

ACCESSION NR: AT4019063

number of neutrons captured by the boron after scattering in the hydrogen. Since the scattering sections of the neutrons by the hydrogen and carbon nuclei are large in comparison with the capture sections, and the capture section of the boron nuclei is great in comparison with the scattering section, it may be assumed that the hydrogen and carbon nuclei only scatter the neutrons, while the boron nuclei only absorb them. At the time, scattering and absorption by the oxygen nuclei may be disregarded, since the full section of the oxygen is small in comparison with the sections of hydrogen, carbon and boron. In both sections of the paper, the authors discuss the possible use of electronic computers in carrying out the calculations by the formulas derived. "The authors express thanks to V. N. Ignatenko for carrying out the calculations". Orig. art. has: 9 figures and 17 formulas.

ASSOCIATION: None

SUBMITTED: 14Aug63

DATE ACQ: 27Feb64

ENCL: 00

SUB CODE: NP

NO REF SOV: 003

OTHER: 005

Cord 4/4

ACCESSION NR: AR4038006

3/0283/64/000/003/0011/0011

SOURCE: Ref. Zh. Yadernyye reaktory\*. Otdel'nyy vy'pusk, Abs. 3.50.51.

AUTHOR: Avayev, V. N.; Vasil'yev, G. A.; Veselkin, A. P.; Yegorov, Yu. A.; Zhirnov, A. D.; Kucheryayev, V. A.; Orlov, Yu. V.; Puzov, Ye. A.; Pankrat'yev, Yu. V.

TITLE: Shielding properties of certain types of concrete

CITED SOURCE: Sb. Vopr. fiz. sashchity\* reaktorov. M., Gosatomizdat, 1963, 193-198

TOPIC TAGS: radiation, concrete, neutron, gamma radiation, shielding, shield, radiation shielding, radiation shield, cement

TRANSLATION: Investigations that were conducted showed that heavy concrete gives more effective protection against neutrons and gamma-radiation. The addition of magnesium to the concrete somewhat increases the shielding properties as compared to concrete of Portland cement in the same density. The introduction of Boron compounds into the concrete greatly reduces the flow of thermal neutrons.

DATE ACQ: 17Apr64

SUB CODE: NP

ENCL: 00

Card 1/1

ACCESSION NR: AT4019067

s/0000/63/000/000/0312/0318

AUTHOR: Avayev, V. N.; Yegorov, Yu. A.; Orlov, Yu. V.

TITLE: Gamma pair spectrometer

SOURCE: Voprosy\* fiziki zashchity\* reaktorov; sbornik statey (Problems in physics of reactor shielding; collection of articles). Moscow, Gosatomizdat, 1963, 312-318

TOPIC TAGS: nuclear reactor, reactor shielding, radiation dosimetry, spectrometer, Gamma spectrometer, Gamma pair spectrometer, scintillation pair spectrometer, electron position pair, annihilation radiation

ABSTRACT: The authors describe a scintillation-type gamma-pair spectrometer which is being successfully used to measure the deformation of the  $\gamma$ -spectra of a nuclear reactor in the shielding in the region of  $\gamma$ -quanta energies greater than 1.5 Mev and for the study of capture  $\gamma$ -radiation. When the energy of the gamma-quanta is absorbed by the material of the scintillator, annihilation  $\gamma$ -radiation is generated as a result of the formation of the electron - positron pair, resulting in two  $\gamma$ -quanta, each with an energy of 0.51 Mev. If the dimensions of the scintillator are small, the annihilation  $\gamma$ -quanta leave it. In the scintillator, meanwhile, energy  $E_{\gamma} = E_{\gamma 0} - 1.02$  Mev is absorbed. This circumstance makes it

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possible to construct a scintillation pair spectrometer which will compare favorably with spectrometers of other types. The spectrometer circuit is so designed that only the amplitude of those pulses is measured which are caused by the absorption of  $\gamma$ -quanta energy resulting from the process of pair formation. For this purpose, the spectrometer sensor includes, in addition to the scintillator radiated by the  $\gamma$ -quanta stream of the source, two supplementary scintillators to record the annihilation  $\gamma'$ -quanta. Further theoretical considerations are explained in the article. The advantages of a scintillation gamma pair spectrometer distinguish it favorably from  $\gamma$ -spectrometers of other types and particularly from single-scintillator spectrometers, even if the scintillator is large in size. The difficulties generally encountered in deciphering the results of measurements of complex  $\gamma$ -spectra by means of a spectrometer with a scintillator are discussed in some detail. The point is emphasized that the pair spectrometer is practically insensitive to fast neutrons. This important advantage of the scintillation pair spectrometer is particularly valuable, if the spectrometer is employed to measure  $\gamma$ -spectra in the presence of a neutron background - for example, in nuclear reactors. Two defects are also mentioned: 1) the efficiency of the spectrometer is not great, but in order of magnitude lies between the efficiency of a single-scintillator spectrometer and a Compton spectrometer; 2) the electronic circuitry is extremely complex. A block diagram of the scintillation gamma pair spectro-

