SEMENOV, A.A.; KARPEYEV, G.A.

Evaluation of the statistical characteristics of fluctuations of the ultrashortwave radio signal propagated in a statistically inhomogeneous medium. Vest.Mosk.un.Ser.mat.,mekh.,astron.,fiz.,khim. 13 no.4:71-83 '58. (MIRA 12:4)

1. Kafedra rasprostraneniya, izlucheniya i kanalizatsii radiovoln Moskovskogo universiteta.
(Information theory)
(Radio waves)

SEMENOV, A.A.; TSYDYPOV, Ch.TS.

Investigation of variations of direct microwave signals under the influence of meteorological characteristics of the troposphere on the ground path. Izv. AN SSSR. Ser. fiz. 22 no.10:195-201 O '58. (MIRA 12:3)

1.Moskovskiy gosudarstvennyy universitet im. M.V. Lomonosova.
(Radio waves) (Radio meteorology)

SOV/109-59-4-2-5/27

AUTHORS: Semenov, A.A., and Karpeyev, G.A.

TITLE: Investigation of the Properties of the Rapid Fadings of Radio Signals Propagating over Medium-Distance Near-Ground Paths (Issledovaniye kharaktera bystrykh zamiraniy radiosignalov na prizemnykh trassakh sredney protyazhennosti)

PERIODICAL: Radiotekhnika i Elektronika, 1959, Vol 4, Nr 2, pp 187-194 (USSR)

ABSTRACT: During the period December 1955 - March 1956, the Chair of the Radiowave Propagation of the Physics Department of the Moscow University carried out the investigations on the propagation of radio signals over ground paths in the zone of direct visibility. The propagation paths were situated over a locality whose profile is illustrated in Fig (1); large regions of this area were covered with a dense forest. The transmitter employed in the measurements operated at the wavelength of 3 cm and had a pulse power of 65 kW. A parabolic antenna, having the main beam of 2.7^{0} and a horizontal polarization, was used. The amplitudes of two standard signals reflected

Investigation of the Properties of the Rapid Fadings of Radio Signals Propagating over Medium-Distance Near-Ground Paths

distance of 15 km, while curves III and IV are for the reflector situated at a distance of 36 km. The correlation functions for the two signals were also determined, but it was found that for the receiver spacing of 30 m, the correlation coefficients were very small (of the order of 0.2). There are 5 figures (1 plate) and 12 references of which 7 are Soviet and 5 English; 2 of the Soviet references being translated from English.

ASSOCIATION: Fizicheskiy Fakul'tet Moskovskogo Gosudarstvennogo Universiteta im.M.V.Lomonosova (Physics Department of the Moscow University imeni M.V.Lomonosov)

SUBMITTED: 2nd April 1957

S/055/59/000/06/14/027
B006/B005

AUTHORS: Semenov, A. A., Karpeyev, G. A.

TITLE: On the Relation Between the Fading Frequency of the Ultrashort-wave Field Amplitude and the Drift Velocity of Inhomogeneities in the Troposphere and the Carrier Frequency

PERIODICAL: Vestnik Moskovskogo universiteta. Seriya matematiki, mekhaniki, astronomii, fiziki, khimii, 1959, No. 6, pp. 131 - 136

TEXT: At first, it is investigated theoretically inhowfar the dynamic parameters of the troposphere can be determined by an investigation of the fading of radio signals and by a study of dynamics of the troposphere by means of fluctuation characteristics of signals. To estimate theoretically the influence of regular drift and chaotic motion of inhomogeneities, an expression is written down - on the basis of the classical model of radio-wave dispersion in the troposphere - for the space-time correlation function (1) of the complex field amplitude in two points, a moving coordinate system is introduced, and an equation is formulated for the correlation coefficient of the complex field amplitude $\varrho_0(\tau)$ in this coordinate system. This equation is further transformed (Fourier trans-

Card 1/2

SEMENOV, A.A.; KARPEYEV, G.A.

Relationship between the frequency of amplitude fadeouts of a UHF field to the velocity of drift of tropospheric inhomogeneities and to the frequency of the carrier. Vest.Mosk.un.Ser.mat.,mekh.,astron., fiz.,khim. no.6:131-136 '59. (MIRA 13:10)

1. Kafedra rasprostraneniya radiovoln Moskovskogo universiteta.
(Microwaves)

69894

S/109/60/005/04/007/028
E140/E435

9,9000

AUTHORS: Karpeyev, G.A. and Semenov, A.A.

TITLE: An Experimental Method for the Study of UHF Fluctuations

PERIODICAL: Radiotekhnika i elektronika, 1960, Vol 5, Nr 4, pp 578-583 (USSR)

ABSTRACT: The purpose of the present work is to substantiate the interference method of measuring UHF fluctuations. The results of measurements by this method have been interpreted as phase fluctuations of the wave by Deam and Fannin (Ref 3) but this is not always correct. It is shown that if the signal at the input to the antenna system can be represented by the sum of a random and a regular field component, the output voltage variation will be determined by the amplitude-phase variations of the input field and will depend on the regular field component and the length of the base. There are 1 figure and 7 references, 3 of which are Soviet and 4 English.

ASSOCIATION: Fizicheskiy fakul'tet Moskovskogo gosudarstvennogo universiteta im. M.V.Lomonosova (Physics Department,

Card 1/2

KARPEYEV, G.A.; KUBASOV, P.Ye.; SEMENOV, A.A.; FILIPP, N.D.

Concerning the possibility of using a phase-measuring method for investigating field fluctuations of a radio wave propagating through a turbulent medium. Izv. vys. ucheb. zav.; radiotekh. 4 no.4: 425-431 Jl-Ag '61. (MIRA 14:11)

1. Rekomendovana kafedroy rasprostraneniya radiovoln Moskovskogo ordena Lenina gosudarstvennogo universiteta imeni Lomonosova.
(Radio waves) (Microwaves)

24935

S/188/61/000/004/001/003
B111/B209

9.9816
6.4300

AUTHORS: Semenov, A. A., Karpeyev, G. A., Kubasov, P. Ye., Filipp, N. D.

TITLE: Investigation of the spatial correlation properties of the amplitude fluctuations in a USW field

PERIODICAL: Moskovskiy Universitet. Vestnik. Seriya III. Fizika, astronomiya, no. 4, 1961, 14-21

TEXT: The authors present the results of experimental measurements; they estimate the radii of the spatial coordinates and compare the spatial correlations of the field amplitude fluctuations with the temporal ones. The experimental setup was as follows: At one end of a 37-km long terrace two pulse emitters were mounted, the one displaying a power of 80 kw at a frequency of 3,000 Mc, operating with a repetition rate of 400 cps and a pulse length of 1 μ sec; the data of the second emitter are 65 kw, 9370 Mc, 577 cps, and 1 μ sec. The antennas were accomplished as parabolic rotary aerials having a diameter of 1.8 m and 0.7 m, respectively. The receivers were placed at the other end of the terrace and had two similar channels for each of the two frequencies. Each of the channels was a superheterodyne

Card 1/5

Investigation of the spatial ...

$\vec{v}_1$ the turbulent velocity (Ref. 10: Chernov, L. A., Rasprostraneniye voln v srede so sluchaynymi neodnorodnostyami - Wave propagation in a medium with incidental heterogeneities, Izd-vo AS SSSR, M., 1958). For a considerable number of experiments, the temporal correlation $\varrho(\tau)$ may be written as $\varrho = \exp(-\tau/a)$, where a has to be determined by experiment. An analogous expression holds for the spatial correlations $\varrho(l)$. The authors point out the fact that, in the case of slow wind velocities $v < 1$m/sec and enhanced refractions, the experimental curves are near those expected. When turbulence is great, not only the effect of regular drift but also that of chaotic motion in the atmosphere has to be taken into account in the formation of fluctuations. Investigations at the horizon showed that l_0, for which $\varrho(l_0) = 0.5$, always has the same order of magnitude. There are 6 figures and 10 references: 8 Soviet-bloc and 2 non-Soviet-bloc:

ASSOCIATION: Kafedra rasprostraneniya radiovoln (Department of Radiowave Propagation)

SUBMITTED: May 26, 1960 (initially)
May 25, 1961 (after revision)

Card 3/5

24936
S/188/61/000/004/002/003
B111/B209

9.9816

Semenov, A. A., Karpeyev, G. A., Filipp, N. D.

