskogo gosudarstvennogo

2/5

ACCESSION NR: AP4042372

universiteta (Nuclear Physics Institute, Moscow State University)

SUBMITTED: 13Feb64

ENCL: 02

SUB CODE: NP

NR REF SOV: 003

OTHER: 001

3/5

ACCESSION NR: AP4042372

ENCLOSURE: 01

Values of parameter  $\theta_0^2 M_0$ , proportional to force constants

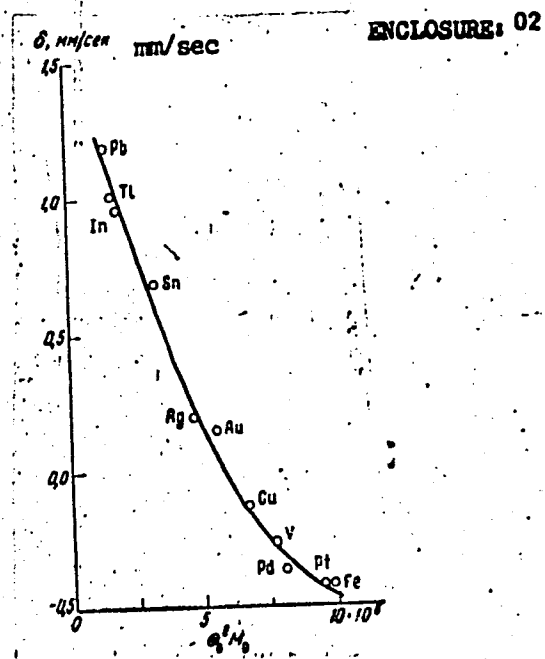
Matrix	$\delta, \text{Å}/\text{cm}$ mm/sec	$\theta_0, ^\circ\text{K}$	$\theta_0^2 M_0 \cdot 10^{-4}$
Ag	$+0,20 \pm 0,02$	210	4,76
Cu	$-0,13 \pm 0,03$	325	6,71
Au	$+0,15 \pm 0,02$	170	5,69
In	$+0,06 \pm 0,05$	129	1,91
Tl	$+1,01 \pm 0,03$	96	1,88
Pb	$+1,20 \pm 0,05$	90	1,68
V	$-0,27 \pm 0,04$	390	7,74
Pt	$-0,42 \pm 0,04$	220	9,44
Fe	$-0,42 \pm 0,06$	420	9,85
Pd	$-0,37 \pm 0,03$	275	8,04
Sn	$+0,69 \pm 0,03$	170	3,43

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ACCESSION NR: AP4042372

Isomer shifts vs. parameter  $\theta_{0M}^2$

Card 5/5





L 22176-65 EWT(1)/EWT(n)/EEC(t)/EMP(b)/T Feb AEDC(a)/AFWL/SSD/ASDA-5/ASMP-2  
 ASDP-3/ESDG(s)/ESDT LJP(c) JD/JG S/0056/64/047/006/2085/2090  
 ACCESSION NR: P5001831

AUTHOR: Bryukhanov, V. A.; Delyagin, N. N.; Shpinel', V. S.

TITLE: Mossbauer effect on Sn-119 impurity nuclei in binary metallic solid solutions

SOURCE: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 47, no. 6, 1964, 2085-2090

TOPIC TAGS: Mossbauer effect, tin, silver alloy, binary matrix, solid solution, isomer shift, electron density, absorption line

ABSTRACT: Mossbauer effect probabilities and isomeric shifts were measured for the  $\text{Sn}^{119}$  gamma transition on nuclei incorporated as impurities in Ag-Pd, Ag-Au, and Ag-In binary matrices, as well as in Ag-Sn alloys. The technique of the measurements and of the data reduction were similar to those used by the authors earlier (ZhETF v. 45, 1372, 1963; v. 46, 825, 1964; v. 46, 137, 1964). The dependence on the composition of the binary matrix of the electron density at the nucleus, and the effective Debye temperature, which characterizes the probability of the effect, were found over a wide range of concentrations. It is shown that

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ACCESSION NR: AP5001831

3

both the Mossbauer-effect probability and the size of the isomeric shift (as well as the width of the absorption line) are extremely sensitive to features of the electron structure of the host; in particular, the dependence found for the hosts containing a transition metal (palladium) is markedly different from that observed for other matrices. Some feature of the behavior of other impurity atoms in metal hosts are discussed. "The authors thank Yu. Kagan for valuable discussion of the results." Orig. art. has: 2 figures and 1 table.

ASSOCIATION: Institut yadernoy fiziki Moskovskogo gosudarstvennogo universiteta  
(Institute of Nuclear Physics, Moscow State University).

SUBMITTED: 18Jul64

ENCL: 00

SUB CODE: SS, MM

NR REF SOV: 004

OTHER: 005

Gord 2/2

DELYAGIN, N.N.; RYAZANOV, V.L., inzh., nauchn. red.; SMIRNOVA,  
A.P., red.

[Purification of phenolic waste waters; operational  
practices] Ochistka fenol'nykh stochnykh vod; iz opyta  
ekspluatatsii. Moskva, Stroiizdat, 1965. 90 p.  
(MIRA 18:3)

L 00668-67 EWT(m)/ENP(t)/ETI IJP(c) JD

ACC NR: AP6017589

SOURCE CODE: UR/0367/66/003/002/0209/0212

AUTHOR: Balabanov, A. Ye.; Delyagin, N. N.; Khusseyn El' Sais

ORG: Institute of Nuclear Physics of the Moscow State University (Institut yadernoy fiziki Moskovskogo gosudarstvennogo universiteta)

TITLE: Mossbauer effect for gamma transitions with energies 60.0 and 86.5 kev in Gd<sup>155</sup>

SOURCE: Yadernaya fizika, v. 3, no. 2, 1966, 209-212

TOPIC TAGS: gadolinium, gamma transition, Mossbauer effect, hyperfine structure, absorption spectrum