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meter discussed in this article may be seen in the Enclosure. The principle of operation is explained thoroughly in the article. As a central sensor, a spectrometric photomultiplier, type FEU-42, has been used, mounted on which there is a spectrometric NaI(Tl) crystal, 40 mm in both diameter and height. In the supplementary sensors, type FEU-43 photomultipliers, with CsI(Tl) crystals, 60 mm in diameter and 30 mm in height, have been used. The amplitude analyzer employed is a 100-channel analyzer, type AI-100-1, while standard single-channel analyzers, type AADO-1, have been placed in the control channel of the spectrometer for sampling pulses of specific amplitude. Results of various tests conducted with the spectrometer are presented and evaluated in the text. In particular, a test of the sensitivity of the gamma pair spectrometer to neutrons showed the following: 1) In the energy region of  $\gamma$ -quanta approximately less than 2.5 Mev, some distortion of the gamma-spectrum is possible (however, not more than 10%) which can be eliminated by means of additional measurements with a 100-mm thick bismuth filter; 2) If the ratio of neutron and gamma-quanta streams is approximately equal to unity, practically no distortions of the gamma-spectrum are observed; 3) In the case of a gamma-quanta energy value above 2.5 Mev, distortions of the  $\gamma$ -spectrum by the neutron background are likewise not observed. A formula is given for the computation of the efficiency of the spectrometer for a quantitative estimate of the ratios in the gamma-spectrum. Orig. art. has: 7 figures.

ACCESSION NR: AT4019067

ASSOCIATION: None .

SUBMITTED: 14Aug63

SUB CODE: NP

DATE ACQ: 27Feb64

NO REF SOV: 006

ENCL: 01

OTHER: 001

Card

4/5

ACCESSION NR: AT4019067

ENCLOSURE: 01

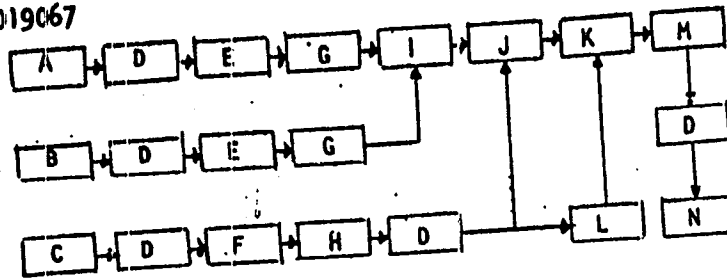


Fig. 1. Block diagram of the  $\gamma$ -pair spectrometer:  
A - central sensor of the spectrometer; B and C - supplementary lateral sensors; D - cathode followers; E - single-channel amplitude analyzers; F - linear pulse amplifier; G - shaping blocks; H and L - delay lines; I and J - coincidence circuits; K - electronic key; M - discriminator-limiter; N - 100-channel amplitude analyzer

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L 1159-66 EWT(m)/EPI(n)-2/EWA(h)

ACCESSION NR: AT5023145

UR/2892/65/000/004/0015/0030

AUTHOR: Avayev, V. N.; Yegorov, Yu. A.

44, 55

44, 55

19, 44, 55

68  
62  
B+1

TITLE: Method for measurement of neutron spectra in the epithermal energy region using resonance indicators

SOURCE: Moscow. Inzhenerno-fizicheskiy institut. Voprosy dozimetrii i zashchity of izlucheniya, no. 4, 1965, 15-30

44, 55

TOPIC TAGS: neutron spectrum, nuclear resonance, radiation dosimetry, cobalt, aluminum, tungsten, indium, gold

ABSTRACT: In the present work, 13 indicators were selected making possible a calculation of the contribution of the  $1/v$  neutron spectra in the energy interval from 0.46 electron volts to 6 thousand electron volts. There is considered the possibility of determining unknown spectra by comparison with the  $1/E$  spectrum. The absolute values of the neutron flux are found by measurements with gold indicators whose activity is determined absolutely. The article gives a mathematical description of a method for measuring the neutron spectrum, taking into  
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ACCESSION NR: AT5023145

account the  $1/v$  contribution. It is claimed that the method is simpler than the three indicator method, and that it can be employed in biological shielding studies. Characteristics of the indicators used are given in tabular form. Experimental results show that, for indicators made of cobalt, aluminum, tungsten, indium, and gold, the contributions of secondary resonances to total activity are small. For all other indicators, the contributions are considerable and must be taken into account in calculations. Determinations of the form of a unknown spectrum from measurements of the activity of resonance indicators is carried out by the method of successive approximations. Experiments were also made on applying the method of resonance indicators to determine the neutron spectrum in strongly absorbing media. Values obtained for the neutron flux are stated to be in good agreement with calculated values. The described method for determination of the form of the spectrum of epithermal neutrons is claimed to be applicable over the energy interval from 0.46 electron volts to 6 thousand electron volts (when the flux with  $E=0.46$  electron volts in the spectrum being investigated is 30-40 times less than in the  $1/E$  spectrum) and in the interval from 1.46 electron volts to 6 thousand electron volts (when the flux with  $E = 1.46$  electron volts and the  $1/E$