TITLE: Some peculiarities of USW-signal fluctuations in the conditions of propagation on a low-altitude terrace in the range of direct vision

PERIODICAL: Moskovskiy Universitet. Vestnik. Seriya III: Fizika, astronomiya, no. 4, 1961, 22-29

TEXT: The results of experimental investigations of the statistical characteristics of the USW-field amplitude fluctuations under the conditions of multi-beam emission are presented. Moreover, the authors show the dependence of the spatial correlations of the amplitude fluctuations on the patel-shaped structure of the field at the point of reception. It was the aim of this paper to demonstrate the effect of a non-regular interface upon the quantity and the spatial propagation of the characteristics of fluctuation. A simple estimate of the fluctuations of multi-beam USW waves is given in the approximation of geometrical optics. In this connection it is stated that the mean square amplitude and its mean square fluc-

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Some peculiarities of USW-signal ...

geneous, the fluctuations at the output of the receiver will differ from those in free space. This difference is determined by the conditions in the troposphere and by the reflection coefficient. Next, some results of experimental studies during 1959 - 60 (Ref. 8: Semenov, A. A., Karpeyev, G. A., Radiotekhnika i elektronika, 4, vyp. 2, 1959) are given proving the fluctuational characteristics of the wave field to be patel-shaped when the structure of the mean field level is also patel-shaped. The studies lead to the conclusion that in certain cases, when refraction is enhanced, the amplitude fluctuations in the course of one measuring process cannot be regarded as steady. The authors point out that the fluctuations with nonsteady characteristics reveal a definite seasonal course. A comparison of the temporal self-correlations of the fluctuations with the spatial correlations showed that an analysis of the temporal self-correlations only agrees satisfactorily with the theory of local isotropic turbulence when during the reception time τ of two consecutive signals the inhomogeneities do not vary but are transmitted with drift velocity only. Measurements of the coefficient of the spatial transverse correlations of the amplitude fluctuations of the received signal resulted in values that are in agreement with those ascertained by time analysis. There are 4 figures and

24936

S/188/61/000/004/002/003
B111/B209

Some peculiarities of USW-signal ...

14 Soviet-bloc references.

ASSOCIATION: Kafedra rasprostraneniya radiovoln (Department of Radiowave Propagation)

SUBMITTED: May 26, 1960 (initially)
May 25, 1961 (after revision)

Card 4/4

31984
S/142/61/004/004/005/018
E192/E382

9,9700 (1046, 1327)

AUTHORS: Karpeyev, G.A., Kubasov, P.Ye., Semenov, A.A. and Filipp, N.D.

TITLE: Possibility of employing the phase-meter method in the investigation of field fluctuations of radio waves propagating in a turbulent medium

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy, Radiotekhnika, v. 4, no. 4, 1961, 425 - 431

TEXT: It is known that during propagation over routes near the ground the field at the receiver is determined by the average characteristics of the medium and the earth surface as well as their statistical characteristics (Ref. 2 - A.G. Arenberg - Propagation of decimetre and centimetre waves - izd-vo Sovetskoye radio, 1957). The presence of statistical processes leads to the amplitude- and phase-fluctuations of the waves and these fluctuations are random functions of time and space coordinates. It can be assumed for the purpose of analysis that at a point P of the space V the field (vector or scalar) can be expressed by:

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Possibility of employing ....

$$\vec{E}(P, t) = \sum_m \vec{E}_m(P, t) = \sum_m E_m'(P, t) e^{i\varphi'_m(P, t)}$$

where the sum extends over all the partial fields $\bar{E}_m(P, t)$, which can be regarded as having arrived at the receiver along various trajectories; the field $\bar{E}(P, t)$ is therefore a result of multi-ray propagation. A two-antenna interferometer, shown in Fig. 1, is used as the receiver; it consists of: 1 - two antennae; 2 - feeder system and 3 - a square-detector. The voltage at the point C of the receiving system can be expressed by:

$$\vec{E}_c(\vec{r}, t) = \sum_m G_{1m}(t) E_m'(P_1, t) e^{i\varphi_m(P_1, t)} +$$

$$+ \sum_m G_{2m}(t) E_m'(P_2, t) e^{i\varphi_m(P_2, t)}$$

Card 2/6

Possibility of employing ....

where G_{1m} and G_{2m} are the gain coefficients of the two antennae,

$\varphi_m(P, t) = \varphi'_m(P, t) + \varphi_{mp}$, where φ'_m represents the mean value of the phase in the antenna aperture;

φ_{mp} is the fixed phase-shift during transmission of the signal from point P to point C of the feeder system.

The mathematical expectation $U_o(\bar{r})$ of the amplitude $U(r, t)$ of the output signal of the square-detector (see Fig. 1) is found analytically and this expression is employed to determine the conditions during propagation of ultrashort waves over near-ground routes extending over tens of kilometres. Under the assumption that the fluctuations are small two cases (important in practice) are investigated: 1) the field at the receiver has only one component ($m, n = 1$) and 2) the field consists of two components $E_o + E_s$, such that E_o has a constant phase and amplitude, while E_s is a random component. It is found that for

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Possibility of employing ....

the first case the expectation $U_o(\bar{r})$ depends on the invariable field characteristics as well as the statistical characteristics of the medium. It is further shown that use of the phase-meter system accentuates the relative fluctuations of the output signal so that these can be measured and investigated comparatively easily. Secondly, the method makes possible measuring the space correlation characteristics of the field fluctuations. In the case of the field consisting of the two components E_o and E_s, use of the method permits elimination of the constant field component, which facilitates measurement of the field fluctuations. The problem was investigated experimentally and it was found that in the direct-visibility zone the amplitude-phase fluctuations of the ultrashort waves were so small that there existed practical difficulties in effecting the measurements. Thus, for example, during 65 measurement periods conducted between January and March, 1957, in 33 cases the relative fluctuation $\sigma_o^2 < 0.01$, in 20 cases $0.01 \leq \sigma_2 \leq 0.25$ and only in 12 cases $\sigma_o^2 > 0.25$.

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31984
S/142/61/004/004/005/018
E192/E382

Possibility of employing ....

A series of measurements of amplitude-phase fluctuations was carried out in the autumn of 1959 at ultrashort waves by the phase-meter method and it was found that the low-frequency component of the amplitude-phase fluctuations was primarily determined by the phase-fluctuations of the field; on the other hand, the fast component was due to the amplitude-fluctuations. This was further confirmed by some measurements of auto-correlation functions of the amplitude- and amplitude-phase fluctuations of the field at a frequency of f = 9 350 Mc/s. A preliminary estimate of the mean square phase-fluctuations shows it to be of the order of 10^{-2} radians, which compares with data available from the literature (Ref. 6 - A.V. Men', S.Ya. Braude and V.I. Gorbach - DAN SSSR, 1959, 125, no. 5, 1019; Ref. 7 - D.M. Vysokovskiy - Some problems of long-distance tropospheric propagation of ultrashort radio waves, pub. by AS USSR, 1958).

Card 5/6

31984
S/142/61/004/004/005/018
E192/E382

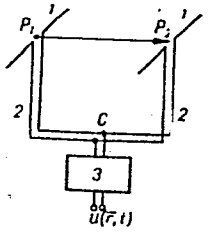
Possibility of employing ....

There are 4 figures and 7 Soviet-bloc references.

