

AVRASIN, Ya.D., kandidat tekhnicheskikh nauk; BERG, P.P., professor, doktor tekhnicheskikh nauk, BERNSHTEYN, M.L., kandidat tekhnicheskikh nauk; GENEROZOV, P.A., starshiy nauchnyy sotrudnik; GLINER, B.M., inzhener; DAVIDOVSKAYA, Ye.A., kandidat tekhnicheskikh nauk; YELCHIN, P.M., inzhener; YEREMIN, N.I., kandidat fiziko-matematicheskikh nauk; IVANOV, D.P., kandidat tekhnicheskikh nauk; KNOROZ, L.I., inzhener; KOBRIN, M.M., kandidat tekhnicheskikh nauk; KORITSKIY, V.G., dotsent; KROPKOV, D.V., inzhener; KUDRYAVTSEV, I.V., professor, doktor tekhnicheskikh nauk; KULIKOV, I.V., kandidat tekhnicheskikh nauk; LEPETOV, V.A., kandidat tekhnicheskikh nauk; LIKINA, A.F., inzhener; MATVEYEV, A.S., kandidat tekhnicheskikh nauk; MIL'MAN, B.S., kandidat tekhnicheskikh nauk; PAVLUSHKIN, N.M., kandidat tekhnicheskikh nauk; FRITSYN, V.I., inzhener [deceased]; RAKOVSKIY, V.S., kandidat tekhnicheskikh nauk, RAKHSHTADT, A.G., kandidat tekhnicheskikh nauk; RYABCHENKOV, A.V., professor, doktor khimicheskikh nauk; SIGOLAYEV, S.Ya., kandidat tekhnicheskikh nauk; SMIRYAGIN, A.P., kandidat tekhnicheskikh nauk, SUL'KIN, A.G., inzhener; TUTOV, I.Ye., kandidat tekhnicheskikh nauk, KHRUSHCHOV, M.M., professor, doktor tekhnicheskikh nauk; TSYPIN, I.O., kandidat tekhnicheskikh nauk; SHAROV, M.Ya., inzhener; SHERMAN, Ya.I., dotsent; SHMELEV, B.A., kandidat tekhnicheskikh nauk; YUGANOVA, S.A., kandidat fiziko-matematicheskikh nauk; SATEL', E.A., doktor tekhnicheskikh nauk, redaktor; SOKOLOVA, T.F., tekhnicheskii redaktor

[Machine builder's reference book] Spravochnik mashinostroitelia; v shesti tomakh. izd-vo mashinostroit. lit-ry. Vol.6. (Glav. red.toma E.A.Satel'. Izd. 2-oe, ispr. i dop.) 1956. 500 p. (MLRA 9:8)  
(Machinery--Construction)

PEROVA, K.F., inzh.; PTITSYN, V.I., inzh.

Complete mechanization of 3-stage stump removal from milled peat  
bogs. Torf. prom. 35 no.3:15-16 '58. (MIRA 11:5)

1. Shaturskoye torfopredpriyatiye.  
(Peat)

GRINBERG, A.A.; MADSIHYUK, E.A. ; PTITSIN, V.V.

Among the Reports of the Academy of Sciences of the USSR. an article by  
PTITSIN, V.V. "Potentiometric method for determining the content of platinum  
and iradium." (Chemistry) is listed.

SO: Doklady Akademii Nauk SSSR, #9, Vol LI, 1946, Unclassified.

PTITSYN, Yu., avtomekhanik

Increasing the overhaul life of motor vehicles. Avt.transp. 38  
no.10:62-63 O '60. (MIRA 13:10)  
(Motor vehicles--Maintenance and repair)

PTITSYN, Yu., mekhanik

"Tuning of the GAZ motortrucks" by V.I. Medvedev. Reviewed by  
IU. Ptitsyn. Avt. transp. 37 no.12:56-57 D '59.

(MIRA 13:3)

1.Kharovskaya avtotransportnaya kontora Vologodskogo oblavtotresta.  
(Motortrucks--Maintenance and repair)

ALEYNIKOV, N.A.; GOLOVANOV, G.A.; USAGHOV, P.A.; TOCHILIN, M.S.;  
PTITSYN, Yu.V.

Winning high-iron magnetite-hematite concentrates. *Biul.tekh.-  
ekon.inform.Gos.nauch.--issl.inst.nauch.i tekh.inform.* no.5:11-13  
'62. (MIRA 15:7)

(Iron--Metallurgy)

7 (3), 24 (7)

AUTHORS:

Golyandin, N. S., Ptitsyna, I. G.,  
Reshina, I. I., Sakin, I. I.

SOV/48-23-10-26/39

TITLE:

The Infrared Spectrometers IKS-14 and IKS-12

PERIODICAL:

Izvestiya Akademii nauk SSSR. Seriya fizicheskaya, 1959,  
Vol 23, Nr 10, pp 1240-1243 (USSR)

ABSTRACT:

These two Soviet devices are used for the rapid and accurate recording of absorption spectra. Figure 1 shows a full view of the device of the type IKS-14; it is used for the direct recording of absorption spectra within the range of 0.75-25  $\mu$ , and is suited for double- and single-beam operation. Recording is effected on a paper band moving at a rate of between 0.4 and 100 mm/min. The recording rate of the spectrum is between 0.01 and 1.5  $\mu$ /min. The mode of operation is discussed. Figure 2 shows two parts of polystyrene and ammonia spectra recorded by means of this device; in this case a LiF prism was used. The spectra recorded by means of this device showed good reproducibility ( $\pm 1\%$ ). The infrared spectrometer of the type IKS-12 is a modernized form of the device of the type IKS-11 and has been produced in series since 1957. In this device amplification is effected by means of a two-cascade photo-

Card 1/2

The Infrared Spectrometers IKS-14 and IKS-12

SOV/48-23-10-26/39

electrooptical multiplier (FEOU-18) with a sensitivity of  $0.6-1.10^{-9}$  w/mm and a linearity of  $\pm 1\%$ . Recording of the spectra is effected by means of an electronic potentiometer (EPP-09). The total sensitivity of the reception-amplification system is  $4.10^{-10}$  w/mm. In order to increase the resolving power, additional scanning rates (30 and 15 min per rotation of the monochromator) were introduced. Also reproducibility is better than in the case of the first-mentioned device ( $\pm 0.5\%$ ). The amount of light scattering is about 4%, resolution is about  $1.4 \text{ cm}^{-1}$  in the range of  $800 \text{ cm}^{-1}$  if a NaCl-prism is used. Figure 3 shows part of the ammonia spectrum recorded by means of this device. There are 3 figures and 3 Soviet references.

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1ST AND 2ND CROSS      3RD AND 4TH CROSS

PROCESSES AND PROPERTIES INDEX

BC

a-1

**Absorption of gases by mercury. S. FERRAZZINI**  
 (Tech. Phys. U.S.S.R. 1955, 2, 66-78; 5, 339-342).—Multiple distillation in vac. is necessary to remove all adsorbed gases. Org. compounds and org. Hg compounds are not removed by this means. Purified Hg in contact with air is freed from adsorbed gases by one distillation. Hg at 150–200° in contact with the vapour of benzene, C<sub>6</sub>H<sub>6</sub>, or PhMe at 0.001–0.01 mm. pressure rapidly forms Hg compounds, which are removed by passing the vapour through a hot tube. Adsorption of H<sub>2</sub> on a Hg monocrystal in process of formation gives 0.6 of a unimol. layer.      CH. ANG. (c)

ASB-11A METALLURGICAL LITERATURE CLASSIFICATION

FROM SOURCE      TO SOURCE

GROUPS      GROUPS

1ST AND 2ND CROSS      3RD AND 4TH CROSS

COMMON ELEMENTS

COMMON VARIABLES INDEX

PROCESSES AND PROPERTIES INDEX

*ca* The absorption of gases by mercury. S. Pitruin. *J. Tech. Phys. U. S. S. R.* 2, 66-78(1935)(in English); ✓

*J. Tech. Phys. (U. S. S. R.)* 3, 329-42(1935)(in Russian).-- Multiple repeated distn. *in vacuo* is necessary to remove all adsorbed gases. Each distn. removes about 1/2 of the residual gases. Adsorbed org. compds. and org. compds. of Hg are not thus removed. On passage of the vapors in vacuo through a ferrochrome tube heated to 450° to 1000°, decompn. of the adsorbed and dissolved compds. yields gases with from 1 to 15 C atoms. The heat of decompn. is 1.9 Cal. Purified cold Hg in contact with air absorbs gases that are easily removed by one distn. Hot Hg, 150-200°, in contact with org. vapors of benzine, benzene or toluene at 0.001 to 0.01 mm. rapidly gives org. Hg compds. that can be removed only slowly on passing the vapors through a hot tube with a heat of decompn. of 2.3 Cal. With water vapor a compd. with a heat of decompn. results. Adsorption of H<sub>2</sub> on a Hg monocrystal in process of formation gives 0.6 of a unimol. layer. Hg vapors at the moment of condensation absorb small amts. of H<sub>2</sub>, N<sub>2</sub> and O<sub>2</sub>, whereas the cold liquid absorbs much less. Hg thus purified at 1000° gave off much less gas when used in gasotrons than Hg cleaned only by NaOH, HNO<sub>3</sub>, and simple distn. F. H. R.

A S M - S L A METALLURGICAL LITERATURE CLASSIFICATION

L I T T E R A T U R E

PROCESS AND PROPERTIES INDEX

1

Ca

Gas evolution from tungsten on heating in vacuo.  
 S. V. Pitzmin. *J. Tech. Phys. (U. S. S. R.)* 4, 1190-94  
 (1964).—The results indicate that rapid evolution of gas  
 at first proceeds from the surface layers of diffused gas,  
 but that later the slow evolution is due to the large quan-  
 tity of energy required by the mois. to pass through the W  
 crystals.  
 Eino Hanninen

ASME-ISA METALLURGICAL LITERATURE CLASSIFICATION

LIST AND INDEX OF PROCESSES AND PROPERTIES INDEX

B-1

**Gas evolution from tungsten on heating in vacuo. S. V. PRINIK (J. Tech. Phys. U.S.S.R., 1934, 4, 1189-1194).—The initial gas evolution is from surface layers. The later slow evolution is due to the large amount of energy needed for gas to pass through the W crystals. CH. ABS. (r)**

ASB-SLA METALLURGICAL LITERATURE CLASSIFICATION

MATERIALS INDEX												LIST AND INDEX											
GROUPS												LETTERS											
A	B	C	D	E	F	G	H	I	J	K	L	A	B	C	D	E	F	G	H	I	J	K	L

PROCESSES AND PROPERTIES INDEX

19

CA

Evolution of gas from solid glass on heating. N. A. Orlova and S. V. Puzina. *J. Tech. Phys. (U. S. S. R.)* 3, 566-691 (1963). Graphs show the rate of desorption from lead and dolomite glass used for lamp bulbs. F. H. R.

Studies on chilled plate glass. Taroji Araki, Shunzuke Takahashi and Shūichi Mori. *J. Soc. Chem. Ind., Japan* 36, Suppl. binding 677 (1953).—Polariscopic examn. of the glass showed systematic stress distribution. Phys. properties for chilled and untreated glass are presented. K. Kammermeyer

A S M - S L A METALLURGICAL LITERATURE CLASSIFICATION

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100

1ST AND 2ND ORDERS

PROCESSES AND PROPERTIES INDEX

3RD AND 4TH ORDERS

CA

1

Present status of high-vacuum technique. S. V. PHTZUN. *J. Tech. Phys.*  
(U. S. S. R.) 2, 651-70(1932).—A review. F. H. R.