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L. 1159-66

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spectra differ by  $10^3$ - $10^4$  times).<sup>1153</sup> "The authors express their thanks to  
A. I. Vasil'yev and G. G. Moiseyev for help in carrying out the experiments."  
Orig. art. has: 11 formulas, 1 figure and 3 tables

ASSOCIATION: None

SUBMITTED: 00

ENCL: 00

SUB CODE: NP

NR REF SOV: 005

OTHER: 005

Card 3/3 *DP*

L 2282-66 EWT(m)/EPT(n)-2/EMA(h) DM

ACCESSION NR: AP5016926

24  
18  
B

UR/0089/65/018/006/0584/0588  
539.125.52

AUTHOR: Avayev, V. N.

19

TITLE: On the form of the spectrum of moderated neutrons in ab-  
sorbing media

SOURCE: Atomnaya energiya, v. 18, no. 6, 1965, 584-588

TOPIC TAGS: neutron spectrum, neutron energy distribution, nuclear  
fission, nuclear reactor moderator, neutron absorption

ABSTRACT: An approximate method is considered for solving the kinetic  
equation for an infinite homogeneous medium with uniformly distributed  
sources, with  $\Sigma_s = \text{const}$  and  $\Sigma_c E^{-1/2}$  ( $\Sigma_s$  -- scattering cross section,  
 $\Sigma_c$  -- capture cross section,  $E$  -- energy). A simple analytic expres-  
sion for determining the form of the spectrum is derived on the basis  
of this solution of the kinetic equation and is compared with experi-  
mental data. The experimental data consisted of the determination of

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ACCESSION NR: AP5016926

6

the spectral distribution of neutrons in a water-water research reactor, with the form of the neutron spectrum in the energy region from 0.46 eV to 6 keV measured by means of resonant indicators. The theoretical results were also compared with experimental data on the spectral distributions in iron and in a mixture of iron with polyethylene and boron, as well as in a mixture of graphite with boron and a mixture of iron with boron carbide. In all cases the stationary form of the spectrum agreed within the limits of experimental errors with the theoretical results. The author thanks Yu. A. Yegorov for help with the work, M. Ye. Netecha, A. V. Nikitin and Yu. V. Orlov for a useful discussion, and A. I. Vas. Ilyev and G. G. Molisev for help during the experiments. Orig. art. has: 1 figure and 17 formulas.

ASSOCIATION: None

SUBMITTED: 13May64

NR REF SOV: 002

ENCL: 00

SUB CODE: NP

OTHER: 003

Card 2/2 DP

Avayev, V.V.

58

5/032/60/026/04/40/046  
B010/8006

AUTHORS: 1) Ivanov, K.A., 2) Konstantinov, V.A., 3) Ostapenko, Ye.P.,  
4) Avayev, V.V., 5) Mokhov, M.V., 6) Medvedev, V.P.,  
7) Litugina, N.V.

TITLE: News in Brief

PERIODICAL: *Lavoiskaya laboratoriya*, 1960, Vol. 26, No. 4, pp. 504-506

TEXT: 1) The author reports on the development of X-ray apparatus for measuring stresses of first order in welded designs. The apparatus (Fig., photograph) comprises a switchboard, high voltage transformer, X-ray tube (in a casing), a stand for the latter, a chamber, and mechanisms for vibrating and rotating the specimen. P.M. Lebedev and P.V. Shepelev collaborated in designing the chamber and the stand. A brief description of the apparatus is given. 2) The author recommends the use of an attachment (Fig.) for taking photographs of near-crystalline specimens by the *I-FROG camera*. The specimen which is fixed by a holder, is shifted by means of a cam which has the shape of opposite Archimedean spirals. Cam rotation shifts the specimen by  $\sin^2 \alpha$ , where  $\alpha$  = angle

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of specimen displacement vertical to the incident X-ray. 3) The authors describe a dismantlable vacuum tube (Fig.) for X-ray structural analysis. The tube casing has three openings for the X-rays and one for evacuation. The copper anode has a titanium mirror, the construction of which is described. 4) The author briefly describes a simple device (Fig., photograph) for lowering the chamber of the *ISP-22 quartz spectrograph*. 5) The authors describe a simple apparatus for sampling gas under reduced pressure. The apparatus (Fig., diagram) consists of two absorbers, a rheometer, and a vacuum pump. A short explanation of the diagram is given. 6) The author discusses the application of somewhat modified Taylor condensers for investigating rectification processes of ternary systems in the distillates of which demixing occurs. The mode of operation of the condensers is described by means of a diagram (Fig.). There are 6 figures and 1 reference.