ASSOCIATION: Kafedra rasprostraneniya radiovoln Moskovskogo ordena Lenina gos. universiteta im. M.V. Lomonosova (Department of Radio-wave Propagation of Moscow Order of Lenin State University im. M.V. Lomonosov)

SUBMITTED: June 20, 1960

Fig. 1:



Card 6/6

SEMENOV, Aleksandr Aleksandrovich; DOLUKHANOV, M.P., prof., retsenzent; KARPEYEV, G.A., red.; GEORGIYEVA, G.I., tekhn. red.

[Theory of electromagnetic waves; lecture course for radio physisists] Teoriia elektromagnitnykh voln; lektsionnyi kurs dlia radiofizikov. Moskva, Izd-vo Mosk. univ., 1962. 255 p. (MIRA 15:3)

(Electromagnetic waves) (Radio)

SEMENOV, A., inzh.

Radio communications in outer space. Radio no.10:6-7 O '62.
(MIRA 15:10)

(Astronautics) (Radio)

ARSEN'YAN, T.I.; SEMENOV, A.A.

Comparison of statistical characteristics of the fluctuation of the field of direct and reflected ultrashort radio wave signals in the troposphere. Radiotekh. i elektron. 7 no.10:1699-1702 O'62. (MIRA 15:10)

1. Fizicheskiy fakul'tet Moskovskogo gosudarstvennogo universiteta im. M.V.Lomonosova.
(Microwaves) (Ionospheric radio wave propagation)

SEMENOV, A.A.; CHEN' ZHUN-FAN' [Ch'ên Jung-fan]

Nature of the fluctuations of the output signal in interference reception of radio waves on terrestrial routes. Radiotekh. i elektron. 7 no.11:1890-1895 N '62. (MIRA 15:11)

1. Fizicheskiy fakul'tet Moskovskogo gosudarstvennogo universiteta im. M.V. Lomonosova.
(Microwaves)

SEMENOV, Aleksandr Aleksandrovich; KARPEYEV, K.A., red.; YERMAKOV, M.S., tekhn. red.

[Introduction to electrodynamics of radiating systems] Vvedenie v elektrodinamiku izluchaiushchikh sistem. Moskva, Izd-vo MGU, 1963. 85 p. (MIRA 16:7)
(Electromagnetic waves) (Antennas (Electronics))
(Microwaves)

VINOGRADOVA, Marianna Bronislavovna; SEMENOV, Aleksandr Aleksandrovich; ARMAND, N.A., red.; KLYAUS, Ye.M., red.izd-va; LAUT, V.G., tekhn. red.

[Principles of the theory of tropospheric propagation of ultrashort radio waves] Osnovy teorii rasprostraneniia ul'trakorotkikh radiovoln v troposfere. Moskva, Izd-vo AN SSSR, 1963. 188 p. (MIRA 16:11)

(Radio waves)

SEMENOV, A.A.; ARSEN'YAN, T.I.

Study of the properties of fluctuations of the field of ultrashort radio waves in propagation in the troposphere. Meteor. issl. no.9:203-222 '65. (MIRA 19:1)

SEMENOV, F. T.

ANASTAS'IN, V.F.; ARAKELOV, A.S.; BOBROV, A.L.; VIKHOREV, Yu.V.; VIL'DER, S.I.; GLUSHKO, I.K.; GOKUN, A.M.; PIN'KOVSKIY, Ya.I.; PASHKOV, N.D.; RYABUKHA, G.K.; REBENKO, G.S.; SMUROV, Fedor Pavlovich; SOSKIND, D.M.; SAMSONOV, B.A.; SEMENOV, A.B.; SULEYMANOV, A.B.; KHARLAMOV, A.A.; TSAR'KOV, B.N.; SHIFRIN, D.L.; SHEYNMAN, V.I.; ABAKUMOVSKIY, Dmitriy Dmitriyevich, red.toma; SVYATITSKAYA, K.P., vedushchiy red.; TROFIMOV, A.V., tekhn.red.

[Petroleum equipment; in six volumes] Neftianoe oborudovanie; v shesti tomakh. Moskva, Gos.nauchno-tekhn.izd-vo neft. i gorno-toplivnoi lit-ry. Vol.4. 1959. 294 p. (MIRA 12:9)
(Petroleum refineries--Equipment and supplies)

SEMENOV, A.D., inzhener.

Construction of diesel-engine tugboats by the continuous flow and position method at the Pobezhimov Plant. Mech.transp. 16 no.5:33-37 My '57. (MLRA 10:5)
(Shipbuilding) (Assembly line methods)

KALLISTOV, P.L.; ZENKOV, D.A.; PROKOF'YEV, A.P. Prinimali uchastiye: BOGDANOV, F.M.; BORZUNOV, V.M.; BURYBLIN, A.V.; DROZDOV, M.D.; YEROFEYEV, B.N.;KOMISSAROV, A.K.; KOGAN, I.D.; LYUBIMOV, I.A.; MIRLIN, R.Ye.; ROKHLIN, M.I.; SERGEYEV, P.V.; SEMENOV, A.D.; FROLOV, V.V.; NEMANOVA, G.F., red. izd-va; GORDIYENKO, Ye.B., tekhn. red.

[Instructions for applying the classification of reserves to primary gold deposits] Instruktsiia po primeneniiu klassifikatsii zapasov k korennym mestorozhdeniiam zolota. Moskva, Gos. nauchno-tekhn.izd-vo lit-ry po geol. i okhrane nedr, 1955. 46 p. (MIRA 15:2)

1. Russia (1923- U.S.S.R.) Gosudarstvennaya komissiya po zapasam poleznykh iskopayemykh.
(Gold ores--Classification)

SEMENOV, A. D.

USSR/Physical Chemistry - Thermodynamics. Thermochemistry. Equilibrium. Physicochemical Analysis. Phase Transitions B-8

Abs Jour : Referat Zhur - Khimiya, No 2, 1957, 3757

Author : Osipov O.A., Semenov A.D.

Title : Molecular Weight of Some Complex Compounds of Titanium Tetrachloride.

Orig Pub : Zh. obshchey khimii, 1956, 25, No 11, 2059-2062

Rostov/on/Don State U.

Abstract : Composition-properties diagrams plotted on the basis of results of determination of viscosity, conductance, fusibility and density of the systems $TiCl_4-C_3H_7COOC_4H_9$ (I), $TiCl_4-C_3H_7COOC_5H_{11}$ (II) and $TiCl_4-CH_2CLCOOC_2H_5$ (III), indicate the formation of thermally stable compounds of the 1:1 type (RZhKhim, 1955, 11279). Cryoscopic determinations of the molecular weight of the complexes were carried out in benzene with equimolecular proportions of

Card 1/3

SEMENOV A. D.

DATSKO, V.G.; SEMENOV, A.D.

Daily variations of oxygen content and the oxidizability of Azov Sea water in the summer of 1955. Gidrokhim. mat. 27:3-9 '57. (MIRA 11:4)

1. Gidrokhimicheskiy institut AN SSSR, Novocherkassk.
(Azov Sea--Oxygen)

SEMENOV, A.D.: Cand Mister Chem Sci (diss) -- "The organic substances and biogenic elements in the Azov Sea after regulation of the Don River". Novocherkassk, 1958. 14 pp (Acad Sci USSR, Hydrochemical Inst), 150 copies (KL, No 1, 1959, 115)

62-58-3-17/30

AUTHORS: Datsko, V. G. , Semenov, A. D.