ABSTRACT: The purpose of the investigation was to check on the hyperfine structure of the resonance absorption spectra of gadolinium. The measurements were made with a Eu<sup>155</sup> source on gadolinium oxide in a host lattice of samarium oxide at a temperature 80K, at conditions under which the hyperfine structure in the gadolinium oxide disappears, making it possible to obtain an emission line with width close to natural. The absorption spectra were measured with the aid of an electrodynamic spectrometer; constant velocity of the source relative to the absorber was provided by means of a sawtooth electrodynamic vibrator. The gamma quanta were registered with a scintillation spectrometer with NaI(Tl) crystal. For the 86.5-kev gamma radiation, the width of the absorption line was found to be  $0.37 \pm 0.06$  mm/sec, which agrees with the natural line width calculated from the level lifetime. The width of the 60.0-kev level was found to be  $1.4 \pm 0.4$  mm/sec or  $(2.8 \pm 0.8) \times 10^{-7}$  ev, which agrees with a

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L 00668-67

ACC NR: AF6017589

level lifetime  $(2.4 \pm 0.7) \times 10^{-9}$  sec, approximately one order of magnitude larger than obtained from the known data on the probability of Coulomb excitation and the M1/E2 ratio for 60.0 kev. The probability of the Mossbauer effect for gamma quanta with 86.5 kev energy at 80K was found to be  $(1.2 \pm 0.2)\%$ , corresponding to a characteristic Debye temperature of  $191 \pm 10^\circ$ . The authors thank V. S. Shpinel' for interest in the work and useful discussions. Orig. art. has: 1 figure.

SUB CODE: 20/ SUBM DATE: 01Jul65/ ORIG REF: 001/ OTH REF: 004

Card 2/2 vlr

ACC NR: AP6024867

SOURCE CODE: UR/0056/66/051/001/0095/0100

AUTHOR: Delyagin, N. N.; Khusseyin El' Saiz,; Shpinel', V. S.

ORG: Nuclear Physics Institute of Moscow State University (Institut yadernoy fiziki Moskovskogo gosudarstvennogo universiteta)

TITLE: Magnetic hyperfine structure of  $Gd^{155}$  levels in metallic gadolinium and in the intermetallic compound  $GdAl_2$

SOURCE: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 51, no. 1, 1966, 95-100

TOPIC TAGS: ~~nuclear physics~~, Mossbauer effect, gadolinium, ~~nucleus~~, hyperfine structure, nuclear structure, NUCLEUS, EXCITED NUCLEUS, ISOTOPE, MAGNETIC STRUCTURE

ABSTRACT: The hyperfine structure of the ground state and the excited 86.5-keV state of the  $Gd^{155}$  nucleus was investigated by means of the Mossbauer effect in metallic gadolinium and in the intermetallic compound  $GdAl_2$  at a temperature of 80K. The measurements were performed with an  $Eu^{155}$  source in the samarium oxide lattice. At temperatures close to that of liquid nitrogen,  $Eu^{155}$  emits an unsplit line with a natural width. The absorption spectra obtained indicated that the spin of the 86.5-keV level is  $5/2$  and the ratio of the g-factors for the excited and ground states is  $-2.1 \pm 0.3$ . The intrinsic magnetic field strengths of the gadolinium nuclei were found to be  $366 \pm 55$  and  $134 \pm 25$  kOe for metallic gadolinium and  $GdAl_2$ , respectively. Extrapolation to lower temperature yielded a field strength value of  $167 \pm 25$  kOe for gadolinium nuclei in  $GdAl_2$ . The great difference in the intrinsic

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ACC NR: AP6024867

magnetic fields in gadolinium and  $GdAl_2$  was not accompanied by an isomer shift. No level shift due to quadrupole interaction was detected for gadolinium or  $GdAl_2$ . The experimental value of the magnetic moment for the 86.5-keV level ( $\pm 0.85 \pm 0.13$ )  $\mu_{nuc}$  was not consistent with the theoretical value. Orig. art. has: 2 figures. [CS]

SUB CODE: 20/ SUBM DATE: 16Feb66/ ORIG REF: 001/ OTH REF: 011

Card 2/2

ACC NR: AR6037014

(A,N)

SOURCE CODE: UR/0181/66/003/011/3426/3428

AUTHOR: Delyagin, N. N.

ORG: Moscow State University im. M. V. Lomonosov (Moskovskiy gosudarstvennyy universitet)

TITLE: Interpretation of isomer shifts of gamma radiation of impurity nuclei  $\text{Sn}^{119}$  and  $\text{Au}^{197}$  in metallic solid solutions

SOURCE: Fizika tverdogo tela, v. 8, no. 11, 1966, 3426-3428

TOPIC TAGS: Mossbauer effect, tin, gold, compressibility, isomer shift, electron density, gamma scattering

ABSTRACT: This is a continuation of earlier investigations of the Mossbauer effect for these nuclei (ZhETF v. 47, 2085, 1964 and preceding papers), and is devoted to a comparison of the isomer shift as measured by the Mossbauer effect with other known dynamic characteristics of metals. The particular characteristic chosen was compressibility. The isomer shifts of 23.8-keV gamma rays from  $\text{Sn}^{119}$  measured for  $\text{Sn}^{119}$  impurity atoms in Pt, Pd, Fe, V, Cu, Au, Ag, Al, Zn, Sn, Cd, In, Tl, and Pb, and for  $\text{Au}^{197}$  in the same metals, as obtained from different sources, show that the isomer shift and the compressibility are clearly and uniquely related. The increase in the interaction force is accompanied by a decrease in the electron density localized on the impurity atom. Plots of the compressibility against the isomer shift for the different metals all fit a single straight line in the case of  $\text{Sn}^{119}$  and two separate

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ACC NR: AP6037014

straight lines in the case of Au<sup>197</sup>, with one group of metals (Pt, Pd, Cu, Ni, Fe, Co) exhibiting much larger values of the electron density on the impurity nucleus than the remaining metals. This is attributed to the interaction of the d-electrons of the gold impurity atom. It is suggested that allowance for the role of the d-electrons may explain other investigations of the Mossbauer effect in which gold is involved, and refute the customarily employed model for the alloys Au-Ni, Au-Pd, and Cu-Ni. Orig. art. has: 2 figures.