MATERIALS INDEX

ASME-5LA METALLURGICAL LITERATURE CLASSIFICATION

1ST AND 2ND ORDERS

3RD AND 4TH ORDERS

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100

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PROCESSES AND PROPERTIES INDEX																																																			
CO													Evolution of gas from solid glass on heating. N. A. Orlova and S. Y. Ptitsina. <i>J. Tech. Phys. (U.S.S.R.)</i> 3, 590-601 (1933).--Graphs show the rate of desorption from lead and dolomite glass used for lamp bulbs. F. H. R.													19																									
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COMMON VARIABLES INDEX																																																			
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PROCESSES AND PROPERTIES INDEX

19

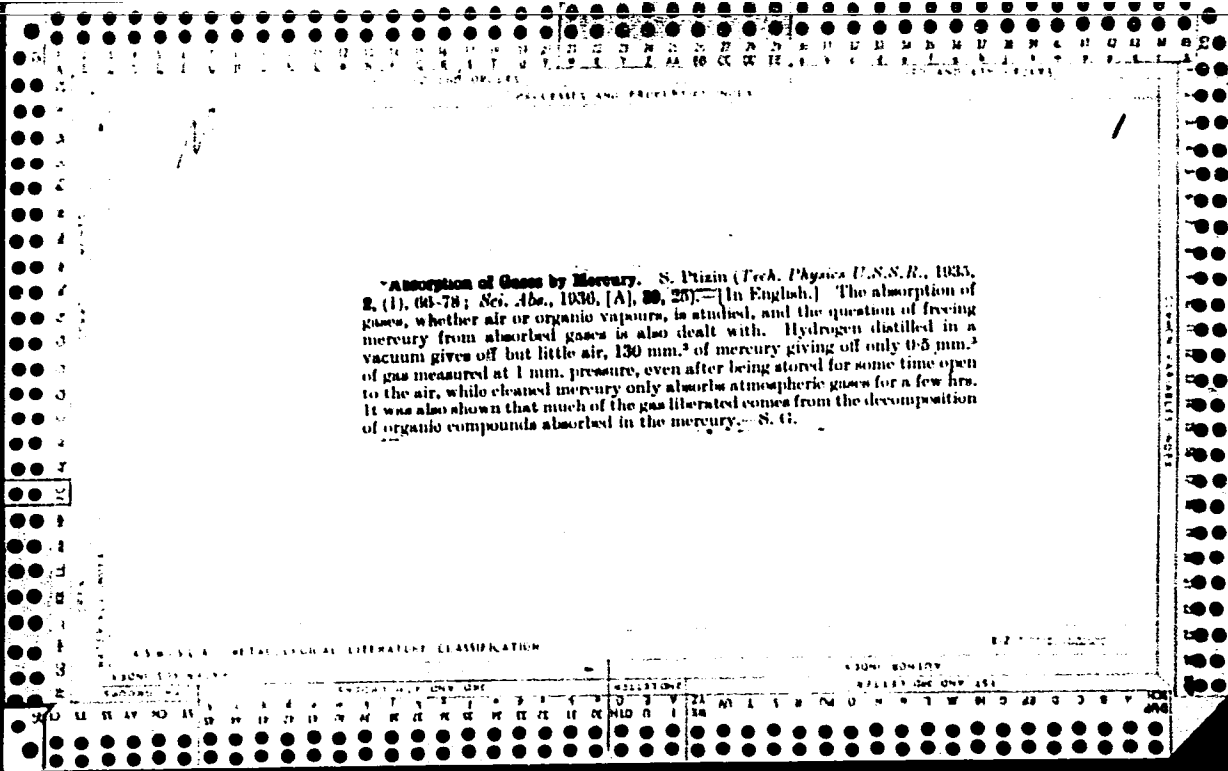
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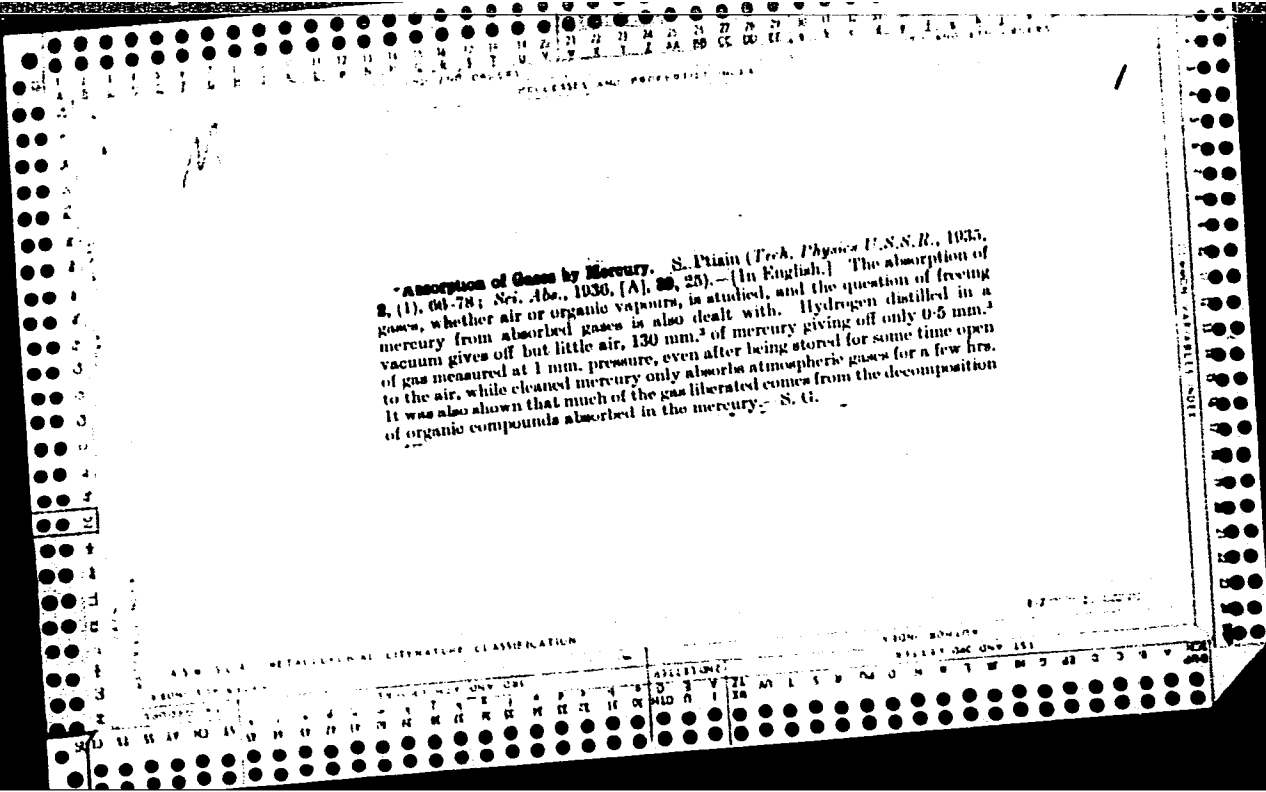
Evolution of gas from solid glass on heating. N. A. Orlova and S. Y. Pilyugin. *J. Tech. Phys. (U. S. S. R.)* 3, 590-601 (1962).—Graphs show the rate of desorption from lead and dolomite glass used for lamp bulbs. P. H. R.

A 58-55A METALLURGICAL LITERATURE CLASSIFICATION

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PRECISES AND PROPERTIES INDEX

1ST AND 2ND DEGREES      140 AND 4TH DEGREES

SA A53  
D

**111. Absorption of Gases by Mercury.** S. Ptisin. *Techn. Phys. U.S.S.R.* 2, 1, pp. 66-78, 1935. *In English.*—The absorption of gases, whether air or organic vapours, is studied, and the question of freeing Hg from absorbed gases also receives attention. It is shown that Hg distilled in a vacuum gives off but little air, 130 mm<sup>3</sup> of Hg giving off only 0.8 mm<sup>3</sup> of gas measured at 1 mm. pressure, even after being stored for some time open to the air while cleaned mercury only absorbs atmospheric gases for a few hours. It was also shown that much of the gas liberated comes from the decomposition of organic compounds absorbed in the Hg. G. E. B.

AS - SLA METALLURGICAL LITERATURE CLASSIFICATION

E-27

151 AND 1ST DEGREE      1ST AND 2ND DEGREE

1ST AND 2ND ORDERS      PROCESSES AND PROPERTIES INDEX      3RD AND 4TH ORDERS

Common Element

Common Variability Index

OPEN MATERIALS INDEX

ASB-5LA METALLURGICAL LITERATURE CLASSIFICATION

1ST LETTERS      2ND LETTERS

A B C D E F G H I J K L M N O P Q R S T U V W X Y Z

0 1 2 3 4 5 6 7 8 9

M

**\*The Evolution of Gas from Tungsten on Heating in a Vacuum. S. V. Pizgin (Zhurnal Tekhnicheskoy Fiziki (J. Tech. Physics), 1934, 4, 1189-1194).—**  
 [In Russian.] The gas evolution from tungsten in electronic tubes has been studied and the characteristics of tungsten in a vacuum obtained.—N. A.

KULIKOV, Igor' Onufriyevich; GUSEV, Nikolay Dmitriyevich;  
UL'YAMINSKIY, Boris Aleksandrovich; PITSM, Viktor  
Grigor'yevich; KAZAKOV, B.Ye., otv. red.

[Mines on Spitsbergen] Shakhty na Shpitsbergene. Mc-  
skva, Nedra, 1964. 108 p. (MIRA 18:2)

GANOV, V.S., inzh.; PTITSYN, V.M., inzh.; CHERNYKH, N.P., inzh.

Regulating settling machines in the central preparation plant at  
the "Koksovaya-1" Mine. Nauch. trudy KuzNIIUgleobog. no.1:  
80-85 '62. (MIRA 16:8)  
(Kuznetsk Basin—Coal preparation plants—Electric equipment)  
(Automatic control)

GOLOVANOV, G.A., gornyy inzh.; BERDICHEVSKIY, R.I., gornyy inzh.;  
PTITSYN, Yu.V., gornyy inzh.; LAVRENT'YEV, V.A., gornyy tekhnik

Redesigning the Olenogorsk Ore Dressing Plant. Gor.zhur.  
no.8:55-57 Ag '62. (MIRA 15:8)

1. Olenegorskiy gorno-obogatitel'nyy kombinat.  
(Olenogorsk region--Ore dressing)

BRITISH, A. N.

BRITISH, A. N. and S. A. M. "On the mechanism of the action of sulfonamide preparations on single-celled organisms", Trudy Seret. SSSR, 1954, Vol. VI, 1954, p. 107-113.

See: V-21, 17 Sept. 50, (Leopold's 'Zentralblatt' No. 24, 1950).



LEBEDEV, Ye.I.; PTITSYNA, I.G.; SAKHAROV, A.V.; BLOKH, A.A.; IVANOVA, N.I.;  
FEDOSEYEV, A.M.

New devices for molecular spectrum analysis in the infrared spectral  
region. Zhur. prikl. spekt. 2 no.4:377-380 Ap '65.

1. Leningradskaya ob"yedineniye optiko-mekhanicheskikh predpriyatiy. (MIRA 18:8)

PTITSYNA, L.P.; PUCHKOVA, L.V.; RUMYANTSEVA, L.V.