ASSOCIATION: 6) Leningradskiy gosudarstvennyy universitet (Leningrad State University)

Card 2/2

AVAYEVA, A. F.

Dissertation: "Agricultural Economy of New Zealand." Cand Geog Sci, Leningrad  
State Pedagogical Inst, Leningrad, 1953. (Referativnyy Zhurnal--Geologiya/  
Geografiya, Moscow, Aug 54)

SO: SUM 393, 28 Feb 1955

AVAYEVA, S. M.

155T41

USSR/Medicine - Protein Synthesis  
Albumin Synthesis

Dec 49

"The Problem of Synthesis of Protein," S. M. Avayeva, 10 pp

"Priroda" No 12

Presents general summary of work done in the synthesis of protein. Refers to work done by E. Fisher (German), and Zelinskiy and V. S. Sadikov (Russian). Amply illustrated with complex chemical formulas depicting some simpler aspects of protein synthesis.

155T41

HVHYEVH, S.M.

USSR

✓ Synthesis and reactions of oxazolones. M. M. Bo yink and S. M. Avayva. *Uchenye Zapiski Kazansk. Gosudarst. Univ. im. M. V. Lomonosova* No. 1.2, *Org. Khim.* No. 7, 248-49 (1950).—Treatment of glycine in *N* NaOH with *p*-C<sub>6</sub>H<sub>4</sub>NC<sub>6</sub>H<sub>4</sub>COCl gave 70% *p*-nitrohippuric acid (1), m. 120°. Heating 1.70 g. hippuric acid with 10 ml. H<sub>2</sub>O on a steam bath gave, after removal of excess volatile materials in vacuo, 73.1% 2-phenyl-5-oxazolone, m. 92°. Similarly 1 gave 66% 2-(*p*-nitrophenyl)-5-oxazolone, m. 112-113°. Heating 2.7 g. 3,5-dinitrohippuric acid with 10 ml. Ac<sub>2</sub>O as above gave 3.51 g. mixed acetic 3,5-dinitrohippuric anhydride, m. 66° to 104° in various runs; heated with EtOH it yields EtOAc. 2-Phenyl-5-oxazolone is 83% hydrolyzed after 30 min. in aq. Me<sub>2</sub>CO at room temp.; the 2-(*p*-nitrophenyl) analog is 100% hydrolyzed in 23 min., while the mixed anhydride is 100% hydrolyzed in about 1.25 hr. Stirring 1 g. *p*-nitrohippuric acid with 1.42 ml. BaH in 2 g. Ac<sub>2</sub>O and 0.38 g. NaOAc 2 hrs. gave 83% 2-(*p*-nitrophenyl)-1-benzylidene-5-oxazolone, m. 206°, slowly hydrolyzed under the above conditions. Similarly was obtained 50-75% 3,5-dinitrophenyl-1-benzylidene-5-oxazolone, m. 239° (decompt.), whose half-life in aq. Me<sub>2</sub>CO is 4.3 hrs. 2-Phenyl-5-oxazolone and BaH gave 30% 2-phenyl-1-benzylidene-5-oxazolone, m. 161°, which is not hydrolyzed under above conditions. When the mixed anhydride (above) is treated with BaH there is slowly formed 14% 2-(3,5-dinitrophenyl)-1-benzylidene-5-oxazolone, m. 239°, similar reaction in Ac<sub>2</sub>O-NaOAc gave 50% yield. Refluxing glycine with 2-phenyl-5-oxazolone in Et<sub>2</sub>O 3 hrs. gave 51% hippuryglycolic acid, m. 140-1°. Similarly was obtained 73% *p*-nitrohippuric acid, m. 170-1°. Heating *N*-benzoylphenylserine with 2-phenyl-5-oxazolone in Me<sub>2</sub>CO 6 hrs. gave hippuric acid and 2-phenyl-1-benzylidene-5-oxazolone. Heating 2.1 g. *p*-nitrohippurate with 0.9 g. NaOAc and 4 ml. Ac<sub>2</sub>O 1.5 hrs. at 110° gave *p*-O<sub>2</sub>NC<sub>6</sub>H<sub>4</sub>CO<sub>2</sub>H. Stirring 3,5-dinitrohippuric acid (1 g.) with 1.7 ml. Ac<sub>2</sub>O, 0.3 g. NaOAc and 2 ml. Me<sub>2</sub>CO gave 3,5-dinitrohippuric acid.  
G. M. Kosolapoff



AVAYEVA, S. M.