SUB CODE: 20/ SUBM DATE: 21Apr66/ ORIG REF: 004/ OTH REF: 004

Card 2/2

DELYAGINA, L. R.

"Serological Typing of the Causative Agent and the Serological  
Diagnosis of Diphtheria." Sub 27 Dec 51, Acad Med Sci USSR.

Dissertations presented for science and engineering degrees in  
Moscow during 1951.

SO: Sum. No. 480, 9 May 55

DELYAGINA, L.P.; KRAVCHENKO, N.A.; TER-AVAKYAN, N.P.; MIROSHKINA, S.K.

Significance of the agglutination reaction as a method for differentiating diphtheria from tonsillitis of different etiology in carriers of diphtherial germs. *Pediatrics* 39 no.4:28-30 J1-Ag '56. (MLRA 9:12)

1. Iz Moskovskogo nauchno-issledovatel'skogo instituta vaktsin i syvorotok imeni I.I.Mechnikova (dir. M.I.Sokolov)

(TONSILLITIS, differ. diag.

diphtheria, hemagglut. reaction in carriers of *Corynebacterium diphtheriae*)

(DIPHTHERIA, differ. diag.

tonsillitis, hemagglut. reaction in carriers of *Corynebacterium diphtheriae*)

*Delyagina, L. P.*

EXCERPTA MEDICA Sec.4 Vol.11/4 Med. Microb. etc. April 58

851. AGGLUTINATION REACTION IN DIPHTHERIA WITHIN THE SCOPE OF REGIONAL LABORATORIES (Russian text) - *Delyagina L. P.* and *Kravchenko N. A.* - NAUCH. TRUD. MOSK. INST. VAKT. SYVOR. 1956, 6 (19-22)

A diagnostic method has been developed for diphtheria which involves the determination of specific agglutinins in the patients' blood. The reaction was carried out on the lines of the Widal reaction, the Wright reaction, etc. The result was considered positive if the titre was 1:100 and higher. 1,134 patients were examined; in 862 of these the diagnosis of diphtheria was confirmed clinically. The diagnosis was confirmed serologically in 690 of the 862 cases (80%) and bacteriologically in only 472 (55%). Of the 272 patients in whose case the diagnosis of diphtheria was rejected the agglutination reaction was positive in 36 (13%); diphtheria pathogens were isolated in 11 (4%). The authors consider the agglutination reaction to be suitable for diagnosis in doubtful cases of diphtheria. (S)

DELYAGINA, L. P.

EXCERPTA MEDICA Soc.4 Vol.11/4 Med.Microb. etc. April 58

1058. THE OBTAINING OF A COMBINED DIPHTHERIA-INFLUENZA PROPHYLAXIS (EXPERIMENTAL DATA) (Russian text) - Delyagina L. P. - NAUCH. TRUD. MOSK. NAUCH. - ISSLEDOV. INST. VAKTS. I. SYVOR. 1956, 6 (99-103)

The efficacy of combined diphtheria-influenza vaccine administered intranasally was investigated on guinea-pigs and white mice. It was found that simultaneous administration of diphtheria toxoid and influenza virus does not interfere with the development of immunity to diphtheria and provokes an immunological reaction to influenza antigens.

(S)

DELYAGINA, Ye.M.

Case of aplasia of the kidneys, ureters, urinary bladder,  
and testes. Zdrav. kazakh. 21 no.12:58 '61. (MIRA 15:3)

1. Iz kafedry patologicheskoy anatomii (zav. - V.A. Yaglinskiy)  
Aktyubinskogo meditsinskogo instituta.

~~EXTRAORDINARY ORGANS~~ (ABNORMALITIES AND DEFORMITIES)

DELYAMURE, L.L.

Study of lipoproteins in the blood of donors by agar gel electrophoresis using previously colored blood plasma. Vop. med. khim. 9 no.2:200-204. Mr-Ap '63. (MIRA 17:8)

1. Meditsinskaya sluzhby Chernomorskogo flota, Sevastopol'.

DELYAMURE, L.L.

Diagnostic significance of determining lipoproteins in the blood serum in Botkin's disease. Lab. delo 10 no.3:141-145 '64.

(MIRA 17:5)

1. Meditsinskaya sluzhba Chernomorskogo Flota, Sevastopol'; nauchnyy rukovoditel' raboty - prof. G.V.Troitskiy.



DELYAMURE, L.L.

Sudan test and its significance in the determination of the  
bonding strength between blood proteins and lipids. Lab.  
delo no.8:465-467 '65. (MIRA 18:9)

1. Meditsinskaya sluzhby Chernomorskogo flota, Sevastopol'.

KLEYNENBERG Sergey Yevgen'yevich; YABLOKOV, Aleksey Vladimirovich;  
BEL'KUCH, Vsevolod Mikhaylovic ; TARASEVICH, Mariya  
Nikolayevna; Primali uchastiye: DELYAMURE, S.L.;  
ZHEMKOVA, Z.P.; MAKAROV, B.M., red.

[Beluga; a monographic study on the species] Belukha; opyt  
monograficheskogo issledovaniia vida. [By] S.E.Kleinenberg i  
dr. Moskva, Izd-vo "Nauka," 1964. 455 p. (MIRA 17:4)

DELYAMURE, S. L.

Delyamure, S. L. "On the study of the helminthofa of the dolphin *Tursiops tursio* Fabr.", Trudy Gel'mintol. laboratorii (Akad. nauk SSSR), Vol. II, 1949, p. 110-13, - Bibliog: 12 items.

SO: U-4630, 16 Sept. 53, (Letopis 'Zhurnal 'nykh Statey, No. 23, 1949).

DELYAMURE, S.L.

Albinism in Bats. Nauk.zap.Kiev.un. 9 no.6:160-161 '50. (MLRA 9:10)  
(Bats) (Albinoes and albinism)

DELYAGURE, S. I.