Metric invariants of quadrics in quasi-elliptical spaces. Dokl.  
AN Azerb. SSR 16 no.7:639-641 '60. (MIRA 13:9)

1: Kolomenskiy pedagogicheskiy institut. Predstavleno akad. AN  
AzerSSR Z.I. Khalilovym.  
(Quadrics)

PTITSYNA, L.P.; PUCHKOVA, L.V.; RUMYANTSEVA, L.V.

Metric invariants of equations of quadrics in a quasi-elliptic  
space. Uch. zap. MGPI no.208:265-277 '63. (MIRA 17:6)

22272

S/109/61/006/005/019/027  
D201/D303

9.2572

AUTHORS: Gershenzon, Ye.M., Ptitsyna, N.G., Rozhkova, G.I., and Etkin, V.S.

TITLE: A single circuit parametric amplifier

PERIODICAL: Radiotekhnika i elektronika, v. 6, no. 5, 1961, 829 - 834

TEXT: The authors give certain results of studying a single circuit parametric amplifier using a semi-conductor diode. They based their study on works published in the thirties, of the school of L.I. Mandel'shtam and of N.D. Papaleksi (Ref. 5: K. voprosu o parametricheskoy regeneratsii (On the Question of Parametric Regeneration) IEST, 1935, 3, 1) (Ref. 6: E.M. Rubchinskiy, IEST, 1953, 3, 7) (Ref. 7: M. Divil'kovskiy, S. Rytov, ZhTF, 1936, 6, 3, 474) (Ref. 8: V.A. Lazarev, Kolebaniya v svyazannykh sistemakh s periodicheski menyayushchimisya parametrami (Oscillations in Linked Systems With Periodically Changing Parameters) ZhTF, 1940, 10, 11, 918).

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22272

S/109/61/006/005/019/027

D201/D303

A single circuit ...

The theory of a single circuit parametric amplifier is based in its essentials on Ref. 10 (Ref. 10: Spravochnik po volnovodam (Waveguide Handbook) perev. s angl. pod red. v. i. Sushkevicha, Izd. Sovetskoye radio, 1952) [Abstractor's note: No further details given]. The circuit oscillations equation is given as

$$L \frac{d^2 q}{dt^2} + R \frac{dq}{dt} + \frac{1}{C_0} [1 + m \sin(\omega_s t - \varphi_s)] q = E_0 \sin(\omega_s t - \varphi_s) \quad (3)$$

where L - the equivalent inductance of the cct;  $R = Z + R_s$ ;  $R_s$  - the loss resistance of the diode. [Abstractor's note: The symbols are those used in Ref. 7 (Op.cit.)]. Applying the method of Ref: 7 (op.cit.) and notation of

$$y = \frac{q}{C_0 U_0}; \quad \lambda = \frac{E_0}{U_0}; \quad 2\theta = \frac{R}{\omega_0 L}; \quad \omega_0^2 = \frac{1}{LC_0}; \quad \omega_s = 2\omega_0;$$

$$t = t_1 + \frac{\varphi_s - \varphi}{\omega_s}; \quad \frac{\omega_0}{\omega_1} = 1 + \xi_0; \quad \frac{\omega_c}{\omega_1} = 1 + \xi; \quad \tau = \omega_1 t \quad \Psi = \varphi_c - \frac{\omega_c}{\omega_s} \varphi_s$$

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S/109/61/006/005/019/027  
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A single circuit ...

the equation for the amplitude of the fundamental of oscillations is derived as

$$A^2 = \frac{\lambda^2}{4C^2} \left[ \left( \xi_0^2 + \left( \theta + \frac{m}{4} \right)^2 \right) \sin^2 \Psi + \left( \xi_0^2 + \left( \theta - \frac{m}{4} \right)^2 \right) \cos^2 \Psi - \xi_0 \frac{m}{4} \sin 2\Psi \right] \quad (8)$$

where  $\Psi$  is the signal frequency and  $\omega_p$  the pumping frequency. The amplitudes of harmonics are given in

$$A_{1+\xi}^2 = \lambda^2 \frac{\theta^2 + (\xi_0 + \xi)^2}{4(4\xi^2\theta^2 + C^2)}, \quad A_{1-\xi}^2 = \lambda^2 \frac{\left(\frac{m}{4}\right)^2}{4(4\xi^2\theta^2 + C^2)} \quad (9)$$

and the resonance curves for synchronism and 2nd harmonic regime are given for three values of  $\xi$ , from which it may be seen that the maximum of amplification occurs near  $\omega_s = 1/2 \omega_p$ . The minimum noise figure which can be obtained is given by

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D201/D303

A single circuit ...

$$F_{\min} = 1 + \frac{1}{\frac{f_{cr}}{f} - 1} \frac{T_s}{T_0}$$

in which  $f_{cr}$  is the frequency at which the modulation of the self-capacity of the diode can compensate only for losses introduced by the diode itself. The experimental studies of single circuit amplifiers were carried out using arrangements described by the authors (Ref. 15: Osnovy teorii, rascheta i voprosy metodiki eksperimental'nogo issledovaniya odnokonturnykh parametricheskikh usiliteley SVCh na poluprovodnikovyykh diodakh, Radioelektronnaya prom - st', 1959, 17, 3) at frequencies 3,000 and 4,500 mc/s. It was observed that there are two harmonics present at the output. X

Table.	№ 1 no 1026 Mcs/s (1)	Q	Q <sub>генер</sub> схем (2)	K, от 26 (3)	Δf <sub>ампл</sub> Mcs/s (4)	Δf <sub>рецепт</sub> Mcs/s (5)	Q √K <sub>1</sub> Δf <sub>рецепт</sub> 1
	4500	25-30	30-35	27 (500 паз)	7		155/4500 ≈ 1/30
Card 4/6		25-30	30-35	20 (100 паз)	15	40°	150/4500 ≈ 1/30

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S/109/61/006/005/019/027  
D201/D303

A single circuit ...

Table (cont'd). Legend: 1 -  $f_{\text{working}}$  mc/s; 2 -  $Q_{\text{ext}}$ ; 3 - K, db;  
4 -  $f_{\text{ampl}}$  mc/s; 5 -  $f_{\text{tuning}}$  mc/s; 6 -  $\sqrt{K_1} \frac{\Delta f_{\text{exp}}}{f}$ .

The table gives the magnitudes of the Q-factor of one of the amplifier models, together with the measured values of other parameters at a frequency of 4,500 mc/s, using diodes as described by M. Gershenzon and V.S. Etkin (Ref. 12: 0 parametricheskoy regeneratsii v diapazone SVCh na poluprovodnikovom diode, Izv. vuzov MVO SSSR (Radiofizika) 1959, 2, 5, 835). Similar results have been obtained at 3,000 mc/s. The authors acknowledge the help of K.A. Merkur'yev, N.Ye. Skvortsova, A.V. Krasilov, V.M. Val'd - Perlov and A.A. Rabinovich-Vizel'. There are 3 figures, 1 table and 17 references: 13 Soviet-bloc and 4 non-Soviet-bloc. The references to the English-language publications read as follows: H. Heffner, G. Kotzebue, Proc. I.R.E., 1958, 46, 6, 1301; G. Herrman, H. Venohara, A. Uhlir, Proc. I.R.E., 1958, 46, 6, 1301; S. Blooms, K.K. Chang, R.C.A. Rev., 1957, 18, 4, 578; A. Uhlir, Proc. I.R.E., 1956,

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22272

S/109/61/C06/005/019/C27  
D201/D305

A single circuit ...

44, 4, 557.

ASSOCIATION: Moskovskiy gosudarstvennyy pedagogicheskiy in-t im.  
V.I. Lenina Kafedra eksperimental'noy fiziki (Moscow  
State Pedagogical Institute im. V.I. Lenin, Depart-  
ment of Experimental Physics)

X

SUBMITTED: July 2, 1959 (initially)  
March 3, 1960 (after revision)

Card 6/6

PTITSYNA, N.G.

Ray systems in comet tails of the first type. Biul. Kom. po  
komet. i meteor. AN SSSR no.9:12-18 '64.

(MIRA 17:10)

PTITSYNA, N.G.

Geometry of envelopes in the head of Morehouse's comet  
(1908 III). Biul. Kom. po komet. i meteor. AN SSSR no. 11:  
11-16 '65. (MIRA 18:12)

1. Institut astrofiziki AN Tadzhikskoy SSR.

GERSHENZON, Ye.M.; LYUBIMOVA, T.F.; PTITSYNA, N.G.; ROZHKOVA, G.I.;  
ETKIN, V.S.

Investigation of superregenerative conditions in single-stage  
parametric amplifiers. Izv.vys.ucheb.zav.; radiofiz. 4 no.1:  
113:120 '61. (MIRA 14:8)

1. Moskovskiy pedagogicheskiy institut imeni V.I.Lenina.  
(Amplifiers (Electronics))

L 31159-66 EWT(1)/EWT(m)/T/EWP(t) IJP(c) JD//AT  
ACC NR: AP6006810 SOURCE CODE: UR/0181/66/008/002/0332/0341

AUTHOR: Blagosklonskaya, L. Ye.; Gershenson, Ye. M.; Gurvich, Yu. A.; Ptitsyna, N. G.; Serebryakova, N. A.

ORG: Moscow State Pedagogical Institute in V. I. Lenin (Moskovskiy gosudarstvennyy pedagogicheskiy institut) 75  
71  
B

TITLE: Cyclotron resonance of hot electrons in silicon and germanium 27 27 27

SOURCE: Fizika tverdogo tela, v. 8, no. 2, 1966, 332-341

TOPIC TAGS: cyclotron resonance, electron, silicon semiconductor, germanium semiconductor, impurity scattering

ABSTRACT: The cyclotron resonance of hot electrons in silicon and germanium was measured at 4.2 and 1.4°K in the three-centimeter range. Single crystal specimens of p-type silicon and germanium were used with a resistivity of 5000-18000 and approximately 70 Ω·cm respectively and a donor-acceptor impurity concentration of less than  $5 \cdot 10^{13} \text{ cm}^{-3}$ . The free carriers in the specimens were excited by light from an incandescent lamp modulated with a frequency of 500 cps. The cyclotron resonance was recorded as a function of magnetic field strength. The level of the

Card 1/2

9.2572

25950

S/141/61/004/001/010/022  
E192/E382

AUTHORS: Gershenzon, Ye.M., Lyubimova, T.F., Ptitsyna, N.G.,  
Rozhkova, G.I. and Etkin, V.S.

TITLE: Investigation of the Super-regenerative Regime in  
Single-tuned Parametric Amplifiers

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy,  
Radiofizika, 1961, Vol. 4, No. 1, pp. 113 - 120

TEXT: The super-regenerative regime in parametric amplifiers  
can be achieved by additionally introducing low-frequency  
modulation of the variable capacity in the system (Ref. 1 -  
Heffner, H., Wade, G. and Junger, M. - Proc. IRE, 47, 1971, 1959;  
Ref. 2 - B. Bossard - Proc. IRE, 47, 1970, 1959). If this  
regime in the amplifier is achieved by a comparatively slow  
modulation of the pump signal, the oscillations in a series  
LCR circuit of the system can be described by:

$$L \frac{d^2 q}{dt^2} + R \frac{dq}{dt} + \frac{q}{C_0} [1 + m |1 + h \cos(\omega_m t)| \sin(\omega_n t)] = E_0 \cos(\omega_c t - \psi), \quad (1)$$

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E192/E382

where  $\omega_c$  is the signal frequency,  
 $\omega_H$  is the modulation frequency,  
 $m$  is the mean modulation depth of the nonlinear  
capacitance, and  
 $h$  is the depth of the low-frequency pump-source  
modulation.