AVAYEVA, S. M. - "Synthesis, Properties, and Reciprocal Conversions of  
N-Peptides, O-Peptides, and O, N-Serine Peptides." Sub 28 Nov 52,  
Moscow Order of Lenin State U imeni M. V. Lomonosov. (Dissertation  
for the Degree of Candidate in Chemical Sciences).

SO: Vechernaya Moskva January-December 1952

BOTVINIK, M. M.

AVAYEVA, S. M.

MISTRYUKOV, E. A.

Amino Acids

"Synthesis and Reactions of N-aminoacyl Derivatives of Ethanolamines"  
Dokl. AN, SSSR 82, No 5, 1952

Laboratoriya Khimii Belka Akad. H. D. Zelinskogo Moskovskogo  
Gosudarstvennogo Universiteta im. M. V. Lomonosova Recd. 26 Nov 1951

SO: Monthly List of Russian Accessions, Library of Congress, July 1952, UNCL

CA

AVA TEMA, 3.11.

11-A

Hydrolysis of *O*-acylaminoacyl derivatives of serine (*O*-peptides) by enzymes. M. M. Botvink and S. M. Avucva. *Doklady Akad. Nauk S.S.S.R.* 84, 951-5 (1952). --Hydrolysis by pancreatic and cryst. trypsin of the following *O*-peptides was studied by following the variation of pH (with periodic adjustment of pH by addn. of NaOH). The substrates were:  $AcNHCH(CH_2Ph)CO_2CH_2CH(CO_2Et)NHCOCH(CH_2Ph)NHAc$  (I) (m. 103-5°);  $H_2NCH(CH_2Ph)CO_2CH_2CH(NHCOPh)CO_2Et$  (II) (m. 171°);  $o-C_6H_4CO_2NCH_2CO_2CH(CH_2CO_2Et)NHCOCH_2N(CO_2C_6H_5)_2$  (III) (m. 171°);  $H_2NCH(CH_2CO_2CH_2CH(CO_2Et)NHCOPh$  (IV) (m. 120°);  $H_2NCH(CH_2Ph)CO_2CH_2CH(CO_2Et)NH_2$  (V) (m. 152°). The *O*-peptides of serine (I, II) are readily cleaved at the ester link with the rates of cleavage of the enzymes being about equal. The results, given graphically, indicate some 40% cleavage in the 1st hr. The cleavage of these products by alkali is accelerated by a rise in pH; thus II is cleaved 5% in 200 min. at pH 8 and 25% in but 60 min. at pH 10. IV, V, III, and *Et ester of benzoylserine* are unchanged in 3 hrs. by either the enzymes or alkali. The enzymes cleave only the ester link between the HO group of serine and under conditions of existence of free CO<sub>2</sub>H group in the hydroxyamino acid. G. M. Kosolapoff

Analysis of *N*-benzoyl-L-serine. *M. M. Borzhukov* (Moscow State Univ., 1955).—Serine (5.25 g.) in 2-phenyl-1-benzylidene-2-oxazolin-3-one in 45 ml. Me<sub>2</sub>CO was shaken 3 hrs., filtered and the filtrate was evapd. The oil solidified on standing and after treatment with hot CCl<sub>4</sub> was identified as PhC(=O)NHCH<sub>2</sub>CH(NHCOCH<sub>2</sub>CH<sub>2</sub>Ph)CO<sub>2</sub>H, m. 119° (from diethyl ether) (cf. Bergmann and Mitsunobu, C.A. 72, 426). The solid residue obtained by filtration was taken up in abs. EtOH, filtered, and the filtrate evapd. to dryness, yielding HO<sub>2</sub>CCH(NHCOCH<sub>2</sub>CH<sub>2</sub>Ph)CO<sub>2</sub>H, m. 171° (from EtOH-EtOAc and petr. ether). Hydrogenation over Pd black gave *N*-benzoyl-L-phenylalanine, m. 103-5°, and 95% *N*-(acetyl-3-phenylalanine)serine, m. 70-3°. Heating 0.21 g. methyl-2-oxazolin-3-one in abs. Me<sub>2</sub>CO 3 hrs. at 65-70° and 3 more hrs. in vacuo, treating with PhNH<sub>2</sub> and heating 6 min. to 70-80° gave a solid mass of 0.3 g. PhC(=O)NHCH<sub>2</sub>CH(NHCOCH<sub>2</sub>CH<sub>2</sub>Ph)CO<sub>2</sub>H, m. 227° (from CCl<sub>4</sub>); the mother liquor treated with PhNH<sub>2</sub> and HCl yielded I, indicating that the desired reaction failed to take place. Heating 3 g. I with 3 g. Me<sub>2</sub>C(NHCH<sub>2</sub>CO)COCl in CCl<sub>4</sub> 3 hrs. at 45-55°, filtering, and evapd. gave an oil which, taken up in EtOH and slowly dilut. with H<sub>2</sub>O, yielded 0.5 g. *N*-(benzoyl-3-phenylalanine)serine, Et. ester, needles, m. 118°. It is hydrolyzed by refluxing 3 hrs. with 0.02*N* NaOH. Refining I, with benzylamine (II) in dioxane with 1.5 g. 2-phenyl-1-benzylidene-2-oxazolin-3-one in CHCl<sub>3</sub> 6 hrs. gave, after evapn. and soln. in CCl<sub>4</sub>, a ppt. of 0.87 g. II,