New member of the Pseudaliidae family, a lung parasite of Delphinus delphis ponticus Barabasch, 1935. Trudy Gel'm. lab. No 5, 1951.

DEIVANTRE, S. L.

Kharakternyye osobennosti cel'min'ofauny Istonogikh / Mitobraznykh  
v svete ikh ekologii i filozenii, "Works on Helminthology" on the 75th Birthday  
of K. I. Skryabin, Izdat, Akad. Nauk, SSSR, Moskva, 1953, page 211  
Helminthology Laboratory, AS USSR and the Chair of Zoology, Crimean Pedagogical Inst.  
in. M. V. Frunze.

DELYAMURE, S. L.

Dissertation: "A Morphological and Systematic Survey of the Helminth Fauna of Marine Mammals (Pennipedia, Cetacea) in the Light of Their Morphology and Phylogeny." Dr Biol Sci, Inst of Zoology, Acad Sci USSR, Moscow, Oct-Dec 53. (Vestnik Akademii Nauk, Moscow, Jun 54) [Source gives brief summary of work.]

SO: SUM 318, 23 Dec 1954

*DELYAMURE, S.L.*

DELYAMURE, S.L.; SKRYABIN, K.I., akademik redaktor; MEDNIKOVA, M.V.,  
redaktor; SIMKINA, Ye.N., tekhnicheskii redaktor.

[Helminthic fauna of marine mammals in the light of their  
ecology and phylogeny] Gel'mintofauna morskikh mlekopitaiushchikh  
v svete ikh ekologii i filogenii. Pod red. K.I.Skriabina. Moskva,  
Izd-vo Akademii nauk SSSR, 1955. 517 p. (MLRA 8:12)  
(Helminthology)



DELYAMURE, S.L.

On amphiboreal and bipolar distribution of helminths found in marine mammals. Dokl.AN SSSR 107 no.4:621-623 Ap '56. (MLRA 9:7)

1.Krymskiy pedagogicheskiy institut imeni M.V.Frunze. Predstavlena akademikem K.I.Skryabinym.  
(PARASITES--CETACEA) (HELMINTHOLOGY)

DELYAMURE, S.L.; SKRYABIN, A.S.

General features of the geographical distribution of helminths  
infesting sea mammals. Izv. Kryn. otd. Geog. ob-va no.5:247-253  
'58. (MIRA 14:9)  
(Helminthology) (Parasites--Pinnipedia) (Parasites--Cetacea)

DELYAMURE, S.L.; KLEYNENBERG, S.Ye.

New data on helminths of the white whale [with summary in English].  
Biol.MOIP.Otd.biol. 63 no.3:25-32 My-Je '58. (MIRA 12:3)  
(PARASITES--WHITE WHALE)  
(WORMS, INTESTINAL AND PARASITIC)

DELYAMURE, S.L.

"Basic problems in the parasitology of fishes." Reviewed by  
S.L.Deliature. Zool.zhur. 38 no.12:1900-1903 D '59.  
(MIRA 13:5)

(Parasites--Fishes)

DELYAMURE, S.L.; SKRYABIN, A.S.

Helminths parasitic in fur seals of Komandorskiye Islands. Nauch.  
dokl.vys.shkoly; biol.nauki no.2:11-14 '60. (MIRA 13:4)

1. Rekomendovana kafedroy zoologii Krymskogo pedagogicheskogo instituta.  
(KOMANDORSKIYE ISLANDS--WORMS, INTESTINAL AND PARASITIC)  
(PARASITES--SEALS (ANIMALS))

DELYAMURS, S.L.

The necessity of a thorough and systematic study of the parasites  
of commercial marine mammals. Trudy sov. Ikht. kcm. no.12:222-232  
\*61. (MIRA 14:6)

1. Kafedra zoologii Krymskogo pedagogicheskogo instituta.  
(Worms, Intestinal and parasitic) (Parasites--Marine mammals)

DELYANURE, Semen Lyudvigovich, prof., doktor biol. nauk; SHALYT,  
M.S., isp. obyazan. prof., kand. biol. nauk, red.;  
KOZIN, Ya.D., prof., doktor geol.-miner. nauk, red.;  
SHUL'TS, N.P., red.

[Fishes in freshwater bodies of water] Ryby presnykh vodo-  
emov. Simferopol', Izd-vo "Krym," 1964. 69 p.  
(MIRA 17:7)

DELYAMURE, S.L.; KUROCHKIN, Yu.V.; SKRYABIN, A.S.

Helminths of the Caspian sea (Phoca caspica Gm.). Trudy Astr. zap.  
no.9:105-118 '64. (MIRA 18:10)



DELy anov, L. G.

12(3); 28(1)

PHASE I BOOK EXPLOITATION

SOV/2776

Novoye v zheleznodorozhnoy avtomatike, telemekhanike i svyazi; sbornik statey  
(New Developments in Railroad Automation, Remote Control, and Communications;  
Collection of Articles) Moscow, Transzheldorizdat, 1959. 198 p. 3,000 copies  
printed.

Eds. (Title page): B.S. Ryazantsev, Candidate of Technical Sciences, and A.M.  
Pogodin, Engineer; Ed. (Inside book): G.I. Marenkova, Engineer; Tech. Ed.:  
G.P. Verina.

PURPOSE: This collection of articles is intended for engineers and technicians  
specializing in railroad automatic and remote control and communications.

COVERAGE: The articles in this book concern the following problems: the appli-  
cation of automatic control in the electric power supply of automatic block-  
signalling systems; the construction of electric interlocking systems in  
switching yards of railroad stations; modernization of route control systems;  
equipping of runs with a relay-electromechanical system of semiautomatic  
block signals; protection of track circuits of coded automatic block-  
signalling systems and telephone networks of overhead communication lines

Card 1/6

80V/2776

New Developments (Cont.)