TITLE: The Determination of Phosphorus in Natural Waters by Means of the Extraction of Molybdeno-Phosphoric Heteropolyacid by Butyl Alcohol (Opredeleniye fosfora v prirodnykh vodakh pri pomoshchi ekstragirovaniya fosfornomolibdenovoy geteropolikisloty butilovym spirtom)

PERIODICAL: Izvestiya Akademii Nauk SSSR, Otdeleniye Khimicheskikh Nauk, 1958, Nr 3, pp. 357 - 358 (USSR)

ABSTRACT: In hydrochemical investigations (connected with the investigation of the biological productivity) of water reservoirs the determination of biogenetic elements in the water is very interesting. To these belong the phosphorus compounds. The method hitherto most employed does, however, not guarantee satisfactory results. As basis of the method suggested by the authors was mentioned: extraction of the above-mentioned acid by normal or isobutyl alcohol with a subsequent reduction of this acid in an alcoholic medium. This method of extraction can also be employed in cases in which the determi-

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62-58-3-17/30

The Determination of Phosphorus in Natural Waters by Means of the Extraction of Molybdeno-Phosphoric Heteropólyacid by Butyl Alcohol

nation of the phosphates in natural waters by means of the Denizhe-Atkins-method is not possible. In the determination of the general phosphorus content the extraction method offers better possibilities and guarantees a higher precision than the method according to Denizhe-Atkins. There are 2 tables.

ASSOCIATION: Gidrokhimicheskiy institut Akademii nauk SSSR (Institute for Hydrochemistry, AS USSR)

SUBMITTED: September 27, 1957

Card 2/2

5(2) SOV/62-59-9-3/40

AUTHORS: Kapiin, V. T., Semenov, A. D., Datsko, V. G.

TITLE: Trial to Combustion Rapidly the Organic Substance in Detecting Phosphorus and Nitrogen in Natural Waters

PERIODICAL: Izvestiya Akademii nauk SSSR. Otdeleniye khimicheskikh nauk, 1959, Nr 9, pp 1526-1528 (USSR)

ABSTRACT: To accelerate the combustion of organic substances in natural water by applying sulfuric acid, which may last up to 130 hours, the authors used potassium chlorate with good success. The time necessary for the detection was reduced to 1 - 1.5 hours, but the method made necessary an additional treatment of the water to eliminate the influence of the oxidant residues on the result of analysis. The additional treatment is especially necessary for the detection of nitrogen. For phosphorus detection it is the following: 100 ml of sample, 2 ml of sulfuric acid and 1 ml of 5% potassium chlorate solution are boiled until the appearance of SO_2 smoke, subsequently a return-flow cooler is attached and boiling goes on for another hour. All organic compounds are completely destroyed in the course of this process.

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SOV/62-59-9-3/40

Trial to Combustion Rapidly the Organic Substance in Detecting Phosphorus and Nitrogen in Natural Waters

The excess potassium chlorate is decomposed by sodium sulfite and continued boiling, the SO_2 is then evaporated and the precipitate is investigated for phosphorus by the conventional method. Table 1 lists the analysis results of water from Don and Volga, the Tsimlyanskoye reservoir, the Azov Sea and the Taganrog Bay. For detecting nitrogen the reagents had to be very precisely measured-in. Otherwise the decomposition process is the same. Table 2 shows the results. There are 2 tables and 8 references, 3 of which are Soviet.

ASSOCIATION: Gidrokhimicheskiy institut Akademii nauk SSSR (Hydrochemical Institute of the Academy of Sciences, USSR)

SUBMITTED: March 8, 1958

Card 2/2

DATSKO, V.G.; SEMENOV, A.D.

Observations of the oxygen concentrations in the Sea of Azov on the content of biogenous elements in 1955-1956. Gidrokhim. mat. 29:102-117 '59. (MIRA 13:5)

1. Gidrokhimicheskiy institut Akademii nauk SSSR, Novocherkassk. (Azov, Sea of--Water--Analysis) (Oxygen)

DATSKO, V.G.; SEMENOV, A.D.

Determining phosphorus in natural waters. Gidrokhim.mat. 29:219-229 '59. (MIRA 13:5)

1. Gidrokhimicheskiy institut Akademii nauk SSSR, Novocherkassk.
(Water--Analysis) (Phosphorus--Analysis)

SEMENOV, A. D.

PHASE I BOOK EXPLOITATION SOV/5374

Akademiya nauk SSSR. Gidrokhimicheskiy institut

Gidrokhimicheskiye materialy, t. XXX (Hydrochemical substances, v.30) Moscow, Izd-vo AN SSSR, 1960. 213 p. Errata slip inserted. 2,000 copies printed.

Sponsoring Agency: Akademiya nauk SSSR. Gidrokhimicheskiy institut (Novocherkassk).

Editorial Board (Title page): Resp. Ed. O. A. Alekin, N. V. Veselovskiy, Deputy Resp. Ed. V. G. Datsko, G. S. Konovalov, M. I. Krivenkov, P. A. Kryukov, Resp. Secretary and K. G. Lazarev. Ed. of Publishing House: D. N. Trifonov. Tech. Ed.: I. T. Dorokhina.

PURPOSE: This publication is intended for hydrologists, hydrochemists, and hydrometeorologists.

COVERAGE: This is a collection of 22 articles on the hydrochemistry of rivers and water bodies in the USSR. The authors discuss pollution, spectrographic methods of determining the content of microelements in water, and the content and discharge of ions, gases, as well as chemical, biogenic, and organic substances. A map showing the distribution of the ionic discharge of rivers in the USSR is the most complete to appear in print to date. No personalities are mentioned. Each article is accompanied by references.

Card 5/8

SEMENOV, A.D.; IVLEVA, I.N.; DATSKO, V.G.

Determination of microgram quantities of amino acids in natural waters. Izv. AN SSSR. Otd. khim. nauk no. 1:184-186 Ja '61. (MIRA 14:2)

1. Gidrokhimicheskiy institut AN SSSR.
(Amino acids)

SEMENOV, A.D.; IVLEVA, I.N.; DATSKO, V.G.

Method of determining microgram quantities of reducing sugars in natural waters by the use of alkaline solution of bivalent copper. Gidrokhim.mat. 34:138-146 '61. (MIRA 15:2)

1. Gidrokhimicheskiy institut AN SSSR, Novocherkassk.
(Water--Analysis) (Sugars)

SEMENOV, A.D.; BUSLER, I.V.

Stable amplifier for measuring the pH value of solutions with a glass electrode. Gidrokhim.mat. 34:157-163 '61. (MIRA 15:2)
(Amplifiers (Electronics)) (Hydrogen-ion concentration)
(Electric measurements)

RABINOVICH, Aleksandr Moiseyevich, prof.; SEMENOV, A.D., prof., red.; BELOBORODKO, I.B., tekhn. red.

[Tomography in pulmonary tuberculosis] Tomografiia pri tuberkuleze legkikh; posobie dlia prakticheskogo vracha. Leningrad, Medgiz, 1963. 143 p. (MIRA 17:1)

SEMENOV,A.D.; CZAJKA, W.W. (Leningrad, ZSSR)

Some functional aspects of pulmonary tuberculosis in various modes of therapy. Gruzlica 31 no.6:545-547 Je'63.

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SEMENOV, A.D.; IVLEVA, I.N.; DATSKO, V.G.

Methods for the concentration and determination of amino acids in natural waters. Trudy Kom.anal.khim. 13:62-65 '63. (MIRA 16:5)

1. Gidrokhimicheskiy institut g. Novocherkasska.
(Amino acids) (Water—Analysis)

SEMENOV, A.D.; IVLEVA, I.N.; DATSKO, V.G.

Microdetermination of reducing sugars in natural waters.
Trudy Kom.nanal.khim. 13:66-68 '63. (MIRA 16:5)

1. Gidrokhimicheskiy institut, Novocherkassk.
(Sugars) (Water--Analysis)

KOCHNOVA, T.Ye., prof.; SEMENOV, A.D., prof.; YEVDOKIMOVA, A.D., dotsent; ROZUMOVSKAYA, V.F., kand.med.nauk; TRIFONOVA, T.M.