Eq. (1) can also be written as:

$$\ddot{y} + 2\theta\dot{y} + (1 + 2\xi_0)y + my [1 + h \cos(\Omega\tau)] \sin(2\tau) = \lambda \cos[(1 + \xi)\tau - \psi], \quad (2)$$

where:

$$y = q/C_0 u_0; \lambda = E_0/u_0; 2\theta = R/\omega_0 L; 2\omega_0/\omega_n = 1 + \xi_0; \\ 2\omega_c/\omega_n = 1 + \xi; 2\omega_m/\omega_n = \Omega; \tau = \omega_n t/2; \omega_0 = 1/\sqrt{LC_0}. \quad (2a)$$

In the analysis of this equation it is assumed that  $\xi_0 = 0$   
and that the system can be solved by the Van-der-Pol equation,  
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Investigation of the <sup>25950</sup>..

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which is in the form:

$$y = a \sin \tau + b \cos \tau$$

where  $a$  and  $b$  are slowly varying time functions. Consequently, the system of simplified equations for the amplifier (Ref. 3 - the authors - Radio-engineering industry, 17, '3, 1959) can be written as:

$$\begin{aligned} 2\dot{a} &= \lambda \cos(\tau - \psi) - \left(2\theta + \frac{m}{2}\right)a - \frac{mh}{2}a \cos(\Omega\tau); \\ -2\dot{b} &= -\lambda \sin(\tau - \psi) + \left(2\theta - \frac{m}{2}\right)b - \frac{mh}{2}b \cos(\Omega\tau). \end{aligned} \tag{3}$$

which differs from those obtained in Ref. 3 by the presence of the last terms which are due to the modulation. It can be assumed that the solution of the simplified equations is in the form:

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Investigation of the ... <sup>25950</sup>

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$$a = \sum_N \{ A_{1N} \sin [(\xi + N\Omega) \tau - \psi] + A_{2N} \cos [(\xi + N\Omega) \tau - \psi] \};$$

$$b = \sum_N \{ B_{1N} \sin [(\xi + N\Omega) \tau - \psi] + B_{2N} \cos [(\xi + N\Omega) \tau - \psi] \} \quad (N \neq 0), \quad (4)$$

where  $A_{1N}$ ,  $A_{2N}$ ,  $B_{1N}$  and  $B_{2N}$  are constant coefficients.

These constants can be determined from an infinite system of algebraic equations which are obtained by substituting Eqs. (4) into Eqs. (3). However, in practice, it is sufficient to consider only a finite  $N$ , so that the number of equations is reduced. By analysing the solutions obtained on the basis of Eqs. (4), it is concluded that:

- 1) the amplification bandwidth in the super-regenerative regime is greater than that in the regenerative regime for the same maximum amplification coefficient, and
- 2) at  $\omega_c = \omega_H/2 \pm N\omega_m$ , the amplitude of the oscillations

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Investigation of the <sup>25950</sup>....

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of the signal frequency and other frequency components achieves a maximum, the maximum being most pronounced in the component  $\omega_c \pm N\omega_m$  which coincides with  $\omega_H/2$ . The

oscillations in the super-regenerative amplifier have a complex spectrum and two types of frequency characteristics are possible:

- a) the overall value of the oscillations excited is regarded as the response of the system and thus the corresponding frequency characteristic can be observed if the amplifier is followed by a video detector;
- b) the amplitude of the oscillations having a frequency of the input signal, or that of one of the spectral components, is regarded as the response of the system; in this case the characteristic can be determined if the amplifier is followed by a filter or a superheterodyne receiver having a narrow bandwidth. These effects are illustrated by families of frequency characteristics of the two types which are given in Figs. 1 and 2. The characteristics of Fig. 1 were evaluated for  $\Theta = 0.021$ ,  $m = 0.08$ ,  $n = 0.047$ ,  $\Omega = 6 \times 10^{-3}$  and  $h = 100\%$ ;

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Investigation of the <sup>25950</sup>....

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E192/E382

the parameters for Fig. 2 were  $\epsilon = 0.021$ ,  $m = 0.08$ ,  
 $n = 0.047$ ,  $\Omega = 0.25 \times 10$  and  $h = 0.75\%$ . From these figures  
it is seen that the magnitude of the secondary maxima in the  
super-regenerator-filter system decays faster than in the  
super-regenerator-video detector system. The super-regenerative  
amplifier was investigated experimentally at comparatively low  
frequencies (1.3 Mc/s) and at UHF. The amplifier for 1.3 Mc/s  
was studied by employing a sweep-frequency generator and a  
superheterodyne receiver. Investigation of the UHF amplifiers  
was performed by means of a spectrum analyser. The measured  
results are in qualitative agreement with the calculated data.  
In particular, the measured characteristics show that in the  
case when the modulation frequency  $\omega_m$  is greater than the  
bandwidth of the amplifier, the frequency response of the system  
has a large number of narrowly-spaced peaks (comb-like response).  
The authors express their gratitude to Yu.Ye. D'yakov for  
discussing the problems of this work.

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Investigation of the ..... 25950

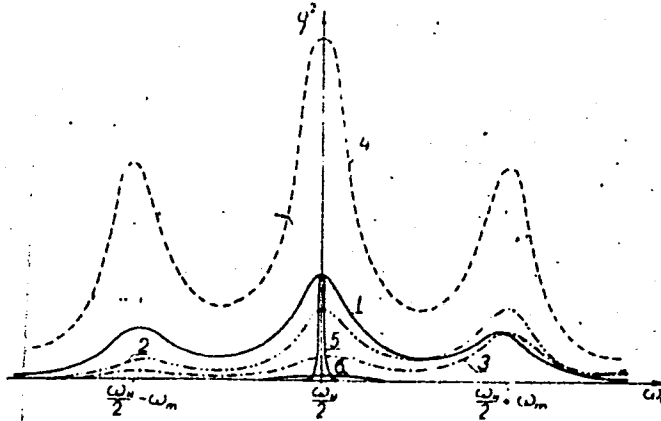
S/141/61/004/001/010/022  
E192/E382

There are 7 figures and 6 references: 4 Soviet and 2 non-Soviet (quoted in text).

ASSOCIATION: Moskovskiy pedagogicheskiy institut im.V.I.Lenina  
(Moscow Pedagogical Institute im. V.I. Lenin)

SUBMITTED: July 7, 1960

Fig. 1:



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*PTITSYNA, N.G.*

32921

S/194/61/000/011/056/070  
D271/D302

9,2572 (1139)

AUTHORS: Bogatkova, O.M., Gershenson, Ye.M., Dombrovskaya, T.S., Ptitsyna, N.G., Rozhkova, G.I., Sperantov, V.V. and Etkin, V.S.

TITLE: Single-circuit regenerative and super-regenerative parametric amplifiers with semiconductor diodes

PERIODICAL: Referativnyy zhurnal. Avtomatika i radioelektronika, no. 11, 1961, 12, abstract 11 K91 (V sb. Poluprovodnik. pribory i ikh primeneniye, no. 6, M., Sov. radio, 1960, 41-62)

TEXT: Theoretical and experimental results are given of a study of single-circuit regenerative and super-regenerative parametric amplifiers with semiconductor diodes. The amplifier forward and reflex operation in a synchronous and biharmonic mode is considered. Results of the investigation into noise parameters of the diode are given. Experiments confirmed the analytical results. It

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D271/D302

Single-circuit...

is shown that super-regenerative operation leads to considerable distortions of the received signal spectrum, but on the other hand it makes it possible to widen the amplifier bandwidth and to achieve greater stabilization of gain. 8 references. [Abstracter's note: Complete translation]

4

Card 2/2

GERSHENZON, Ye.M.; PTITSYNA, N.G.; ROZHKOVA, G.I.; ETKIN, V.S.

Concerning a single-stage parametric amplifier. Radiotekh. i  
elektron. 6 no.5:829-834 MY '61. (MIRA 14:4)

1. Moskovskiy gosudarstvennyy pedagogicheskiy institut imeni  
V. I. Lenina, kafedra eksperimental'noy fiziki.  
(Amplifiers (Electronics))

GORBATENKO, T.I.; PTITSYNA, N.I.

Intensification of the melting and the refining of glass. Stek.  
i ker. 22 no.2:28-29 F '65. (MIRA 18:3)



GORBATENKO, T.I.; PTITSYNA, N.I.

Using a dextrin solution as bonding material for high-grog  
refractories. Stek. 1 ker. 20 no.10:42-43 0 '63. (MIRA 16:10)

(Refractory materials)

SUSHITSKIY, L.A. [Sushyts'kyi, L.A.]; PTITSYNA, N.V. [Ptytsyna, N.V.]

Cupronapht, a new substitute for Bordeaux liquid. Dop.  
AN URSSR no.10:1368-1370 '61. (MIRA 14:11)

1. Institut mineral'nykh resursov AN USSR. Predstavleno akademikom  
AN USSR A.V.Dumanskim [Dumans'kyi, A.V.].  
(Bordeaux mixture)

29860  
S/044/61/000/007/033/055  
C111/C222

16.7500    16.4900  
AUTHOR:    Ptitsyna, N.V.

TITLE:      The application of the variation method for some generalizations of the problem by Miln

PERIODICAL: Referativnyy zhurnal. Matematika, no. 7, 1961, 70, abstract 7 B 330. ("Nekotorye matem. zadachi neytron. fiz. M., MGU", 1960, 28-55)

TEXT: The solution of the inhomogeneous integral equation with a symmetric kernel

$$q(x) = f(x) + \lambda \int_0^{\infty} k(x,s)q(s)ds$$

is reduced to the minimizing of the functional

$$I = \int_0^{\infty} q(x) \left[ q(x) - \lambda \int_0^{\infty} k(x,s)q(s)ds - 2f(x) \right] dx$$

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S/044/61/000/007/033/055  
C111/C222

The application of the variation ...

to what the approximate Ritz method is used. The operator  $A(q) =$   
 $= q - \int_0^{\infty} kq ds$  is assumed to be positive (for  $\sup_x \int_0^{\infty} k(x,s)ds < 1$ ,  $A(q)$   
is positive definite). With the aid of this method the author solves a  
number of generalizations of the problem by Miln on the scattering of  
neutrons in the halfspace.

4

[Abstracter's note : Complete translation.]

PTITSYNA, N.V., kand.khim.nauk; DURDINA, O.A.

Copper naphthenate paste is a substitute for Bordeaux mixture.  
Zashch. rast. ot vred. i bol. 6 no.3:36-38 Mr '61. (MIRA 15:6)

1. Glavnyy agronom-entomolog Krymskogo oblastnogo upravleniya  
sel'skogo khozyaystva (for Durdina).

(Fungicides)  
(Naphthenic acids)

S/058/61/000/004/007/042  
A001/A101AUTHOR: Ptitsyna, N.V.

TITLE: On the application of variational method to some generalizations of Milne's problem

PERIODICAL: Referativnyy zhurnal, Fizika, no 4, 1961, 125-126, -abstract 4B582 (V sb. "Nekotoryye matem. zadachi neytron. fiz.", Moscow, MGU, 1960, 28-55)

TEXT: The author considers the variational method of approximate solution of Fredholm's integral equation with symmetric kernel:

$$q(x) = f(x) + \lambda \int_0^{\infty} K(x, s) q(s) ds. \quad (1)$$

The corresponding functional has the following form:

$$I(\tilde{q}) = \int_0^{\infty} \tilde{q}(x) \left[ \tilde{q}(x) - \lambda \int_0^{\infty} K(x, s) \tilde{q}(s) ds - 2f(x) \right] dx. \quad (2)$$

Functional (2) is of minimum value at  $\tilde{q} = q$ , where  $q(x)$  is solution of equation (1). Moreover, the operator

Card 1/2

On the application of variational method ...