The author describes measures for removal of complications occurring in automatic block-signalling systems from the simultaneous use of rails for track circuits and current feedback into the power system. In 1957 the TsNII MPS (Central Scientific Research Institute of the Ministry of Transport) conducted a series of measurements of harmonic currents and voltages in traction substations and rails, and of insulation resistance with respect to ground of metallic structures supporting the contact wire. These tests were made in the Kurgan-Makushino section of the South Ural Railroad. The author presents the results of these tests and suggestions for the prevention and removal of effects of harmonics in the primary a-c supply current on the signalling systems.

Matskevich, A.G. Engineer, and L.G. Delyanov. Electric Interlocking Control in Switching Yards 41

The author describes the methods used in train formation at Soviet railroad stations and finds that in many cases switching operations are still manual. He gives a description of an electrically operated automatic-interlocking system.

Stepanov, N.M., Engineer. Relay-Electromechanical System of Semiautomatic Block Signalling 59  
Card 3/6

SOV/2776

New Developments (Cont.)

The author describes a system of semiautomatic block signals called "relay-electromechanical" which was developed in 1956-1957 at the Giprotranssignalsvyaz' and which was found to work satisfactorily on a few runs.

Kovbasenko, V.S., Engineer. Route Lever System in Route Control Systems 78  
The author is of the opinion that the route-control system of Engineers Natalevich and Grigorov, widely used in the USSR, applies only to small railroad stations. For large railroad stations and sidings a route lever system was developed which can handle both incoming and outgoing trains from all routes and in all directions. Operation of this system for over five years gave satisfactory results. A description of the system is given.

Trekhdenov, V.I., and Ye.N. Kiselev, Engineers. Route Control Systems of the Blocking Type 89

The Design Office of the Main Administration of Signalling and Communications of the Ministry of Transport in 1957 developed a new system of route control. This system consists of standard switch-locking arrangements (with route and signal control locks) and control tower equipment. The authors describe the system in detail.

Card 4/6

New Developments (Cont.)

SOV/2776

Kut'yin, I.M., Candidate of Technical Sciences. Development of Automatic and Remote Control on Railroads in the USA

147

This is a descriptive article of achievements in the US in the above field during the last 3 to 5 years.

Pogodin, A.M., Engineer. Communications on Railroads in the USA

173

This is a descriptive article on the various types of communications systems on railroads in the USA.

AVAILABLE: Library of Congress

JP/jb  
1-18-60

Card 6/6

ODNOKOLOV, A.P.; DELYANOV, Ye.G.

Improve the manufacturing technology of hors d'oeuvre type canned vegetables. Kons. i ov.prom. 18 no.4:17-18 Ap '63. (MIRA 16:3)

1. Simferopol'skiy tekhnikum pishchevoy promyshlennosti (for Delyanov).  
(Vegetables, Canned)

DELYANOVA, R.Sh.

Helminths of dogs in Uzbekistan. Uzb.biol.zhur. no.5:47-57  
'58. (MIRA 12:1)

1. Sredneaziatskiy gosudarstvennyy universitet im. Lenina i  
Vsesoyuznyy institut gel'mintologii im. akademika K.I.Skryabina.  
(Uzbekistan--Worms, Intestinal and parasitic) (Parasites--Dogs)

G.

USSR/Zooparasitology - Helminths.

Abs Jour : Ref Zhur - Biol., No 15, 1958, 67522

Author : Delyanova, R.Sh.

Inst : Academy of Sciences UzSSR. (SREDNEAZIATSKIY GOSUDARSTVENNIY UNIVERSITET  
IMENI V.I. LENINA.)

Title : The Distribution of Helminths in Dogs of Various Geographical Zones of the USSR.

Orig Pub : Dokl. AN UzSSR, 1957, No 10, 65-71

Abstract : A list is given of 82 species of helminths, 39 of which can be parasitic in humans and farm animals. 13 species have been registered in the dogs of the tundra zone, 34 in the taiga zone, 34 in the zone of broadleaf and mixed forests, 41 in the European-Kazakh steppe and wooded steppe zone, 45 in the Aralo-Caspian desert and semi-desert zone, 19 in the Central Asian mountain zone, 38 in the Caucasian zone, 17 in the Crimean zone, 21 in the Amur-Ussuri kray zone.

Card 1/1

ACC NR: AP6019536

(A)

SOURCE CODE: UR/0190/66/008/006/0997/1002

AUTHORS: Chernobay, A. V.; Tirak'yants, Zh. S.; Delyatitskaya, R. Ya.

ORG: All-Union Scientific Research Institute of Single Crystals  
(Vsesoyuznyy nauchno-issledovatel'skiy institut monokristallov)

TITLE: Structure and reactivity of some vinyl aromatic monomers in initiated polymerization

SOURCE: Vysokomolekulyarnyye soyedineniya, v. 8, no.6, 1966, 997-1002

TOPIC TAGS: monomer, polymerization initiator, polystyrene, copolymerization, homopolymerization

ABSTRACT: The relation between structure and reactivity of some vinyl aromatic monomers in initiated polymerization has been investigated. The monomers are arranged by their activeness in homopolymerization as follows: 9-vinylnanthracene < acenaphthalene < vinyl naphthalene < styrene < 2-vinylnaphthalene < 2-vinylfluorene < 4-vinyldiphenyl. The copolymerization constants of styrene with 9-vinylnanthracene have been determined to be  $r_1 = 0.3$  and  $r_2 = 2.2$ ,  $q = 2.0$  and  $e = -0.16$ . It has been

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UDC: 66.095.26 + 678.746



L 41223-66  
ACC NR: AP6019536

found that an increase in the linking index and monomer activity in respect to the polystyrene radical is followed by an increase of the overall homopolymerization rate. Some exceptions occur with steric hindrances, which are less important in homopolymerization than in copolymerization. Orig. art. has: 3 figures and 1 table. [Based on authors' abstract] [NT]

SUB CODE: 07/ SUBM DATE: 26May65/ ORIG REF: 010/ OTH REF: 007/

Card 2/2

Translation from: Referativnyy zhurnal, Metallurgiya, 1957, Nr 6, p 111 (USSR) SOV/137-57-6-10153

AUTHOR: Delyukin, A.Z.