Second All-Russian Conference of Phthisiologists. Sovet. med. 27 no.9:134-137 S'63 (MIRA 17:2)

SEMENOV, A.D., prof.; GABER, I.E., kand. med. nauk

Use of artificial pneumothorax in a tuberculosis clinic; conference of the Leningrad Scientific Research Institute of Tuberculosis. Probl. tuberk. 41 no.2:83-86 '63 (MIRA 17:2)

NEMTSEVA, L.I.; SEMENOV, A.D.; DATSKO, V.G.

Microdetermination of volatile amines escaping from natural waters with water vapor. Zhur. anal. khim. 19 no.3:383-385 '64. (MIRA 17:9)

1. Gidrokhimicheskiy institut AN SSSR, Novocherkassk.

DATSKO, V.G. [deceased]; VASIL'YEVA, V.L.; ROMENSKAYA, N.N.; IVLEVA, I.N.; SEMENOV, A.D.

Some data on organic substances in the Tsimlyansk Reservoir and elements of their balance. Gidrokhim. mat. 37:63-70 '64. (MIRA 18:4)

1. Gidrokhimicheskiy institut Glavnogo upravleniya gidrometeorologicheskoy sluzhby pri Sovete Ministrov SSSR, Novocherkassk.

SEMENOV, A.D.; BRYZGALO, V.A.; DATSKO, V.G. [deceased]

Potentiometric determination of organic acids in natural waters. Gidrokhim. mat. 38:137-143 '64. (MIRA 18:4)

1. Gidrokhimicheskiy institut AN SSSR, Novocherkassk.

IVLEVA, I.N.; SEMENOV, A.D.; DATSKO, V.G. [deceased]

Method of determining reducing sugars in natural waters with p-aminohippuric acid. Gidrokhim. mat. 38:144-149 '64.
(MIRA 18:4)

1. Gidrokhimicheskiy institut AN SSSR, Novocherkassk.

SEMENOV, A.D.; SEMENOVA, I.M.; GONCHAROVA, I.A.; STRADOMSKAYA, A.G.; DATSKO, V.G. [deceased]

Infrared spectra of humic acids in natural waters. Gidrokhim. mat. 38:157-161 '64. (MIRA 18:4)

1. Gidrokhimicheskiy institut AN SSSR, Novocherkassk.

BUSLER, I.V.; SEMENOV, A.P.

Double-cascade amplifier for the potentiometric determination of the pH of solutions. Gidrokhim.mat. 36:172-175 '61.

A field pH-meter. Ibid.:176-181 (MIRA 15:11)

1. Gidrokhimicheskiy institut, Novocherkassk. Submitted December 9, 1961.

SEMENOV, A.D.; IVLEVA, I.N.; DATSKO, V.G.

Determination of the reducing sugars in the hydrolysates of the organic matter of natural waters. Gidrokhim.mat. 36:161-164 '64. (MIRA 18:11)

1. Gidrokhimicheskiy institut, Novocherkassk. Submitted December 18, 1961.

KOLESNIKOV, I.S., professor; SEMENOV, A.D., kandidat meditsinskikh nauk, direktor.

Pneumonectomy in pulmonary tuberculosis. Probl.tub. no.3:48-58 My-Je '53. (MLRA 6:7)

1. Leningradskiy tuberkuleznyy institut imeni A.Ya.Shternberga.
(Lungs--Surgery) (Tuberculosis)

KAN,G.S., kandidat meditsinskikh nauk, zaveduyushchiy (Leningrad); SEMENOV, A. D., kandidat meditsinskikh nauk, direktor; CHERNIGOVSKIY, V.N. deystvitel'nyy chlen Akademii meditsinskikh nauk SSSR, nauchnyy rukovoditel'.

Data on role of the nervous system in pathogenesis of tuberculosis. Arkh. pat. 15 no.1:13-21 Ja-F '53. (MLRA 6:5)

1. Eksperimental'nyy otdel Leningradskogo nauchno-issledovatel'skogo tuberkuleznogo instituta (for Kan). 2. Leningradskiy nauchno-issledovatel'skiy tuberkuleznyy institut (for Semenov and Chernigovskiy). 3. Akademiya meditsinskikh nauk SSSR (for Chernigovskiy). (Tuberculosis) (Nervous system)

SHTEYN, L.B. (Leningrad); PEREL'MAN, R.L., professor, zaveduyushchiy; SEMENOV, A.D. dotsent, direktor.

Studies on the active tonus of the lungs with simultaneous bilateral water manometry. Arkh.pat. 15 no.1:45-50 Ja-F '53. (MLRA 6:5)

1. Otdel eksperimental'noy patologii Leningradskogo tuberkuleznogo instituta im.A.Ya. Shternberga (for Perel'man). 2. Leningradskiy tuberkuleznyy institut im. A.Ya. Shternberga (for Semenov). (Lungs)

SEMENOV, A.D. (Reviewer)

"Pulmonary tuberculosis in adults." [Chlen-korrespondent Akademii meditsinskikh nauk SSSR] V.A.Ravich-Shcherbo. Reviewed by A.D.Semenov. Probl. tub. no.4:73-75 Jl-Ag '54. (MLRA 7:11)
(TUBERCULOSIS)
(RAVICH-SHCHERBO, V.A.)

SEMENOV, A.D., professor

Effect of phthivazid on the functional state of the nervous system. Prob.tub.no.4:36-42 Jl-Ag '55. (MLRA 8:10)

1. Direktor Leningradskogo nauchno-issledovatel'skogo instituta tuberkuleza.

(NICOTINIC ACID ISOMERS, ther.use
isoniazid, in tuberc.,eff. on nervous system)
(TUBERCULOSIS, ther.
isoniazid, eff. on nervous system)
(NERVOUS SYSTEM, eff. of drugs on
isoniazid, in ther. of tuberc.)

USSR / Pharmacology and Toxicology. Chemotherapeutic Agents. V-10

Abs Jour : Ref. Zhur - Biologiya, No 17, 1958, No. 80695

Author : Semenov, A. D.
Inst : Not given
Title : On the Influence of Streptomycin on the Vascular Reflexes in Patients with Tuberculosis

Orig Pub : Sov. meditsina, 1957, No 4, 80-83

Abstract : The influence of streptomycin (I) on unconditioned and conditioned vascular reflexes and on reflexes caused by verbal indication of unconditioned stimulators was studied by the method of plethysmography. Cold and pain were used as unconditioned stimulators; light (white, red, green) was used as a conditioned stimulator. For a verbal stimulation, indications were used of corresponding unconditioned stimulators: "it is cold" or "it is painful". Before treatment of I in patients, the development of stagnated

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excitability was observed in the CNS, which developed into persistent vasoconstrictor reactions. Under the influence of treatment with I, the character of the plethysmogram changed sharply. The vascular reflexes in a majority of the patients from stagnate became null, i.e., they disappeared, or paradoxal responses appeared. Consequently, under the influence of I in the CNS, an inhibition state is developed, which changes the character of the vascular reflexes. The effect noted was stable during prolonged therapy with I. No difference in the influence of I on unconditioned verbal or conditioned vascular reflexes were established.

SEMENOV, A.D., professor

Some questions on artificial pneumothorax [with summary in French]. Probl.tub. 35 no.2:38-46 '57. (MIRA 10:6)

1. Iz Leningradskogo nauchno-issledovatel'skogo tuberkuleznogo instituta imeni prof. A.Ya.Shternberga.
(PNEUMOTHORAX, ARTIFICIAL (Rus))

SEMENOV, A.D., prof.

The nervous system and tuberculosis [with summary in French]. Probl. tub. 35 no.7:27-32 '57. (MIRA 11:2)
(TUBERCULOSIS, physiol.
NS)
(NERVOUS SYSTEM, in various dis.
tuberc.)