S/058/61/000/004/007/042  
A001/A101

$$A[q]_x = q(x) - \int_0^{\infty} K(x, s) q(s) ds \quad (3)$$

must be positive in the set which is compact throughout in the Hilbert space containing the solution. The Ritz method is employed for finding the approximate solution of the abovementioned extremum problem, and all functions are assumed to belong to space  $L_2$ . It is pointed out that the more complicated functional employed in a number of articles (Davison B. "Phys. Rev.", 1947, v 71, 694) leads to the same numerical results as equation (2) but its use renders calculations more cumbersome. The Milne problem solution is considered for semi-infinite medium with anisotropic scattering indicatrix. In calculations the author uses scattering indicatrix approximated by a linear combination of three first Legendre polynomials. Solutions of Milne's problem were found also for semi-infinite absorbing medium and for two semi-infinite absorbing media separated by a plane interface.

A. Temkin

[Abstracter's note: Complete translation.]

Card 2/2

PTOKHOV, M.P.

Action of Shope's virus on the endothelium of the heart valves  
in tissue cultures. Vop.onk. 6 no.1:14-19 '60.

(MIRA 13:10)

(HEART—VALVES)

(VIRUSES)



*Plitsyn, N. V.*

PHASE I BOOK EXPLOITATION

SOV/4454

Moscow. Universitet. Kafedra atomnogo yadra

Nekotoryye matematicheskiye zadachi neytronnoy fiziki (Some Mathematical Problems in Neutron Physics) [Moscow] Izd-vo Mosk. univ-ta, 1960. 219 p. Errata slip inserted. 5,000 copies printed.

Ed.: M.G. Zaytseva; Tech. Ed.: K.S. Chistyakova.

PURPOSE: This book is intended for nuclear physicists interested in the mathematical theory of neutron physics.

COVERAGE: The collection of 9 articles was written during the period 1951 - 1955 by students of the Nuclear Physics Department of Moscow State University. The articles deal with the theory of kinetic equations of neutron physics. They should not be regarded as theses but as students' theoretical works which may contain new generalizations and examples of computations, some of which may require further proof. The articles are mathematical in nature and, in general, deal with the problem of setting up and working out approximation methods of

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SOV/4454

## Some Mathematical Problems (Cont.)

solving kinetic equations. A critical review of the articles is given in the foreword by Ye. Kuznetsov, who supervised the work and who, with the assistance of T.A. Germogenova and M.V. Maslennikov, edited the collection. Tables, figures, and references accompany the articles.

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Part 2/3

Some Mathematical Problems (Cont.)

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AVAILABLE: Library of Congress (QC721.M87)

Card 3/3

JA/rn/gmp  
12-7-60

PTITSYNA, N. V.: Master Chem Sci (diss) -- "On the hydrocarbon content of the kerosene fractions of certain petroleums from the Kerch' peninsula". Moscow, 1958. 12 pp (Acad Sci USSR, Inst of Petroleum-Chem Synthesis), 150 copies (KL, No 12, 1959, 126)

*Pt. Tsynu, U.S.S.R.*

NEKRASOV, A.S.; PTITSYNA, N.V.

Aromatic hydrocarbons from kerosene fraction of Crimean petroleum.  
Trudy inst. nefti. 10:74-91 '57. (MIRA 11:4)  
(Crimea--Kerosene) (Hydrocarbons)

PTITSYNA, O. A.

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CA

Synthesis of organoantimony compounds through double diazonium salts. O. A. Reutov and O. A. Ptitsyna (M. V. Lomonosov State Univ., Moscow). *Doklady Akad. Nauk S.S.S.R.* 79, 819-21(1951).—Reaction of 20 g.  $\text{PhN}_2\text{Cl}\cdot\text{SbCl}_4$  with 5 g. Zn dust in 60 ml. EtOAc at 60°, filtration, concn. at room temp., and treatment with 5 N HCl and EtOH gave a little inorg. Sb compl., while treatment of an alc. soln. with  $\text{NH}_4\text{OH}$  gave 42%  $\text{PhSbO}$ ; an  $\text{Et}_2\text{O}$  wash of the ppt. gave 2 g.  $\text{PhSbO}$ , identified as the acetate, m. 131-2°. Hence since the result is duplicated when the evapn. is done in a N atm., the indication is that  $\text{Ph}_2\text{SbCl}_2$  is not formed from decompn. of the initial salt but by a secondary reaction, probably through participation of air at 30-5°, since the reaction does not occur at room temp. Probably the course is  $3\text{PhSbCl}_2 + \text{O} \rightarrow \text{Ph}_2\text{SbCl}_2 + \text{SbOCl} + \text{SbCl}_3$ .  $\text{Ph}_2\text{SbCl}_2$  in EtOAc was freed of solvent at 30-5°, yielding 100%  $\text{Ph}_2\text{Sb(O)OH}$ ; hence  $\text{PhSbCl}_2$  must be the origin of the  $\text{Ph}_2$  deriv. When 10 g.  $\text{PhN}_2\text{Cl}\cdot\text{SbCl}_4$  in 50 ml. EtOAc is decomposed by 2.5 g. Zn dust at 60°, filtered, and the filtrate treated at 60° with 5 g. more  $\text{PhN}_2\text{Cl}\cdot\text{SbCl}_4$ , a vigorous action results, and evapn. at 30-5° yields 60.4%  $\text{Ph}_2\text{Sb(O)OH}\cdot\text{Sb}_2\text{O}_3$ , which with hot dil. HCl yields  $\text{Ph}_2\text{SbCl}_2$ , m. 175.5-60°. This probably arises by formation of  $\text{Ph}_2\text{SbCl}_2$  and  $\text{SbCl}_3$  from the  $\text{PhSbCl}_2$  reacting with  $\text{PhN}_2\text{Cl}\cdot\text{SbCl}_4$ .  
G. M. Kosolapoff

USSR/Chemistry - Antimony Compounds Jan/Feb 52

"Synthesis of Aromatic Organic Antimony Compounds  
From Aryl Azocarboxylic Salts," O. A. Reutov,  
O. A. Ptitsyna

"Iz Ak Nauk, Otdel Khim Nauk" No 1, pp 93-101

The reaction proceeds by the general scheme  
 $ArN_2CO_2K + SbCl_3 + ArSbCl_2 + N_2 + CO_2 + HCl$ .  
Aryl azocarboxylic salts are capable of forming  
aryl diazonium salts under the action of antimony  
tri- or pentachloride. Proposes a practical method

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(Contd)

for obtaining diphenyl antimonie acid by de-  
composing the double salt of phenyl diazonium  
chloride and antimony trichloride with zinc.

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PTITSYNA, O. A.

REUTOV, O.A.; PITSYNA, O.A.

Synthesis of aromatic organoantimony compounds from arylazocarboxylic acid salts. Bull. Acad. Sci. U.S.S.R., Div. Chem. Sci. '52, 103-12  
[Engl. translation].  
(CA 47 no.19:9911 '53)



1. REUTOV, O. A.; PTITSYNA, O. A.
2. USSR (600)
4. Arylation
7. Arylation of metalorganic compounds of trivalent antimony with the aid of diazo compounds, Dokl. AN SSSR 69, No. 5, 1953.

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

PTITSYNA, O.A.

Chemical Abst.  
Vol. 48 No. 9  
May 10, 1954  
Organic Chemistry

2  
Arylation of organometallic compounds of (terval) mony with the aid of diazo compounds. O. A. Ptitsyna and O. A. Ptitsyna (M. V. Lomonosov State Univ., Moscow). *Doklady Akad. Nauk S.S.S.R.* 89, 877-80 (1953); *cf. C.A.* 46, 6093f. —  $\text{Ph}_2\text{SbOAc}$  with  $\text{PhN}:\text{NOAc}$  in cold  $\text{Me}_2\text{CO}$  yields 28%  $\text{Ph}_2\text{Sb}(\text{OAc})\text{Cl}$ . Similarly  $p\text{-MeC}_6\text{H}_4\text{SbCl}_2$  yields  $p\text{-MeC}_6\text{H}_4\text{SbPh}(\text{OAc})\text{Cl}$ , isolated as *phenyl-p-tolylstibinic acid*, m. 155-60°, which with hot 5N HCl gives  $\text{Ph}(p\text{-MeC}_6\text{H}_4)_2\text{SbCl}$ , m. 150-1.5°.  $p\text{-MeC}_6\text{H}_4\text{SbCl}_2$  with  $p\text{-MeC}_6\text{H}_4\text{N}_2\text{OAc}$  in  $\text{Me}_2\text{CO}$  gave 80%  $p\text{-MeC}_6\text{H}_4\text{Sb}(\text{OAc})(p\text{-MeC}_6\text{H}_4\text{N}_2\text{OAc})$  and 20%  $(p\text{-MeC}_6\text{H}_4)_2\text{Sb}(\text{OAc})\text{Cl}$ , isolated as  $(p\text{-MeC}_6\text{H}_4)_2\text{SbO}_2\text{H}$ , after  $\text{NH}_4\text{OH}$  treatment. Reaction of  $(p\text{-MeC}_6\text{H}_4)_2\text{SbOAc}$  with  $p\text{-MeC}_6\text{H}_4\text{N}_2\text{OAc}$  similarly gave 59%  $(p\text{-MeC}_6\text{H}_4)_2\text{Sb}(\text{OAc})$ , isolated as  $(p\text{-MeC}_6\text{H}_4)_2\text{Sb}(\text{OH})\text{OAc}$  after hydrolysis. Similarly in cold  $\text{Me}_2\text{CO}$   $(o\text{-ClC}_6\text{H}_4)_2\text{SbCl}$  and  $o\text{-ClC}_6\text{H}_4\text{N}_2\text{Cl.SbCl}_2$  gave 73%  $(o\text{-ClC}_6\text{H}_4)_2\text{SbCl}$ . In an energetic reaction  $(o\text{-ClC}_6\text{H}_4)_2\text{SbCl}$  and  $p\text{-O}_2\text{NC}_6\text{H}_4\text{N}_2\text{Cl.SbCl}_2$  gave 45%  $(o\text{-ClC}_6\text{H}_4)(p\text{-O}_2\text{NC}_6\text{H}_4)_2\text{SbCl}$ , m. 202°.  $(o\text{-EtOC}_6\text{H}_4)_2\text{SbCl}$  and  $2(o\text{-ClC}_6\text{H}_4\text{N}_2\text{Cl})\text{ZnCl}_2$  similarly gave 74%  $(o\text{-EtOC}_6\text{H}_4)(o\text{-ClC}_6\text{H}_4)_2\text{SbCl}$ , m. 189-90°, when the mixt. was heated 0.5 hr. to 50° after the initial cold reaction. Similarly  $(o\text{-EtOC}_6\text{H}_4)_2\text{SbCl}$  and  $p\text{-O}_2\text{NC}_6\text{H}_4\text{N}_2\text{Cl.SbCl}_2$  in an energetic reaction gave 82%  $(o\text{-EtOC}_6\text{H}_4)(p\text{-O}_2\text{NC}_6\text{H}_4)_2\text{SbCl}$ , m. 230°. Usually only a limited range of Sb derivs. are arylated by any one of the above reagents, although the diazonium acetates are usually the most reactive.  
G. M. Kosolapoff

Ptitsyna, O. A.