TITLE: An Air-driven Chill Machine (Pnevmaticheskaya kokil'naya mashina)

PERIODICAL: V sb.: Mashinostroitel' Belorussii. Nr 1 (2). Minsk, 1956, pp 71-72

ABSTRACT: A chill machine consisting of 6 air-powered sections served by a single operator has gone into operation at the Vitebsk Machine-tool Plant im. Komintern. To prevent chill, the temperature of the chills is held at between 300 and 400°C. The hot chill is covered with a liquid coating and paint. The machine is simple in design and unfailing in operation.

S.Sh.

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DELYUKIN, G. (Leningrad)

An honorable order. Prom. koop. 13 no.7:32-33 J1 '59.  
(MIRA 12:10)

(Gatchina--Hardware)

DELYUKIN, G. (Leningrad)

(sniper trainer. Voenn. snar. 40 no.9138 2 164. (SERA 17:12)

DELYUKIN, Leonid Nikolayevich; IVANOV, S.M., red.; NAZAROVA, A.S.,  
tekhn. red.

[Mechanisms and automatic machines for assembly lines]  
Mekhanizmy i avtomaty - sborshchiki. Moskva, Izd-vo  
"Znanie," 1963. 23 p. (Novoe v zhizni, nauke, tekhnike.  
IV Seriya: Tekhnika, no. 8) (MIRA 16:6)  
(Assembly-line methods) (Automation)

CHERNOBAY, D.G.; KOVALEV, F.Ya., kand. tekhn. nauk, retsenzent;  
DELYUKIN, L.N., inzh., red.; YELISEYEV, M.S., red.izd-va;  
SMIRNOVA, G.V., tekhn. red.

[Electric control of the equipment in machinery plants]  
Elektroavtomatika oborudovaniia mashinostroitel'nykh zavodov. Moskva, Mashgiz, 1963. 205 p. (MIRA 16:10)  
(Machinery industry) (Electric controllers)  
(Electronic control)

POPOV, Vladimir Artem'yevich; ZOREV, N.N., doktor tekhn.nauk, prof.,  
retsensent; DELYUKIN, I. N. inzh., ved. red.; DUGINA, N.A.,  
tekhn. red.

[Principles of the organization of technological processes in  
the manufacture of heavy machinery] Printsipy postroyeniya  
tekhnologii tiazhelogo mashinostroyeniya. Moskva, Mashgiz,  
1963. 478 p. (MIRA 16:9)  
(Machinery industry--Management)

MURAV'YEV, K.N.; MURZIN, I.K.; PETRIK, M.I., inzh., retsenzent;  
SHISHKIN, Ye.I., inzh., retsenzent; DELYUKIN, L.N., inzh.,  
ved. red.; YERMAKOV, N.P., tekhn. red.

[Repair of machine tools] Remont metallovezhushchikh stan-  
kov. Izd.3., perer. i dop. Moskva, Mashgiz, 1963. 392 p.  
(MIRA 16:11)

(Machine tools--Maintenance and repair)



DELYUKINA, Vera Grigor'yevna; VASIL'YEVA, Ye.G., red.; FRESHOVA,  
V.A., tekhn. red.

[Role of chemistry in heavy industry] Chto dast khimiia  
tiazheloi industrii. Leningrad, Lenizdat, 1964. 46 p.  
(MIRA 17:1)

(Chemistry, Technical) (Industry)

S/115/61/000/004/001/010  
B129/B206

AUTHORS: Delyunov, N. F. and Rozenberg, E. I.

TITLE: Linear and angular measuring instruments from GOMZ

PERIODICAL: Izmeritel'naya tekhnika, no. 4, 1961, 5-9

TEXT: The Gosudarstvennyy optiko-mekhanicheskiy zavod im. OGPU (State Optical and Mechanical Plant imeni OGPU) is one of the leading Soviet plants for the precision instruments mentioned in the title. They mass-produce more than 30 types of such instruments with additional equipment, and a great number of experimental and special instruments. GOMZ produce the universal measuring microscope of the type УММ-21 (UIM-21), the design of which is obsolete with regard to performance and easy operation. A new universal measuring microscope of the type УММ-23 (UIM-23) was developed, series production of which is scheduled for 1961. An optical system projects the part to be tested on a screen which has a reading system. All additional equipment of UIM-21 can be used for the UIM-23. For big and heavy parts, the universal measuring microscope of the type УММ-24 (UIM-24) was built, which is intended for measuring in rectangular and

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B129/B206

Linear and angular measuring...

polar coordinates. The universal measuring microscopes of the types УММ-22 (UIM-22) and УММ-25 (UIM-25), which also have a screen and a greater measuring range, were produced during 1958-1959. The plant also produce in series the vertical optimeter of the type ИКВ (IKV) and the horizontal optimeter of the type ИКТ (IKG) with special additional equipment. The production of the electric contact head of the type ПК-2 (GK-2) was started in 1960; it is an additional equipment to the IKG and the measuring machines of the type ИЗМ (IZM), and is intended for inside measurements from 1 to 13.5 mm. A new model of a universal measuring comparator (of a horizontal longitudinal measuring device) of the type ИКУ-2 (IKU-2) for outside and inside linear measurements was elaborated in 1959. The plant pay great attention to the development of cathetometers for measuring vertical sections of parts inaccessible to direct measurement. The data of these cathetometers are listed in Table 3. The plant also produce in series measuring machines of the type ИЗМ-10М (IZM-10M) and ИЗМ-11 (IZM-11) for outside and inside linear measurement of various products. In these new designs the followers permit transverse displacement of the part to be measured and are suitable for testing great end masses. Table 4 gives the data of mass-produced spherometers for measuring curvature radii. The data

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B129/B206

Linear and angular measuring...

for this paper originate from lectures delivered at the soveshchaniye po opticheskim metodam izmereniya dlin i uglov v Leningrad (Conference on Optical Longitudinal- and Angular Measuring Methods in Leningrad) and the soveshchaniye po izmeritel'noy tekhniki v Estonskom respublikanskom sovet nauchno-tekhnicheskikh obshchestv (Tallin) (Conference on Measuring Technology at the Estonian Council of Technical Associations of the Republic). There are 8 figures, 4 tables, and 4 Soviet-bloc references.