4

SEMENOV, A.D., prof. AL', G.E., kand.med.nauk

Principles of choice, indications and contraindications for treatment of pulmonary tuberculosis in sanatoria [with summary in French] Probl. tub. 36 no.4:3-7 '58 (MIRA 11:7)

1. Iz organizationno-meitodicheskogo otdela (rukovoditel' M.L. Gol'dfarb) Leningradskogo nauchno-issledovatel'skogo instituta tuberkuleza Ministerstva zdravookhraneniya RSFSR (dir. - prof. A.D. Semenov)
(TUBERCULOSIS, PULMONARY, ther.
sanatorium care, indic. & contraindic (Rus))

SEMENOV, A.D., prof.; KUDRYAVTSEVA, V.I., kand.med.nauk

Evaluation of de Assis tuberculosis vaccination; experimental investigations. Probl.tub. 37 no.6:83-91 '59. (MIRA 13:2)

1. Iz otdela mikrobiologii (nauchnyy rukovoditel' - prof. V.M. Berman) Leningradskogo nauchno-issledovatel'skogo instituta tuberkuleza (direktor - prof. A.D. Semenov).
(TUBERCULOSIS immunol.)
(VACCINES)

SEMENOV, A.D., prof., otv. red.; GOL'DSHTEYN, M.M., prof. red.; ZARNITSKAYA, B.M., red.; ZARNITSKAYA, B.M., starshiy nauchn. sotrudnik, red.; KUZNETSOVA, S.M., red.; RABINOVICH, A.M., prof., red.; CHAYKA, V.V., doktor med. nauk, red.; ZAGHANICHNYY, B., tekhn. red.

[Transactions of the Leningrad Tuberculosis Research Institute; problems in the clinical aspects of tuberculosis] Voprosy kliniki tuberkuleza; trudy instituta. Leningrad, 1960. 272 p. (MIRA 14:5)

1. Leningrad. Leningradskiy nauchno-issledovatel'skiy institut. 2. Rukovoditel' podrostkovogo otdeleniya Leningradskogo gosudarstvennogo nauchno-issledovatel'skogo instituta tuberkuleza (for Goldshteyn). 3. Rukovoditel' fizioterapevticheskogo otdeleniya Leningradskogo gosudarstvennogo nauchno-issledovatel'skogo instituta tuberkuleza (for Zarnitskaya). 4. Rukovoditel' rentgenologicheskogo otdeleniya Leningradskogo gosudarstvennogo nauchno-issledovatel'skogo instituta tuberkuleza (for Rabinovich). 5. Rukovoditel' laboratorii klinicheskoy fiziologii Leningradskogo gosudarstvennogo nauchno-issledovatel'skogo instituta (for Chayka)

(TUBERCULOSIS)

SEMENOV, A.D., prof. (Leningrad)

Immunity in tuberculosis. Sov. med. 24 no. 2:98-108 F '60.
(MIRA 14:2)

(TUBERCULOSIS)

SEMENOV, A. D., prof.

Theory and practice in the control of tuberculosis at its present-day stage. [Trudy] GIDUV no.23:71-78 '60. (MIRA 15:7)

(TUBERCULOSIS--PREVENTION)

SEMENOV, A.D., prof.

State of higher nervous activity in tuberculosis. K izuch.roli nerv.sist.v pat., immun.i lech.tub. no.2:92-102 '61. (MIRA 15:10)

(TUBERCULOSIS) (NERVOUS SYSTEM) (CONDITIONED RESPONSE)

SEMENOV, A.D.; STREPETOVA, T.N.; TURUPANOVA, N.R.; KHARCHEVA, K.A.

Clinical aspect and course of pulmonary tuberculosis in elderly persons. Trudy TSIU 63:30-35 '63. (MIRA 17:9)

1. Kafedra legochnogo tuberkuleza Leningradskogo instituta usovershenstvovaniya vrachey imeni Kirova i Leningradskiy nauchno-issledovatel'skiy institut tuberkuleza.

1. SEMENOV, A. F.

2. USSR (600)

4. Machine-Tractor Stations

7. What hinders better use of machinery. Les. khoz. 6, No. 1, 1953.

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

SOV-91-58-9-18/29

AUTHORS: Semenov, A.F., Engineer; Dymentov, I.A., Engineer

TITLE: Using a Swiss Type Switchboard with an EMS-54 Millisectimer for Checking the Operating Time of Pneumatic Switches (Primeneniye kommutatora shveytsarskogo tipa k millisekundomeru tipa EMS-54 dlya proverki vremeni srabatyvaniya vozdushnykh vyklyuchateley)

PERIODICAL: Energetik, 1958, Nr 9, pp 25-26 (USSR)

ABSTRACT: This switchboard is for use with an EMS-54 milli-timer for checking the operation of pneumatic switches, in order that every time the switch is switched on or off, measurement can be made, thus conserving air. The switchboard consists of two sets of 4 brass strips, superimposed at right angles and insulated from each other. Holes are drilled at the points of intersection to take plugs which effect contact of any two strips at any given point. One set of strips is connected to the pneumatic switch, the other to the timer. The method of testing a pneumatic switch with this device is described. The switchboard is used by the Power Board of the Omsk Sovnarkhoz. There are 3 diagrams.

1. Pressure switches--Test methods 2. Pressure switches--Testing equipment 3. Jacks (Electricity)--Applications

Card 1/1

SEMENOV, A.F., general-leytenant aviatsii, Geroy Sovetskogo Soyuza

Skill in piloting must be raised to a new level. Vest.protivovozd. obor. no.2:32-36 F '61. (MIRA 14:2)
(Air pilots)

SEMENOV, A.G.

Electromanometer with a miniature pressure gauge. Med.prom. 10 no.4:28-31 O-D '56. (MLRA 10:2)

1. Nauchno-issledovatel'skiy institut eksperimental'noy khirurgicheskoy apparatury i instrumentov Ministerstva zdravookhraneniya SSSR.

(MANOMETER)

IVANOVA, L.N.; SEMENOV, A.G.; MUSHEGYAN, S.A.; VYRZHIKOVSKAYA, M.F.

Experiments with a microelectromanometer for measuring intracardiac pressure. Eksper.khir. 2 no.2:43-46 Mr-Ap '57. (MIRA 12:8)

1. Iz Nauchno-issledovatel'skogo instituta eksperimental'noy khirurgicheskoy apparatury i instrumentov (dir. M.G.Anan'yev).

(BLOOD PRESSURE, determ.
intracardiac, exper. microelectromanometry (Rus))

24 (7)

AUTHOR: Semenov, A. G. SOV/48-23-10-37/39

TITLE: The Development of a Series-produced Magnetic Radiospectrograph of Increased Sensitivity of the Type EPR-2 IKhF

PERIODICAL: Izvestiya Akademii nauk SSSR. Seriya fizicheskaya, 1959, Vol 23, Nr 10, pp 1267 - 1268 (USSR)

ABSTRACT: At the Institut khimicheskoy fiziki AN SSSR (Institute of Chemical Physics of the AS USSR) a radiospectrograph of the type EPR-2 was developed in series, which is destined for investigations carried out by the method of paramagnetic electron resonance. Besides increased sensitivity, stable and simple operation of the device were required. A radiospectrograph with double high-frequency modulation of the magnetic field was developed (the block scheme is given by a figure); high frequency modulation was carried out according to a method described by reference 1. The device operates with a cylindrical resonator with H_{011}-oscillations. The maximum power output is of the order of about 100 w. The maximum double amplitude of the h-f field strength is about 12 Oe. The maximum amplification coefficient is 5.10^5, the band width is 10^4 c.