indicating failure of the reaction. The acyl chloride from 4 g. PhC(=O)CH<sub>2</sub>CH(NHCH<sub>2</sub>CO)Cl refluxed with 3 g. II in CHCl<sub>3</sub>-dioxane 6 hrs. gave, after evapn. and soln. in abs. CCl<sub>4</sub>, a ppt. of 2 g. *O*-(benzoyl-3-phenylalanine)-*N*-benzoylserine, m. 171° (from EtOH-CHCl<sub>3</sub>-CH<sub>2</sub>Cl). Serine iso-Pr ester-HCl (1.38 g.) and 3.6 g. *o*-C<sub>6</sub>H<sub>4</sub>(CO)<sub>2</sub>NCH<sub>2</sub>COCl heated in dioxane at 100-5° until HCl evolution ceased, gave, after evapn. in vacuo, soln. in 8 ml. dioxane, followed by ligroin, 2.7 g. (69%) *N*,*O*-bis(benzoyl-3-phenylalanine)serine iso-Pr ester, C<sub>22</sub>H<sub>28</sub>N<sub>2</sub>O<sub>6</sub>, m. 170-1° (from EtOH-dioxane). II esterified with MeOH under the usual conditions and the crude Me ester treated with MeNH<sub>2</sub> in Et<sub>2</sub>O 2 days gave 65% *N*-benzoylserine *N*-methylamide, m. 140.5° (from abs. EtOH). This (0.5 g.) in dioxane added to PhC(=O)CH<sub>2</sub>CH(NHCH<sub>2</sub>CO)Cl (from 1 g. acid) in CHCl<sub>3</sub>, heated 4 hrs. to 50-60°, the solvent evapd. and the residue treated with CCl<sub>4</sub> gave a ppt. of 77% *O*-(benzoyl-3-phenylalanine)-*N*-benzoylserine methylamide, m. 141° (from EtOH, followed by vacuum drying). For enzymic treatment of these compds., cf. C.A. 45, 10223c.

G. M. Keseloff

AVAYEVA, S.M.

U S S R .

Synthesis of  $\gamma$ -O-peptides of serine. S. M. Avneva, and S. A. Mistryukov. *J. Gen. Chem. U.S.S.R.* 1971, 21, 1011-5 (1973) (Engl. translation). -- See C.A. 48, 1749c. H. L. 11...

AVAYEVA, S. M.

6

Synthesis of derivatives of pathalogylglycine of series. M. M. Botvink, S. M. Avayeva, and B. A. Mitryukov (Moscow State Univ.). Zh. Obshch. Khim. 23, 1716-19 (1953).

To 1.19 g. pathalogylglycine chloride in 1 ml. dioxane was added 0.92 g. serine iso-Pr ester-HCl, then 2 ml. PhNEt<sub>3</sub> and the mixt. was dild. after 50 m.n. with ligroine yielding 1.27 g. (72%) N-(pathalogylglycyl)serine iso-Pr ester, m. 187°. Similarly was prepd. 54% N' ester; crystals from EtOH, m.p. not gives. The latter (.68 g.) kept 3 days in