X. New possibilities of synthesis of organoantimony compounds through the double salts of antimony trichloride and diazonium salts. A. N. Nesmeyanov, O. A. Reutov and O. A. Ptitsyna. *Doklady Akad. Nauk S.S.S.R.* 91, 1341-4 (1953); *cf. C.A.* 39, 4320. —  $ArN_2Cl \cdot SbCl_3$  in  $Me_2CO$  suspension with powd. Fe at 0° yields  $Ar_2SbCl_3$  or  $ArSbCl_4$ , depending on the reagent ratios. Thus, to 25 g.  $PhN_2Cl \cdot SbCl_3$  in 75 ml. dry  $Me_2CO$  was added over 30-40 min. at 0° 3.3 g. powd. Fe, the mixt. stirred 40 min. longer, filtered, the solvent evapd., the residue rubbed with 50 ml. 5N HCl, treated with 25-30 ml. 96% EtOH, and the whole poured into ice-5%  $NH_4OH$ , yielding 9 g. (85%)  $Ph_2SbO_3H$ , reconverted to  $Ph_2SbCl_3$ , m. 171-3° (from 5N HCl). Similarly, equimolar proportions of  $p-O_2NC_6H_4N_2Cl \cdot SbCl_3$  and Fe gave 97%  $(p-O_2NC_6H_4)_2SbO_3H$ , converted to  $(p-O_2NC_6H_4)_2SbCl_3$ , shrinking at 190° (from 5N HCl).  $p-MeC_6H_4N_2Cl \cdot SbCl_3$  (20 g.) and 3.3 g. Fe gave 28%  $(p-MeC_6H_4)_2SbCl_3$ , m. 155-6°, directly, while the mother liquor, after  $NH_4OH$  treatment, gave 43%  $(p-MeC_6H_4)_2SbO_3H$ . An equimolar mixt. of  $x,1,3-XN_2C_6H_4Me_2$  and Fe gave 88%

$[x-(1,3-Me_2C_6H_3)]_2Sb(OH)Cl_2$  after addn. of EtOH; with  $H_2O$ , this gave the corresponding stibinic acid (analysis given). converted to  $[x-(1,3-Me_2C_6H_3)]_2SbCl_3$ , m. 169-70°.  $o-EtOC_6H_4N_2Cl \cdot SbCl_3$  (20 g.) and 3 g. Fe gave 49%  $(o-EtOC_6H_4)_2SbCl_3$ , m. 230-1°, while the ammoniacal soln. gave 42%  $(o-EtOC_6H_4)_2SbO_3H$ , which yielded  $(o-EtOC_6H_4)_2SbCl_3$ , m. 149-50°. Similarly 20 g.  $(o-ClC_6H_4)_2N_2Cl \cdot SbCl_3$  and 2.8 g. Fe gave 9%  $(o-ClC_6H_4)_2SbCl_3$ , m. 94-5°, and 80%  $(o-ClC_6H_4)_2SbO_3H$  (this with aq. AcOH gave  $(o-ClC_6H_4)_2SbO_3Ac$  and  $(o-ClC_6H_4)_2Sb(OH)Cl_2$ , m. 174-5°). Equimolar amts. of the *p*-isomer and Fe similarly gave 10%  $(p-ClC_6H_4)_2SbCl_3$ , m. 193-4°, and 85%  $(p-ClC_6H_4)_2SbO_3H$  [( $p-ClC_6H_4)_2SbCl_3$  from this, m. 149-50°],  $p-BrC_6H_4N_2Cl \cdot SbCl_3$  (19 g.) and 3 g. powd. Fe gave 9%  $(p-BrC_6H_4)_2SbCl_3$ , m. 198.5-9.0°, and 90%  $(p-BrC_6H_4)_2SbO_3H$  [( $p-BrC_6H_4)_2SbCl_3$ , m. 159°].  $p-IC_6H_4N_2Cl \cdot SbCl_3$  (20 g.) and 3 g. Fe gave 85%  $(p-IC_6H_4)_2SbO_3H$ , which with 5N HCl yielded  $(p-IC_6H_4)_2Sb(OH)Cl_2$ , m. 145-6°.  $o-MeOC_6H_4N_2Cl \cdot SbCl_3$  (20 g.) and 3 g. powd. Fe gave 67%  $(o-MeOC_6H_4)_2SbCl_3$ , m. 245°, and 9%  $(o-MeOC_6H_4)_2SbCl_3$ , m. 111-12° (from  $CHCl_3$ -EtOH). G. M. Koshyapoff

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(2)

PTITSYNA, O. A.

Dissertation: "A Study of the Aromatic Organic Compounds of Antimony." Cand Chem Sci, Moscow Order of Lenin State U imeni M. V. Lomonosov, 12 Jun 54. (Vechernyaya Moskva, Moscow, 3 Jun 54)

SO: SUM 318, 23 Dec 1954

Ptitsyna, O. A.

USSR/Chemistry - Free radicals

Card 1/1 Pub. 22 - 26/59

Authors : Reutov, O. A., and Ptitsyna, O. A.

Title : Binary diazonium salts of aryldichlorostibines of the  $ArSbCl_2 \cdot Ar'N_2Cl$  type

Periodical : Dok. AN SSSR 102/2, 291-294, May 11, 1955

Abstract : The synthesis of binary diazonium salts of aryldichlorostibines was realized by a method previously applied to the synthesis of binary diazonium salts of arylantimony tetrachloride and diarylantimony trichloride. It is shown that the stability of  $ArSbCl_2 \cdot Ar'N_2Cl$  type salts depends upon the nature of the  $Ar'$  and  $Ar$ . Certain substituents in the radical of the organoantimony component were found to decrease the stability of binary salts. Thirteen references: 1 USA and 12 USSR (1912-1954). Tables.

Institution : Moscow State University im. M. V. Lomonosov

Presented by : Academician A. N. Nesmeyanov, December 30, 1954

PTITSYNA, O.A.

AUTHOR: PTITSYNA, O.A., REUTOV, O.A., TURCHINSKIY, M.F. 20-1-30/64  
TITLE: The Synthesis of Tin-Organic Compounds by Way of Double Iodides.  
(Sintez olovoorganicheskikh soyedineniy cherez dvoynnye soli, Russian)  
PERIODICAL: Doklady Akademii Nauk SSSR, 1957, Vol 114, Nr 1, pp 110-112 (U.S.S.R.)  
ABSTRACT: Few data are found in chemical publications concerning the application of diaryl iodides as a starting point for the synthesis of metal-organic compounds. It was found that in the case of decomposition by metal powders of the double iodides (diaryliodonium) and chlorine-containing metals corresponding metal-organic compounds can be formed. The same can be done in the case of metal-organic compounds of other metals. (With 1 Table and 5 References).

ASSOCIATION: Not given  
PRESENTED BY:  
SUBMITTED:  
AVAILABLE: Library of Congress

Card 1/1

REUTOV, O.A.; PTITSYNA, O.A.; KARPOV, T.P.; SMOLINA, T.A.

Isotope exchange reactions between triarylstibine and the radioactive antimony isotope  $Sb^{124}$ . Nauch. dokl. vys. shkoly; khim. i khim. tekhn. no.1:115-116 '58. (MIRA 11:6)

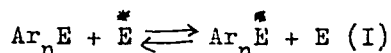
1. Rekomendovana kafedroy organicheskoy khimii Moskovskogo gosudarstvennogo universiteta im. M.V. Lomonosova.  
(Stibine) (Antimony--Isotopes)

AUTHORS: Reutov, O. A., Ptitsyna, O. A., SOV/156-58-1-27/46  
Karpov, T. P., Smolina, T. A.

TITLE: On the Reaction of the Isotope Exchange Between Tri-Aryl-  
Stibines and Radioactive Antimony Sb<sup>124</sup> (O reaktsii izotopnogo  
obmena mezhdru triarilstibinami i radioaktivnoy sur'moy Sb<sup>124</sup>)

PERIODICAL: Nauchnyye doklady vysshey shkoly, Khimiya i khimicheskaya  
tekhnologiya, 1958, Nr 1, pp. 115 - 116 (USSR)

ABSTRACT: The authors recently investigated the reactions of the type



(in which case E - is an n-valent element and E<sup>\*</sup> - its radio-  
active isotope). These reactions are the most simple models for  
reactions between metalorganic compounds and free metals (as  
well as some non-metals); they are the basis of one of the most  
important methods of synthesis of the metalorganic compounds  
(Ref 1):  $m\text{Ar}_n\text{Me} + n\text{E} \rightarrow n\text{Ar}_m + m\text{Me} \quad (\text{II})$  (in which case Me - is  
an n-valent metal and E - an m-valent metal). Naturally, the  
rules which were determined with the exchange-reactions of the  
type (I) may be of considerable importance for the further  
development of the method of synthesis according to scheme (II).

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On the Reaction of the Isotope Exchange Between Tri-  
Aryl-Stibines and Radioactive Antimony Sb<sup>124</sup>

SOV/156-58-1-27/46

The exchange reaction  $Ar_3\overset{*}{Sb} + Sb \rightleftharpoons Ar_3\overset{*}{Sb} + Sb$  referred to in the title, takes place under rather severe conditions. Only when boiling a tetralin solution of triphenyl-stibine (at 207°) with a radioactive antimony powder, a 17% exchange took place within 5 hours. The petroleum fraction with a boiling temperature of from 190 to 200° was used as indifferent solvent in further tests. Tri-p-tolyl stibine was used as test material. Considerable divergences were observed in spite of several parallel tests: the equilibrium was established once at a 15%, once at a 30% and another time at an 80% exchange. Since the surface area of the metallic antimony forms one of the most important factors of the exchange. These diverging results indicate that this surface is in any way changed in the course of the reaction. Apparently, a recrystallization of the antimony powder takes place during its heating in petroleum at from 190 to 200° which is ended within approximately 30 hours. The estimation of surface area of a "reprepared" and a not re-prepared radioactive antimony powder shows 1,44 m<sup>2</sup>/g and 6,9 m<sup>2</sup>/g, respectively. The interaction of the "reprepared" radio-

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On the Reaction of the Isotope Exchange Between Tri-  
Aryl-Stibines and Radioactive Antimony Sb<sup>124</sup>

SOV/156-58-1-27/46

active antimony with tri-p-tolyl stibine in parallel tests lead to a conforming equilibrium exchange (15 to 16%) within 80 to 100 hours. There are 3 references, 2 of which are Soviet.