Card 1/2

The Development of a Series-produced Magnetic Radiospectrograph of Increased Sensitivity of the Type EPR-2 IKhF SOV/48-23-10-37/39

At the output of the h-f amplifier a synchronous detector is connected. The mode of operation is briefly described. For the device, which is practically insensitive to mechanical vibrations and variations of the surrounding temperature, the following main characteristics are given: wave length ≈ 3.2 cm; sensitivity limit: 5.10^{-12} Mol diphenyl-picryl hydrazyl (standard); resolving power: 0.25 Oe; recording time: 0.5, 3, and 18 minutes; temperature range (sample): +196 to +200°; supply from mains: 220 v. There are 1 figure and 2 references, 1 of which is Soviet.

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

Card 2/2

5(0) SOV/30-59-3-10/61

AUTHORS: Semenov, A. G., Bubnov, N. N.

TITLE: The New Magnetic Radiospectrometer (Novyy magnitnyy radiospektrometr). Electronic Paramagnetic Resonance in Chemical Investigations (Elektronnyy paramagnitnyy rezonans v khimicheskikh issledovaniyakh)

PERIODICAL: Vestnik Akademii nauk SSSR, 1959, Nr 3, pp 55-58 (USSR)

ABSTRACT: The usual magnetic radiospectrometers are very sensitive to the slightest mechanical oscillations and temperature charges and require tiresome adjustment before each measurement, which renders their application for the solution of various chemical problems very difficult. In order to overcome these difficulties, some types of magnetic radiospectrometers were designed and tested by the Institut khimicheskoy fiziki Akademii nauk SSSR (Institute of Chemical Physics of the Academy of Sciences, USSR). A radiospectrometer with a transmission resonator, automatic adjustment of the frequency of the klystron generator and a high-frequency modulation of the magnetic field proved to be best. It is easily operable, sensitive and, compared to other types, secures reliable work. A block scheme of it is given

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The New Magnetic Radiospectrometer. Electronic Paramagnetic Resonance in Chemical Investigations

in figure 1 and then described in detail. Figure 2 shows the spectrum of the free triphenyl-methyl radical $(C_6H_5)_3C$. Further, the authors describe a number of experiments which were carried out by means of this radiospectrometer and which demonstrated its wide range of applicability in various chemical fields. There are 2 figures and 1 reference.

SOV/120-59-1-23/50

AUTHORS: Semenov, A. G., Bubnov, N. N.

TITLE: An Electron Spin Resonance Spectrometer (Spektrometr dlya nablyudeniya elektronnogo paramagnitnogo rezonansa)

PERIODICAL: Pribory i tekhnika eksperimenta, 1959, Nr 1, pp 92-96 (USSR)

ABSTRACT: The spectrometer is of the double field modulation type, with automatic frequency control (AFC) applied to the klystron. The AFC signal is obtained by applying about 15 mV at 630 kc/s to the reflector of the 3.2 cm klystron; the resulting output signal is amplified and is detected by a phase-sensitive detector, and thus gives a control signal, which is used to tune the klystron automatically over a range of about 60 Mc/s. The second field modulation (at 975 kc/s) is produced by using a coil carrying about 40 A outside the cavity, which has 2.5 mm slots in it; these slots reduce the Q from about 10 000 to about 8000. The field produced by this coil at the centre of the cavity is about 2 oersted. The sensitivity is about 4×10^{-10} mole of diphenylpicrylhydrazyl at 77°K. Fig 1 shows the block diagram; Fig 2 is a general view of the instrument, Fig 3 shows the cavity and 975 kc/s

Card 1/2

An Electron Spin Resonance Spectrometer

cable, Fig 4 shows the oscillator circuit, and Fig 5 shows the circuit of the amplifiers used to handle and detect the high-frequency signals. There are 5 figures and 2 references, of which 1 is Soviet and 1 English.

ASSOCIATION: Institut khimicheskoy fiziki AN SSSR (Institute of Chemical Physics, Academy of Sciences, USSR)

SUBMITTED: January 24, 1958.

Card 2/2

86745

S/120/60/000/006/020/045
E032/E314

5.5800(1043, 1229, 1273)

AUTHORS: Molin, Yu.N., Koritskiy, A.T., Semenov, A.G., Buben, N.Ya. and Shamshev, V.N.

TITLE: Apparatus for the Observation of E.P.R. Spectra of Solids During Their Irradiation by Fast Electrons

PERIODICAL: Pribory i tekhnika eksperimenta, 1960, No. 6, pp. 73 - 77

TEXT: The electron paramagnetic resonance method (E.P.R.) is being widely used to study the properties of radicals in materials subject to ionising radiation. Usually, such studies are carried out in two stages. In the first stage, the sample is irradiated and in the second the E.P.R. spectrum is recorded. This method is not always convenient because it cannot be used to determine short-period processes taking place in the specimen. In order to remove this disadvantage the present authors have designed an apparatus in which the specimen can be irradiated in situ in the E.P.R. spectrometer. The E.P.R. spectrometer, employing a high-frequency modulation of the magnetic field and working on a wavelength of about 3.2 cm, was described in detail by Semenov and Bubnov in Ref. 5. The

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S/120/60/000/006/020/045
E032/E314

Apparatus for the Observation of E.P.R. Spectra of Solids During Their Irradiation by Fast Electrons

absorbing cell in the spectrometer is in the form of an H_{012} rectangular resonator with a Q-factor of about 1 000. The source of the ionising radiation was the electron accelerator of the Institute of Chemical Physics of the AS USSR, which gives electrons of up to 2 MeV in energy. Fig. 1 shows the method of introducing the electron beam into the resonator of the spectrometer. The electrons are introduced through a cylindrical channel in one of the pole pieces of the magnet so that they enter along the lines of force. The presence of the channel, whose diameter on the pole-piece face is 6 mm, leads to a deterioration in the uniformity of the magnetic field. The nonuniformity at the specimen was found to be 0.8 Oe/cm in the direction of the axis of the channel but very small in the perpendicular direction. Since usually the E.P.R. line width in solids is of the order of 10 Oe, such a nonuniformity does not reduce the resolution of the spectrometer when the thickness of the specimen is of the

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Apparatus for the Observation of E.P.R. Spectra of Solids During Their Irradiation by Fast Electrons

order of 1 or 2 mm. The entire apparatus is placed in a special enclosure which screens it from X-rays. In the region in which the radiation strikes the specimen, there is only the magnet, the resonator and the high-frequency field modulator. The constant magnetic field and the modulation fields are adjusted by remote control. The power is introduced into the resonator through rectangular waveguides having a total length of about 25 m. These had practically no effect on the sensitivity and stability of the spectrometer. The electron-beam current was monitored by an ionisation chamber (5 in Fig. 1) which was placed above the specimen 8 . Additional magnets were provided for controlling the beam. The ionisation chamber was in the form of two foils, each 5 μ thick, and separated by a gap of 5 mm. Ions produced in the gap between the foils are extracted by an electric field derived from a storage battery of 160 V. The dose delivered to the specimen was determined from the formula:

$$D = AIt$$

S/120/60/000/006/020/045
E032/E514

Apparatus for the Observation of E.P.R. Spectra of Solids During Their Irradiation by Fast Electrons

where I is the electron current in μA at the beam shutter 4 (Fig. 1),
t is the time of irradiation and
A is a constant for the given substance.

The latter constant is given by:

$$A = \frac{dE}{d\xi} n \frac{j}{I} \quad ;$$

where $dE/d\xi$ is the rate of loss of energy in the irradiated specimen in $eV/g/cm^2$,
n is the number of electrons in 1 μA of beam current,
j/I is the ratio of current densities at the beam shutter and at the specimen.

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86745

S/120/60/000/006/020/045
E032/E314

Apparatus for the Observation of E.P.R. Spectra of Solids During Their Irradiation by Fast Electrons

The constant A was determined in special experiments in which the specimen was replaced by special probes having the same dimensions as the specimen. In the measurements reported in the present paper the dose rate was varied between 3×10^6 and 3×10^3 rad/sec. The temperature of the specimen was varied by blowing a stream of nitrogen from a dewar filled with liquid nitrogen. In this way, any temperature between -150 and +150 °C can be obtained to within ± 1 °C. The specimens were in the form of discs 3 or 5 mm in diameter and 2 mm thick. The discs were placed in the resonator at the end of a thermocouple. Acknowledgments are expressed to V.V. Voyevodskiy for his interest in the present work.
There are 7 figures and 7 references: 6 Soviet and 1 English.