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Linear and angular measuring...

Legend to Table 3: 1) Type of the cathetometer: a) KM-6 (KM-6); b) KM-8 (KM-8); c) KM-9 (KM-9); 2) vertical measuring range, mm; 3) distance of the part to be measured from the objective, mm; 4) division on the tubus, seconds of arc; 5) error limit of an estimate with the reading system; 6) measurement error of the instrument for measuring a scale graduated in mm. The values from top to bottom refer to measuring lengths of 140-150, 340-380, 500-625, 730-969, and 2000 mm and more; 7) calculated values.

Технические характеристики	Катетометр		
	а KM-6	б KM-8	в KM-9
2 Пределы измерения по вертикали, мм	0-200	0-500	0-1000
3 Расстояние измеряемого изделия от объектива зрительной трубы, мм	140-150 340-380 500-625 730-969	420-670 610-1000 890-2000 2000-∞	
4 Цена деления цилиндрического уровня зрительной трубы (на 2 мм), сек.	20		4
5 Предельная погрешность отсчета по масштабной сетке отсчетной системы, мм	±0,0015	0,0015	
6 Погрешность прибора при измерении стеклянной штриховой шкалы, мм:			
при расстоянии до измеряемой шкалы 140-150 мм	±0,006	-	
при расстоянии до измеряемой шкалы 340-380 мм	±0,010	-	
при расстоянии до измеряемой шкалы 500-625 мм	±0,014	-	
при расстоянии до измеряемой шкалы 730-969 мм	±0,021	-	
при расстоянии до измеряемой шкалы 2000 мм и выше	-		±(0,03-0,04) (расчетное значение)

TABLE 3

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Linear and angular measuring...

Legend to Table 4: 1) Spherometers of the types: a) ИЗС-7 (IZS-7); b) ИЗС-8 (IZS-8); c) ИЗС-9 (IZS-9); 2) radii measuring limits for various test glasses, mm; 3) radii measuring limits of individual spherical faces, mm; 4) smallest division of the reading scale; 5) division of the linear scales; 6) measurement error of the measurement of radii with a pair of test glasses; 7) measurement error (%) of the measuring of radii of individual faces for the measuring ranges of 10-37.5, 37.5-1000, and 80 - ∞ mm.

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B129/B206

Технические характеристики	Сферометры		
	ИЗС-7	ИЗС-8	ИЗС-9
1. Пределы измерения радиусов пар основных пробных стекол ОПС, мм	37,5-750	-	-
2. Пределы измерения радиусов отдельных сферических поверхностей, мм	10-1000	80-∞	-
3. Цена наименьшего деления отсчетного устройства, мм	-	0,001	-
4. Цена деления линейной шкалы, мм	-	1,0	-
5. Погрешность результата измерения радиусов пар пробных стекол, %	±0,02	-	-
6. Погрешность результата измерения радиусов отдельных сферических поверхностей, %:			
от 10 до 37,5 мм	±0,07	-	-
37,5 - 1000 -	±0,04	-	-
80 мм до ∞	-	-	±(0,02-0,06)

TABLE 4

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DELYUNOV, N.F.; DANILEVICH, F.M.; NIKITIN, V.A.

The new IKG-3 horizontal optimeter. Izv. tekhn. no.1:14-16 Ja '65.  
(MIRA 18:4)

DELYUSTIN, L.

[In the people's China; notes of a Soviet journalist] V narodnom  
Kitae. Zapiski sovetskogo zhurnalista. Moskva, Gospolitizdat.  
1954. 102 p. (MLBA 8:1)  
(China--Social conditions) (China--Description and travel)



TOLKUNOV, L., redaktor; DOLYUSIN, L., redaktor; NOVINKOVA, L., tekhnicheskii redaktor

[With Chinese friends] U kitaiskikh друзей. [Moskva] Izd-vo "Pravda,"  
1956. 405 p. (MLRA 9:11)  
(China--Description and travel)

DELYUSIN, Lev Petrovich; ALEKSEYEV, F., redaktor; TROYANOVSKAYA, N.,  
tekhnicheskiy redaktor

[Great changes in the Chinese village] Velikie peremany v kitsaiskoi  
derevne. Moskva, Gos. izd-vo polit. lit-ry, 1957.  
174 p. (MLBA 10:4)

(China--Agriculture)

DELYUSIN, Lev Petrovich; SMAVZYUK, O.L., red. izd-va; TSVETKOVA, S.V.,  
tekhn. red.

[Land should belong to the one who tills it] Zemlia tomu, kto ee  
obrabatyvaet. Moskva, Izd-vo vostochnoi lit-ry, 1961. 117 p.  
(MIRA 14:7)

(China—Land tenure)

DEMA, I.; VOICU, V.

Spectrophotometric determination of palladium (II) with thiosalicylic acid. Studii cerc chim 8 no.1:173-178 '60. (EEAI 9:8)

1. Laboratorul de radiochimie al Institutului de fizica atomica,  
Bucaresti.

(Palladium) (Mercaptobenzoic acid)  
(Spectrophotometry)

VOICU, Valeriu; DEMA, Iosif

Contributions to the analytic chemistry of palladium. Note I. Gravimetric determination of palladium in the form of complex diiodo-diamines. Note II. Gravimetric determination of palladium in the form of complex disulfocyanodiamines. Note III. Gravimetric determination of palladium with pyridine and  $K_2Cr_2O_7$ . Studii cerc chim 8 no.2:301-321 '60. (EEAI 10:2)

1. Laboratorul de radiochimie al Institutului de fizica atomica, Bucuresti.

(Palladium)	(Amines)	(Complex compounds)
(Iodamide)	(Pyridine)	(Potassium dichromate)

DEMA, I.; VOICU, V.