ASSOCIATION: Kafedra organicheskoy khimii Moskovskogo gosudarstvennogo universiteta im.M.V.Lomonosova (Chair of Organic Chemistry at the Moscow State University imeni M.V.Lomonosov)

SUBMITTED: October 26, 1957

Card 3/3

AUTHORS: Reutov, O. A., Ptitsyna, O. A., Patrina, N. D. 79-28-3-5/61

TITLE: Double Diazo Salts of Stannic Trichloromethyl and of Stannic Dichlorodiethyl (Dvoynnye diazoniyevyye soli trekhkloristogo metilolova i dvukhloristogo dietilolova)

PERIODICAL: Zhurnal Obshchey Khimii, 1958, Vol. 28, Nr 3, pp. 588-592 (USSR)

ABSTRACT: According to a method for the synthesis of double diazo salts of antimony organic compounds (ref. 4) elaborated by one of the authors earlier, the authors in the present work carried out the synthesis of the double diazo salts of stannic trichloromethyl. These salts were synthesized by pouring together in the cold an acetone solution of the freshly produced  $\text{ArN}_2\text{Cl} \cdot \text{FeCl}_3$ -salt with the methyl alcohol solution of  $\text{CH}_3\text{SnOOH}$  which was saturated with hydrogen chloride:  $\text{CH}_3\text{SnOOH} + 3\text{HCl} \rightarrow \text{CH}_3\text{SnCl}_3 + 2\text{H}_2\text{O}$ ,  $2\text{ArN}_2\text{Cl} \cdot \text{FeCl}_3 + \text{CH}_3\text{SnCl}_3 \rightarrow (\text{ArN}_2\text{Cl})_2 \cdot \text{CH}_3\text{SnCl}_3 + 2\text{FeCl}_3$ . The salts  $(\text{C}_6\text{H}_5\text{N}_2\text{Cl})_2 \cdot \text{CH}_3\text{SnCl}_3$  and  $(p\text{-C}_7\text{H}_7\text{N}_2\text{Cl})_2 \cdot \text{CH}_3\text{SnCl}_3$ , and others

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Double Diazo Salts of Stannic Trichloromethyl and of Stannic 79-28-3-5/61  
Dichlorodiethyl

could not be obtained in this way. Therefore an one-step method for the synthesis of the diazo salts of stannic trichloromethyl was elaborated as follows: the chloride solution of  $\text{CH}_3\text{SnOOH}$  was added to a diazo solution which had been obtained by diazotizing an aromatic amine in hydrochloric acid by means of sodium-nitrite - this immediately leading to a precipitate of  $(\text{ArN}_2\text{Cl})_3 \cdot \text{CH}_3\text{SnCl}_3$ -salt. The use of o-toluidine did not furnish any diazo salt. The double diazo salts of stannic trichloromethyl obtained according to either method are mentioned in table 1. In the synthesis of the double diazo salts  $(\text{C}_2\text{H}_5)_2\text{SnCl}_2$  another method had to be used: the chloride of the amine was dissolved in alcohol and then diazotized with isoamylnitrite. The stannic dichlorodiethyl dissolved in alcohol was then added to the diazo solution. The formation of the double salt  $(\text{C}_2\text{H}_5)_2\text{SnCl}_2$  can be

represented by the following reaction process:  
 $\text{ArNH}_2 \cdot \text{HCl} + \text{C}_5\text{H}_{11}\text{ONO} \rightarrow \text{ArN}_2\text{Cl} + \text{C}_5\text{H}_{11}\text{OH} + \text{H}_2\text{O},$

$2\text{ArN}_2\text{Cl} + (\text{C}_2\text{H}_5)_2\text{SnCl}_2 \rightarrow (\text{ArN}_2\text{Cl})_2(\text{C}_2\text{H}_5)_2\text{SnCl}_2.$  The salts

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Double Diazo Salts of Stannic Trichloromethyl and of Stannic 79-28-3-5/61  
Dichlorodiethyl

synthetized this way are mentioned in table 2. There are  
2 tables and 5 references, 4 of which are Soviet.

ASSOCIATION: Moskovskiy gosudarstvennyy universitet  
(Moscow State University)

SUBMITTED: February 7, 1957

Card 3/3

5(2), 5(3)

AUTHORS:

Reutov, O. A., Corresponding Member, SOV/20-122-5-21/56  
Academy of Sciences, USSR, Ptitsyna, O. A., Khu Khun-Ven

TITLE:

The Synthesis of Organomercuric Compounds by Means of  
Diaryl Iodonium Salts (Sintez rtutnoorganicheskikh soyedineniy  
cherez soli diarylyodoniya)

PERIODICAL:

Doklady Akademii nauk SSSR, 1958, Vol 122, Nr 5,  
pp 825-827 (USSR)

ABSTRACT:

As was formerly proved by the authors (Refs 1, 2), the double salts of diaryl iodonium can serve as a source for the production of organo-metallic compounds of tin, antimony and bismuth. The reaction consists of a decomposition of diaryl iodonium double salts by tin, antimony or bismuth powders, respectively. The paper under review deals with the possibility of applying this reaction to the synthesis of organomercuric compounds. In order to find optimum conditions, the authors decomposed the corresponding double salt of diphenyl-iodonium chloride sublimate in various solvents. Hg, Fe, Zn, Cu and Ag were used as reducing factors. The results are given in table 1. They show that the main product of reaction is diphenyl mercury

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The Synthesis of Organomercuric Compounds by Means  
of Diaryl Iodonium Salts

SOV/20-122-5-21/56

when iron is used. In all other cases it was  $C_6H_5HgCl$ . Silver decomposes the double salt  $(C_6H_5)_2JCl.HgCl_2$  by forming diphenyl-iodonium chloride and calomel; no organomercuric compounds are created. The maximum yield of phenyl mercury chloride is obtained in the decomposition of the double salt of diphenyl-iodonium chloride sublimate by mercury in water. Because of various short-comings in the use of silver salts, the authors decided to use diphenyl iodonium salts for the synthesis of organomercuric compounds. As can be seen in table 3, a high yield of organomercuric compounds is formed by means of diaryl iodonium salts. Also the comparatively easy accessibility of these salts, as well as the simple process of the synthesis speak in favor of the method suggested. There are 3 tables and 4 references, 2 of which are Soviet.

SUBMITTED: July 5, 1958

Card 2/2

5(1, 2)

AUTHORS:

Reutov, O. A., Corresponding SOV/20-122-6-21/49  
Member, AS USSR, Ptitsyna, O. A., Styazhkina, N. B.

TITLE:

Decomposition of Asymmetric Diaryliodonium Salts by  
Bismuth Powder in the Presence of Bismuth Trichloride  
(Razlozheniye nesimmetrichnykh soley ~~diaryliodoniya~~  
poroshkom vismuta v prisutstvii trekhkhlorigo vismuta)

PERIODICAL:

Doklady Akademii nauk SSSR, 1958, Vol 122, Nr 6,  
pp 1032-1034 (USSR)

ABSTRACT:

The first two authors have demonstrated in an earlier paper (Ref 1) that in the decomposition of the diaryliodonium chlorides by tin powder in the presence of tin dichloride organotin compounds are formed in good yield. Furthermore it was demonstrated that in the decomposition of unsymmetric salts of diaryliodonium of the type  $ArAr'JCl$  under same conditions the more intensely electronegative radical passes from iodine to tin. All these reactions obviously pass through the preliminary stage of the formation of double iodonium salts of tin dichloride, which are decomposed by tin powder. In the same paper (Ref 1) the possibility of forming organobismuth compounds was shown. They are formed by

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Decomposition of Asymmetric Diaryliodonium Salts by Bismuth Powder in the Presence of Bismuth Trichloride SOV/20-122-6-21/49

decomposition of double salts of diaryliodonium chloride and of bismuth trichloride by bismuth powder. For reasons of preparation it has turned out to be more practical not to decompose a double salt by bismuth but to decompose a mixture of  $Ar_2JCl$  and  $BiCl_3$ . For example, the yield of triphenyl bismuth will be 35-40 % under these conditions. The reactions taking place in connection with this are explained by equations. The unsymmetric salts decomposed by the method described are given in table 1 together with the substances produced in this process. As can be seen from it, the more intensely electronegative radical passes in all cases to bismuth. In no case it was possible to isolate a second substance. Apparently it is formed in such small quantities which could only be detected by means of chromatography, e. g. The results obtained are difficult to understand as the quantity of the electron density does not represent a determinative factor in radical reactions (Ref 1), even if it is maintained that the decomposition of double radicals takes place "homolytically". At the same time the regularity observed here in the transition

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Decomposition of Asymmetric Diaryliodonium Salts by SOV/20-122-6-21/49  
Bismuth Powder in the Presence of Bismuth Trichloride

of the more intensely electronegative radical to the metal can easily be explained by the assumption of a heterolytic decomposition of the iodonium double salts. Although in recent times more and more knowledge of a certain role of the polar factors in the radical reactions has been collected, all data described by the authors give evidence of the heterolytic mechanism of the decomposition reactions of the iodonium salts which are discussed here. There are 1 table and 6 references, 1 of which is Soviet.

SUBMITTED: July 5, 1958

Card 3/3

REUTOV, O.A.; PTITSYNA, O.A.; STYAZHKINA, N.B.

Decomposition of unsymmetric diaryliodonium salts by powered bismuth in the presence of bismuth trichloride. Dokl. AN SSSR 122 no.6:1032-1034 0 '58. (MIRA 11:12)

1. Chlen-korrespondent AN SSSR (for Reutov).  
(Iodonium compounds) (Bismuth)

REUTOV, O.A.; PTITSYNA, O.A.; KHU KHUN-VEN [Hu Hung-weng]

Synthesis of mercury organic compounds by means of diaryliodonium salts. Dokl. AN SSSR 122 no. 5: 825-827 0 '58. (MIRA 11:11)

1. Chlen-korrespondent AN SSSR. (for Reutov).  
(Mercury organic compounds) (Iodonium compounds)

5(3)

AUTHORS:

Nesmeyanov, A. N., Reutov, O. A.,  
Ptitsyna, O. A., Tsurkan, P. A.

SOV/62-58-12-6/22

TITLE:

Synthesis of Organometallic Compounds of Pentavalent Antimony  
by Arylation of the Organic Antimony Compounds  $ArSbX_2$  and  
 $Ar_2SbX$  by Diazo-Compounds (Sintez metalloorganicheskikh  
soyedineniy pyativalentnoy sur'my putem arilirovaniya  
sur'myanorganicheskikh soyedineniy  $ArSbX_2$  i  $Ar_2SbX$   
diazosoyedineniyami.)

PERIODICAL:

Izvestiya Akademii nauk SSSR. Otdeleniye khimicheskikh nauk,  
1958, Nr 12, pp 1435-1444 (USSR)

ABSTRACT:

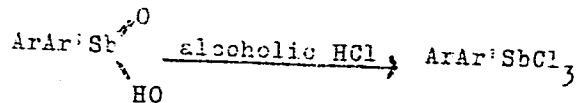
Published works give little data on the arylation of  
organic antimony compounds by means of diazo-compounds  
(Refs 4-7). In the present paper the authors investigated  
in detail the possibilities of arylating compounds of the  
type  $ArSbX_2$  and  $Ar_2SbX$  by means of diazo-compounds as well  
as of various diazonium double salts. They succeeded in  
finding such conditions under which the reaction of arylation  
can be carried out easily and in good yield. The method based

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Synthesis of Organometallic Compounds of Pentavalent Antimony by Arylation of the Organic Antimony Compounds  $ArSbX_2$  and  $Ar_2SbX$  by Diazo-Compounds

SOV/62-58-12-6/22

on the action of diazonium double salts of antimony trichloride on aryl-diiodo stibine proved to be a universal method for the synthesis of mixed organic antimony compounds of the type  $ArAr'SbX_3$ . The former are easily obtained from aryl stibine oxides. In almost all cases the reaction takes place at low temperatures and leads to the formation of the corresponding organic antimony compounds in very good yields. The compounds  $ArAr'SbX_3$  were isolated as diaryl antimonio acid and identified as the diazonium double salts  $ArAr'SbCl_3 \cdot Ar''N_2Cl$  according to the method developed in reference 8:

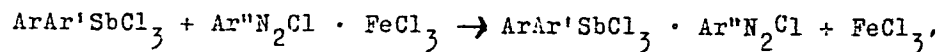


Card 2/3

Synthesis of Organometallic Compounds of Pentavalent Antimony by Arylation of the Organic Antimony Compounds  $ArSbX_2$

SOV/62-58-12-6/22

and  $Ar_2SbX$  by Diazo-Compounds



The results obtained are given in a table. The preparation method employed in synthesizing the substances of the types  $ArAr'SbX_3$  and  $Ar_2Ar'SbX_2$  is an important supplement of previous methods (Refs 2, 8-11) for the production of compounds of this type. There are 1 table and 16 references, 9 of which are Soviet.