5 ml. 33% MeNH<sub>2</sub>-MeOH, evapd. *in vacuo*, and taken up in EtOH, gave on addn. of EtO 0.95 g. H<sub>2</sub>C<sub>2</sub>CH<sub>2</sub>CONH-Me (C<sub>11</sub>H<sub>15</sub>SO<sub>2</sub>NHCH<sub>2</sub>CO<sub>2</sub>H, CONHMe), m. 160°. p-Me-C<sub>6</sub>H<sub>4</sub>SO<sub>2</sub>NHCH<sub>2</sub>CO<sub>2</sub>H (4.7 g.) and 4.5 g. PC<sub>2</sub> stirred 1 hr. in filtered, and the filtrate evapd. and rubbed with petr. ether yielded 63% p-Me-C<sub>6</sub>H<sub>4</sub>SO<sub>2</sub>NHCH<sub>2</sub>CO<sub>2</sub>H, which was directly used without purification; to 3.9 g. of the chloride in 50 ml. C<sub>2</sub>H<sub>5</sub>Cl and 2.03 g. serine Me ester-HCl was slowly added with petr. ether and after 1 hr. the mass was treated with 2 g. (46%) N-(p-toluenesulfonyl)glycylserine Me ester, m. 148-9° (from EtOH or H<sub>2</sub>O). This kept in MeOH-MeNH<sub>2</sub>-H<sub>2</sub>O). 2-Phenyl-4-benzyl-2-oxazolin-5-one (from 5.4 g. PhCH<sub>2</sub>CH(OH)CO<sub>2</sub>H) in 15 ml. C<sub>2</sub>H<sub>5</sub>Cl was added slowly to 3.2 g. serine Me ester-HCl and 3.48 ml. Me<sub>2</sub>NBn in 15 ml. C<sub>2</sub>H<sub>5</sub>Cl, the mixt. stirred 1 hr., shaken with 20 ml. H<sub>2</sub>O, 10 ml. N HCl, and again with 10 ml. H<sub>2</sub>O, the org. layer evapd. *in vacuo*, and the residus taken up in EtOH and dild. with H<sub>2</sub>O, giving 63% N-(benzoylphenylamyl)serine Me ester, m. 158-9°. The mother liquor yielded 28% the above ester and appears to be a diastereoisomer of it. With MeNH<sub>2</sub>-MeOH the ester yielded the corresponding methylamide, m. 210° (from 80% EtOH), after 24 hrs. at room temp. The 2-1 isomer of the Me ester gave a corresponding methylamide, m. 230°. (S. M. K.)

AVAYEVA, S.M.

*mul* Migration of the peptide residue in serine peptides.  
M. M. Botvink, S. M. Avaeva, and E. A. Mistryukov.  
*J. Gen. Chem. U.S.S.R.* 24, 2035-01(1954) (Engl. trans-  
lation).—See *C.A.* 49, 4741d.

3

AVAYEVA, S. M.

Migration of the peptide residue in serine peptides. N. M. Botvink, S. M. Avayeva, and R. A. Mestrovskiy (Moscow State Univ.), *Zhur. Obshch. Khim.*, 24, 2384-91 (1954); cf. *C.A.*, 48, 13228i; Elliott, *C.A.*, 46, 5626g. Treatment of serine peptides contg. other amino-acid groups with  $\text{SOCl}_2$  or  $\text{HCl}$  in alc. or dioxane soln. gave the  $\beta$ -chloro derivs. of alanine peptides which in aq. medium gave the initial compds. Under action of concd.  $\text{HCl}$  there appears to take place a migration of the peptide union from N to O, since the N-peptides of serine are hydrolyzed more rapidly than O-peptides. Treatment with  $\text{H}_2\text{SO}_4$  gave 2 reactions: migration of the peptide link from N to O and dehydration of the peptides. Heating 0.5 g. N-(benzoylphenylalanyl)-serine iso-Pr ester 3 min. with 5 ml.  $\text{SOCl}_2$  gave on diln. with  $\text{Et}_2\text{O}$  N-(benzoylphenylalanyl)- $\beta$ -chloroalanine iso-Pr ester, m. 157°; the same product formed if  $\text{SOCl}_2$  was replaced by dry  $\text{HCl}$  in dry dioxane. Heating the product 2 hrs. in aq. dioxane soln. gave the starting material, m. 108°. N-Benzoylphenylalanylserine methylamide kept 1 hr. with  $\text{SOCl}_2$  at 0° gave a product (I), m. 135-7°, which on standing evolved  $\text{SO}_2$  and gave  $\text{AgCl}$  ppt. with  $\text{AgNO}_3$ . Treated with  $\text{H}_2\text{O}$  it gave the initial amide. I taken up in hot  $\text{AcOH}$  and diltd. with  $\text{H}_2\text{O}$  gave N-(benzoylphenylalanyl)- $\beta$ -chloroalanine methylamide, m. 109°; the same substance formed in reaction with  $\text{SOCl}_2$  at 60°,  $\text{PCl}_5$  in  $\text{CHCl}_3$  at room temp., dry  $\text{EtOH-HCl}$  at 70°, or dry dioxane-HCl at room temp. The rate of hydrolysis of N- and O-peptides of serine with acetylphenylalanyl, phthalaldehydyl, and benzoylphenylalanyl groups was acid. in concd.  $\text{H}_2\text{SO}_4$  by periodic detn. of amino N; similarly hydrolysis was followed of N-(benzoylphenylalanyl)serine iso-Pr ester, N-(benzoylphenylalanyl)serine methylamide, and N-(p-toluenesulfonyl)serine methylamide in  $\text{H}_2\text{SO}_4$  and in concd.  $\text{HCl}$  at 18-26°.