ASSOCIATION: Institut khimicheskoy fiziki AN SSSR
(Institute of Chemical Physics of the AS USSR)

SUBMITTED: November 12, 1959

Card 5/5

31755
S/058/61/000/011/006/025
A058/A101

5.5800 (1273, 1274, 1282)

AUTHORS: Semenov, A.G., Chibrikin, V.M.

TITLE: Concerning the limit frequency of a superheterodyne electron paramagnetic resonance spectrometer

PERIODICAL: Referativnyy zhurnal. Fizika, no. 11, 1961, 129, abstract 11V255 (V sb. "Paramagnitn. rezonans", Kazan', Kazansk. un-t, 1960, 150 - 152)

TEXT: Analysis of the causes limiting the sensitivity of superheterodyne electron paramagnetic resonance spectrometers (low-frequency fluctuation of the conversion resistance of the crystal mixer, the reciprocal frequency fluctuation of the principal and the heterodyne klystron and the frequency fluctuation of the principal klystron) shows that for the sensitivity of the spectrometer to approximate the theoretically possible sensitivity, it is necessary to decrease the effective relative frequency fluctuation $\delta\nu/\nu$ of the principal klystron, i.e. to replace the reflex klystron by a more stable source of microwave oscillations. For eliminating the effect of reciprocal frequency fluctuation it is suggested that instead of using a separate heterodyne klystron, a part of the energy of the

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S/058/61/000/011/006/025
A058/A101

Concerning the limit frequency ...

principal klystron be utilized by using a balanced modulator and separating outside-frequency oscillations at its input.

Yu. Yablokov

[Abstracter's note: Complete translation]

Card 2/2

SEMENOV, A. G.

PHASE I BOOK EXPLOITATION SOV/6495

Blyumenfel'd, Lev Aleksandrovich, Vladislav Vladislavovich Voyevodskiy, and Anatoliy Grigor'yevich Semenov

Primeneniye elektronnogo paramagnitnogo rezonansa v khimii (Use of Electron Paramagnetic Resonance in Chemistry) Novosibirsk, Izd-vo Sibirskogo Otdeleniya AN SSSR 1962. 239 p. 10,000 copies printed.

Sponsoring Agency: Akademiya nauk SSSR. Sibirskoye otdeleniye. Institut khimicheskoy kinetiki i goreniya So. AN SSSR. Institut khimicheskoy fiziki AN SSSR.

Ed.: T. M. Nazaryants; Tech. Ed.: O. A. Lokshina.

PURPOSE: This book is intended for scientists using Electron Paramagnetic Resonance technique in chemistry as a research tool.

COVERAGE: This advanced textbook covers the fundamentals of EPR technique in chemical research. It is based on Soviet and non-Soviet literature and on

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PART I. GENERAL ORIGINS OF THE EPR METHOD

PART II. APPLICATION OF EPR FOR SOLVING CHEMICAL PROBLEMS

SEMENOV, A. G.

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the work of the authors. The first part of the book discusses questions of experimental technique, theory of the method, and analysis of experimental data and the principles of building EPR spectrometers, particularly the serial-type EPR-2 spectrometer used in the USSR. The modern theory of EPR method and the theoretical physics involved, i.e. group theory, quantum mechanics, etc., are presented. The second part of the book deals with the application of EPR technique in solving a series of problems in modern chemical reactions and the study of intermediate compounds and elemental processes. This book is not a complete review of the field, but is restricted to the illustration of concrete examples based on the authors' contributions in this field and to conclusions generalized from these works. The book reportedly does not overlap the existing monographs on EPR. There are 309 references, 121 Soviet and 188 non-Soviet.

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AVAILABLE: Library of Congress

SUBJECT: Chemistry NI/zp/ec 3-9-64.

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S/120/62/000/005/001/036
E032/E514

AUTHOR: Semenov, A.G.

TITLE: Electron paramagnetic resonance spectrometers (A review)

PERIODICAL: Pribory i tekhnika eksperimenta, no.5, 1962, 5-18

TEXT: A brief review covering thirty papers published between 1944 and 1961 (15 Soviet-bloc references). The subject is reviewed under the following headings: 1) principles of construction of modern EPR spectrometers; 2) spectrometer with direct detection, 3) superheterodyne spectrometers; 4)conclusions. It is noted that the most widely used Soviet EPR spectrometer is the mass-produced РЭ1301 (RE1301) spectrometer (direct detection) which was developed in 1957-1958 at the Institut khimicheskoy fiziki AN SSSR (Institute of Chemical Physics AS USSR) which produced a small series of such instruments under the code designation ЭПР-2 (EPR-2). The mass-produced version was prepared at the Special Design Bureau (SKB) for analytical instrument construction of the AS USSR. The sensitivity of this spectrometer is comparable with recent versions of the

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ACC NR: AP6032933 SOURCE CODE: UR/0288/66/000/002/0163/0165

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B

AUTHOR: Semenov, A. G.; Khmelinskiy, V. Ye.

ORG: Institute of Chemical Kinetics and Combustion, Siberian Department, AN SSSR, Novosibirsk (Institut khimicheskoy kinetiki i goreniya Sibirskogo otdeleniya AN SSSR)

TITLE: A high-speed waveguide ferrite switch 15

SOURCE: AN SSSR. Sibirskoye otdeleniye. Seriya tekhnicheskikh nauk, no. 2, 1966, 163-165

TOPIC TAGS: ferrite switch, switching circuit

ABSTRACT: A waveguide ferrite switch of simple design is described in which the ferrite element is placed in a coaxial stub connected in parallel to the main waveguide (see Fig. 1). As a result, the length of the control winding is minimal, a factor which, other conditions being equal, permits a minimum response time. A coaxial stub consisting of inner conductor 7 and outer screen 5 is connected in parallel. The lower end of the stub is short-circuited and the upper end provides a closed circuit through shf choke 4 for direct current only. A control current pulse passes through coaxial joint 2 through the inner conductor and magnetizes ferrite 6. This causes the electric length of the stub to change for shf oscillations in the waveguide, and, as a result, the conditions under which the shf oscillations are propagated are also altered. The switch can be of the normally open or normally

Card 1/2 UDC: 621.316.53+621.372.8

SEMENOV, A. G.

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USSR/Engineering Jan 49
Cutting Torches
Welding

"Flexible Guides For Semiautomatic Gas-Torch Cutting Machines," A. G. Semenov, Engr, Kaliningrad Shipbldg Works, 3/4 p

"Avtogennoye Delo" No 1

Reveals that use of flexible, semiautomatic gas-torch cutting machines, constructed by G. I. Matskevich, made it possible to obtain a straight cut of any length. Accuracy is almost equal to that obtained by automatic machines.

42/49T15

USSR/Engineering (Cmtd) Jan 49

which is explained by its flexibility. Describes construction, and claims that use of this semiautomatic machine enabled the development of extensive automatic welding. Gives two construction tables.

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Flexible Guides for Automatic Welding Machines. A. G. Semenov. (Avtogennoe Delo, 1949, No. 8, pp. 31-32). (In Russian). The flexible drives described are made of "rubberized" cotton paper belting strips 20 mm. wide and 8 mm. thick, attached to a base of the same material and thickness. S. K.

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AUTHOR INDEX

SEMENOV, A. G.

Control of Automatic Flame-Cutting Machines. A. G. Semenov. (*Avtog. Delo*, 1953, (3), 26-27). [In Russian]. The causes of crooked cutting by automatic flame cutting machines are briefly considered and a simple procedure for avoiding this is described.—S. K.