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

SUBMITTED: March 26, 1957

Card 3/3

NESMEYANOV, A.N.; REUTOV, O.A.; PTITSYNA, O.A.; TSURKAN, P.A.

Synthesis of organometallic compounds of pentavalent antimony by arylation of the antimony organic compounds  $ArSbX_2$  and  $Ar_2SbX$  by diazo compounds. Izv. AN SSSR. Otd.khim.nauk no.12:1435-1444 D '58.  
(MIRA 12:2)

1. Moskovskiy gosudarstvennyy universitet imeni M.V. Lomonosova.  
(Antimony organic compounds) (Arylation).



5(3)

SCV/156-59-1-35/54

AUTHORS:

Ptitsyna, O. A., Reutov, O. A., Turchinskiy, M. F.

TITLE:

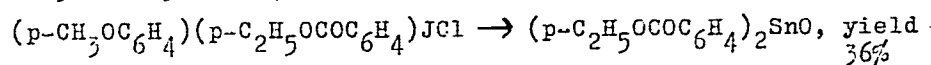
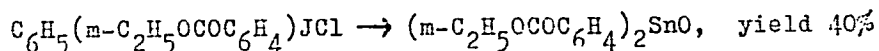
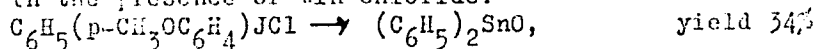
The Decomposition of Asymmetric Salts of Diaryl Iodonium by Tin Powder in the Presence of Tin Dichloride (Razlozheniye nesimmetrichnykh soley diariliodoniya poroshkom olova v prisutstvii dvukhloristogo olova)

PERIODICAL:

Nauchnyye doklady vysshey shkoly. Khimiya i khimicheskaya tekhnologiya, 1959, Nr 1, pp 138 - 140 (USSR)

ABSTRACT:

A method for the synthesis of organic tin compounds is presented. The following compounds were treated with tin powder in the presence of tin chloride:



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The Decomposition of Asymmetric Salts of Diaryl Iodonium SCV/156-59-1-35/54  
by Tin Powder in the Presence of Tin Dichloride

The compounds obtained and their yields are listed in a table. In all cases, the more electro-negative radical attached itself to the tin. No tin compounds were obtained on the decomposition of iodonium salts containing nitro-groups. In these compounds intensive resinification occurred which may be due to reduction processes of the nitro-groups. The experimental part of the paper presents the reaction details, as well as those of the production of the iodonium salts, with regard to laboratory work. There are 1 table and 5 references, 2 of which are Soviet.

ASSOCIATION: Kafedra organicheskoy khimii Moskovskogo gosudarstvennogo universiteta im. M. V. Lomonosova (Chair of Organic Chemistry of Moscow State University imeni M. V. Lomonosov)

SUBMITTED: July 10, 1958

Card 2/2

PTITSYNA, O.A.; REUTOV, O.A.; TURCHINSKIY, M.F.

Decomposition of asymmetric diaryliodonium salts by powdered tin in the presence of tin dichloride. Nauch.dokl.vys.shkoly; khim.i khim.tekh. no.1:138-140 '59. (MIRA 12:5)

1. Predstavlena kafedroy organicheskoy khimii Moskovskogo gosudarstvennogo universiteta im. M.V. Lomonosova.  
(Tin organic compounds) (Iodonium compounds)

5(2)

AUTHORS:

Nesmeyanov, A. N., Academician, SOV/20-125-6-25/61  
Reutov, O. A., Corresponding Member  
AS USSR. Tolstaya, T. P., Ptitsyna, O. A.,  
Isayeva, L. S., Turchinskiy, M. F.,  
Bochkareva, G. P.

TITLE:

Organometallic Compounds Prepared From Double Salts of Halogen  
Metals and Halogenoniums (Metalloorganicheskiye soyedineniya  
iz dvoynykh soley galoidnykh metallov i galogenoniyev)

PERIODICAL:

Doklady Akademii nauk SSSR, 1959, Vol 125, Nr 6, pp 1265-1268  
(USSR)

ABSTRACT:

The present paper adds two further types, (III) and (IV), to  
the two rather similar reaction types (I) and (II) of the  
synthesis of organometallic compounds. Hg, Tl, Sn, Pb, As, Sb,  
and Bi may appear as metal  $M^{(n)}$  in the method of diazonium  
double salts (Ref 1); Cu, Zn, Fe, as well as  $M^{(p)} - M^{(n)}$  as  
metal  $M^{(p)}$  for various combinations. In the method of idonium  
double salts (Ref 2) Hg, Sn, Sb, and Bi were investigated as  
 $M^{(n)}$  which gave a good yield of corresponding organometallic

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Organometallic Compounds Prepared From Double Salts  
of Halogen Metals and Halogenoniums

SOV/20-125-6-25/61

compounds. The same metal  $M^{(n)}$  is usually used as  $M^{(p)}$ , sometimes, however, Zn or Cu. The corresponding decomposition reactions were carried out by the authors in an acetone solution. For this purpose the same metal powder was used as was chosen by O. A. Reutov and O. A. Ptitsyna for diphenyl idonium salts. The course and the results of these new reactions were found to be completely similar to those of the last-mentioned salts. This is a new confirmation of a similarity of all diaryl halogenoniums. Phenyl mercury iodide with yields of 22 and 35% is produced by decomposition of the double salts of diphenyl chloronium iodide and of diphenyl bromonium iodide with  $HgJ_2$  by powdered copper in acetone at low temperature. Diphenyl-tin-dichloride with yields of 57 and 55% is produced by decomposition of the double salts of diphenyl chloronium- and diphenyl bromonium with  $SnCl_4$  by powdered tin. The decomposition of the corresponding double salts of antimony powder leads to a mixture of phenyl-dichlorostibine, diphenyl-chlorostibine, and a small quantity of organo-antimony triaryl compounds. Triphenyl bismuth is produced by decomposition of the bismuth-trichloride

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Organometallic Compounds Prepared From Double Salts  
of Halogen Metals and Halogenoniums

SOV/20-125-6-25/61

double salts by bismuth powder. According to the analysis it is assumed that the double salts of antimony-trichloride and of bismuth-trichloride form mixtures of the compounds:

$[(C_6H_5)_2Hal^+]MeCl_4^-$  and  $[(C_6H_5)_2Hal^+]_2MeCl_5^{--}$ . Table 1 gives 21 decomposed salts, the decomposition temperature and calculated as well as actually obtained results of the analysis, table 2 shows the decomposition reactions of the aforesaid double salts with the halides of heavy metals. The double salts of triphenyl-oxonium either do not react at all with the metal powders under the given experimental conditions, or only with a change of the anion part of the double salt. The cation of triphenyl-oxonium is not changed and does not form organometallic compounds. Thus this method is restricted by the inapplicability of oxonium- and (as is expected by analogy) of ammonium salts. The authors finally try to explain this behavior of triphenyl-oxonium salts. There are 2 tables and 11 references, 5 of which are Soviet.

ASSOCIATION:  
Card 3/4Moskovskiy gosudarstvennyy universitet im. M. V. Lomonosova  
(Moscow State University imeni M. V. Lomonosov) Institut

Organometallic Compounds Prepared From Double Salts  
of Halogen Metals and Halogenoniums

SOV/20-125-6-25/61

elementoorganicheskikh soyedineniy Akademii nauk SSSR (Institute  
of Elemental-Organic Compounds of the Academy of Sciences USSR)

SUBMITTED: January 7, 1959

Card 4/4

REUTOV, O.A., PTITSYNA, O.A., ORLOV, S.I.

Synthesis of solid aryl diazonium salts from double aryl diazonium salts of ferric chloride. Vest. Mosk. un. Ser. 2: khim. 15 no.2: 47-49 Mr-Apr '60. (MIRA 13:6)

1. Kafedra organicheskoy khimii Moskovskogo universiteta.  
(Diazonium compounds) (Iron chloride)



83137

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B016/B060

5.3200  
AUTHORS:

Reutov, O. A., Corresponding Member AS USSR, Ertel', G. A.,  
Ptitsina, O. A.

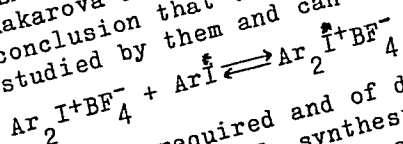
TITLE:

Reaction of Isotopic Exchange Between the Boron Fluorides  
of Diaryl Iodonium<sup>+</sup> and the Aryl Iodides Marked With I<sup>131</sup>

PERIODICAL:

Doklady Akademii nauk SSSR, 1960, Vol. 133, No. 5,  
pp. 1108-1110

TEXT: Basing on results obtained by A. N. Nesmeyanov (Refs. 1-5), L. G. Makarova and A. N. Nesmeyanov (Ref. 4), the authors arrived at the conclusion that the reaction mentioned in the title is possible; it was studied by them and can be represented as follows:



reagents required and of determining the activity are described. Table 1 gives the Ar<sub>2</sub>IBF<sub>4</sub> synthesized by the authors for the first time, along with melting temperatures, analyses, and yields. The reaction of

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Reaction of Isotopic Exchange Between the  
Boron Fluorides of Diaryl Iodonium and the  
Aryl Iodides Marked With I<sup>131</sup>

isotopic exchange discussed here was found to take place only near the temperature at which diaryl iodonium boron fluoride decomposes. The authors studied the reactions of diphenyl iodonium boron fluoride with iodo benzene, and of di-(p-chlorophenyl)-iodonium boron fluoride with p-chloro-iodo benzene, of di-(p-bromophenyl)-iodonium boron fluoride with p-bromo-iodo benzene, of di-(p-tolyl)-iodonium boron fluoride with p-iodo toluene, of di-(p-anisyl)-iodonium boron fluoride with p-iodo anisole, of di-(m-carbethoxy-phenyl)-iodonium boron fluoride with m-iodo-benzoic acid ethyl ester, as well as of di-(m-nitro-phenyl)-iodonium boron fluoride with m-iodo-nitro benzene. Table 2 gives the experimental conditions (temperature and period of reaction), moreover the degree of exchange and the diaryl iodonium boron fluoride yield. Because of varying thermal stability of the compounds, the experiments could not be carried out at the same temperature. Concerning the influence of the nature of the substituent in para- or meta-position of the benzene ring on the reaction rate of isotopic exchange it can therefore be only said that electronegative substituents delay the

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Reaction of Isotopic Exchange Between the  
Boron Fluorides of Diaryl Iodonium and the  
Aryl Iodides Marked With  $I^{131}$

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B016/B060

reaction. This circumstance is apparently caused by the decrease of electron density on the iodine atom in the  $XC_6H_4I$ , with X being an electronegative substituent. In the case of non-substituted phenyl and in the monosubstituted benzene ring, diaryl iodonium boron fluorides form with a sufficiently high activity. The reaction of isotopic exchange can be recommended as a convenient method of producing  $I^{131}$ -marked diaryl iodonium salts. There are 2 tables and 5 references: 4 Soviet and 1 German.

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

SUBMITTED: May 6, 1960

Card 3/3

REUTOV, O.A.; ERTEL', G.A.; PTITSIN, O.A.

Isotopic exchange reaction between diaryliodonium boron fluorides  
and aryl iodides tagged with  $I^{131}$ . Dokl. AN SSSR 133 no.5:  
1108-1110 Ag '60. (MIRA 13:8)

1. Moskovskiy gosudarstvennyy universitet imeni M.V.Lomonosova.
2. Chlen-korrespondent AN SSSR (for Reutov).  
(Iodine--Isotopes)  
(Boron fluoride)