Rapid and precise method for the gravimetric determination of rhodium.  
Studii cerc chim 8 no.2:323-328 '60. (EEAI 10:2)

1. Laboratorul de radiochimie al Institutului de fizica atomica,  
Bucuresti.  
(Rhodium)

R/003/60/011/005/011/023  
A125/A026

AUTHORS: Dema, I.; Găinar, I.; Născuțiu, T.

TITLE: The Utilization of Cobalt Hexamine Traced With <sup>60</sup>Co for the Radiometric Determination of Source Elements. I. Determination of Beryllium and Bismuth

PERIODICAL: Revista de Chimie, 1960, Vol. 11, No. 5, pp. 291 - 293

TEXT: Since 1953, cobalt hexamine traced with <sup>60</sup>Co was used by different scientists such as Ishimori (Refs. 1, 2 and 3), Takashima (Refs. 4 and 5) and Yatsimirskiy and his co-workers (Ref. 6) for the radiometric determination of very small quantities of elements (micrograms and even sub-micrograms). The authors recommend the determination of beryllium and bismuth with the same reactives. 1) Determination of beryllium: In 1956, Th. Pirtea and his co-workers developed a method for the gravimetric determination of beryllium under the complex combination:  $[(H_2O)_2 Be_2 (CO_3)_2 (OH)_3] [Co (NH_3)_6] \cdot 3H_2O$  [7.8]. The smallest quantities of beryllium determined were around 500 μg. By using cobalt hexamine traced with <sup>60</sup>Co, the method could be extended to the determination of Be quantities up to 5 μg, without using a primer. The apparatus, the reactives,

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R/003/60/011/005/011/023  
A125/A026

The Utilization of Cobalt Hexamine Traced With  $^{60}\text{Co}$  for the Radiometric Determination of Source Elements. I. Determination of Beryllium and Bismuth

the necessary solution and the operation method are described. Table 1 presents the results obtained with the solution prepared by the author. 2) Determination of bismuth: Bi has been determined on the basis of the method recommended by A. Pop (Ref. 9) with the complex combinations  $[\text{BiCl}_6]$   $[\text{Co}(\text{NH}_3)_6]$ . Reference is made to the reactives and solutions used and to the operation method. The results obtained are presented in Table 3. A future article will describe the possibilities of using the recommended methods for the determination of these elements in different products. There are 3 tables, 1 figure and 9 references: 5 Japanese, 3 Rumanian and 1 Soviet. ✓

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R/003/60/011/008/005/005  
A125/A026

5.2100

AUTHOR: Dema, I.

TITLE: Gravimetric Determination of Beryllium With Cinnamic Acid

PERIODICAL: Revista de Chimie, 1960, Vol. 11, No. 8, pp. 485-486

TEXT: The technical importance of beryllium led to the establishment of different methods of determination, i.e., the methods of Moser and his assistants; V. Cupr; O. Ruff; E. Stepan; T. Akiyama; G. Spacu and Th. Pirtea; F.M. Semiakin; V.V. Adamovich and N.P. Parlova; Ch. Venkateswarlu and Bh.S.V. Raghava Rao; K.V.S. Krishnamurty; A. Kolb and H. Ahrle. The author recommends in subject article the ammonium salt of the cinnamic acid as a reactive for the gravimetric determination of beryllium. The solution containing beryllium ions is brought to a pH ranging from 5.6 to 6.5; then 0.5 - 2g of solid  $\text{NH}_4\text{Cl}$  is added in a proper ratio to the quantity of beryllium. This mixture is precipitated with 10% ammonium cinnamate up to the complete precipitation and then filtrated through paper, by using a washing solution of 2% ammonium cinnamate. The precipitate is calcined to  $\text{BeO}$ . The results are shown in Table 1. This method can be used without any modification in the presence of Li, Na, K, Ca, Sr, Ba, Mg, Mn, Ni, and T<sup>+</sup>(Table 1). Since

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R/003/60/011/008/005/005

A125/A026

Gravimetric Determination of Beryllium With Cinnamic Acid

the cinnamic acid forms stable precipitates with Fe and Al, these two elements were separated with  $(\text{NH}_4)_2\text{CO}_3$  according to T. Akiyama and in the filtrate, beryllium was determined according to the established procedure. There is 1 table.

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COSTEA, T.; DEMA, I.

Processes associated with the Szilard-Chalmers effect in crystals.  
II. Influence of chemical isomerism. 1. General considerations.  
(EEAI 10:9)  
Studii cerc chim 9 no.1:109-114 '61.

1. Laboratorul de radiochimie al Institutului de fizica atomica,  
Bucuresti.

(Szilard-Chalmers reaction) (Crystals)

S/081/62/000/006/033/117  
B102/B101

AUTHOR: Dema, I.

TITLE: Gravimetric determination of zirconium by means of thiosalicylic acid

PERIODICAL: Referativnyy zhurnal. Khimiya, no. 6, 1962, 131, abstract 6D94 (Rev. chim. (RPR), v. 12, no. 4, 1961, 231-232)

TEXT: A method for determining  $Zr^{4+}$  has been developed basing on Zr precipitation by thiosalicylic acid (I) from nitric acid medium, as a white insoluble precipitate of variable composition; subsequently, this precipitate is calcined to  $ZrO_2$ . The solution to be analyzed (6-60 mg Zr) is diluted with water to 50-100 ml,  $HNO_3$  is added (up to 0.01%), and heated up to  $70-80^\circ C$ , a solution of I in excess (4 g I in 100 ml of 96% ethanol) is added, and the whole is boiled for 5 min. 30 min later the precipitate is filtered off, washed with hot water containing 1-2 drops of  $HNO_3$ , calcined to  $ZrO_2$ , and weighed.  $UO_2^{2+}$ , Al, Sc, Y, La, Ce, Pr, Sm, Rh,

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