G. M. Koshtapoff.







*Pravda, S.M., A. Botvink...*  
 31% in Et<sub>2</sub>O and treatment of the crude product with  
 MeNH<sub>2</sub> in MeOH gave 61% *N*-benzoyl-DL-threonine  
 methylamide (I), m. 170-1° (from EtOAc), similarly was ob-  
 tained 41% *N*-benzoylallothreonine methylamide, m. 180-2°  
 (10.93 g.) in dioxane was treated with chloride from 1.6 g.  
 benzoylbenzylamine and PCl<sub>5</sub> and after heating 7.5 hrs. at  
 65° and standing overnight the mixt yielded 39% *N*-benzo-  
 yl-(*benzoylphenylalanyl*)-DL-threonine methylamide, m.  
 211-21° (from EtOH-EtOAc); similarly was prepd. the  
 allothreonine analog, 51%, m. 213-13.5° with HCl salt of  
 the lactone of benzoylvaline (from 1.4 g. amino acid  
 and 1.17 g. PCl<sub>5</sub>) in dioxane, heated 8 hrs. at 60° similarly  
 gave 40% *N*-benzoyl-*O*-benzoylvaline-DL-threonine meth-  
 ylamide, m. 222.5-3.5° (from AcOH). Similarly was prepd.  
 20% *N*-benzoyl-*O*-benzoylallothreonine methylamide,  
 m. 145-3° (from aq. AcOH). 1 with HCl salt of the alkac-  
 toxine from 1.38 g. benzoylvaline and 1.17 g. PCl<sub>5</sub> in CHCl<sub>3</sub>-  
 dioxane gave after similar treatment 40% *N*-benzoyl-*O*-  
 benzoylvaline-DL-threonine methylamide, m. 21-16° (from aq.  
 EtOAc). Similarly was prepd. the allothreonine analog,  
 35%, m. 26.5-7.1° from AcOH.

G. M. K. 2/2

PM mk

ИВАКОВА, С. П.

Synthesis of N-benzoyl-O-peptides of threonine and their methylamides / II and M. M. Pevsikov. J. Gen. Chem. U.S.S.R. 26, 2605-11 (1956) (English translation).—See C.A. 5, 4946c.

5

454 j

B.M.R.

em

11



НВА/ЕВА, S. M.

Properties of O-peptides of  $\beta$ -hydroxyamino acids. Reaction of ammonolysis and aminolysis. S. M. Avdeeva, M. I. Kozovalova, and V. I. Ostrovskaya (State Univ., Moscow). *Zhur. Obshchei Khim.* 27, 1910-18 (1957). *CA* 48, 8729, 13628, 51, 2946c. Benzoylserine (4.7 g.) in dry dioxane treated with the HCl salt of 2-phenyl-4-isopropylloxazolinone prepd. from 4.8 g. benzoylserine, stirred, kept overnight, and heated 5 hrs. at 50-55°C yielded 6% O-benzoylvalyl-N-benzoylserine, m. 184-5° (aq. EtOH). Similarly 2-phenylloxazolinone HCl salt gave 82.5% O-hippuryl-N-benzoylserine, m. 161-1.5° (aq. Me<sub>2</sub>CO). Various O-peptides were treated with 7 N H<sub>2</sub>OH of various concn. up to 25% and kept 1-24 hrs., yielding ppta of amides of benzoylphenylalanine, benzoylvaline, and hippuric acid, the starting materials being O-benzoylphenylalanyl-N-benzoylserine, O-benzoylvalyl-N-benzoylserine, O-hippuryl-N-benzoylserine, O-benzoylphenylalanyl-N-benzoyltyrosine, the amide of O-benzoylphenylalanyl-N-benzoylserine, O-benzoylphenylalanyl-N-benzoyltyrosine, and the Et ester of benzoylphenylalanine (I), resp. The yields of the amides from the 1st two peptides listed above decline rapidly with reduction of the concn. of NH<sub>4</sub>OH, while the amide from the hippuryl deriv. is substantially independent of NH<sub>4</sub>OH concn. The ammonolysis of I was very slow under these conditions. Heating O-hippuryl-N-benzoylserine with 8-27 moles H<sub>2</sub>NCH<sub>2</sub>CO<sub>2</sub>Et at 34-77° 5-10 hrs. gave up to 92% ppt. of the salt of the 2 components. m. 141°, when the reaction was run in EtOH; expts in aq. Me<sub>2</sub>CO gave only tars; omitting the sol-

6

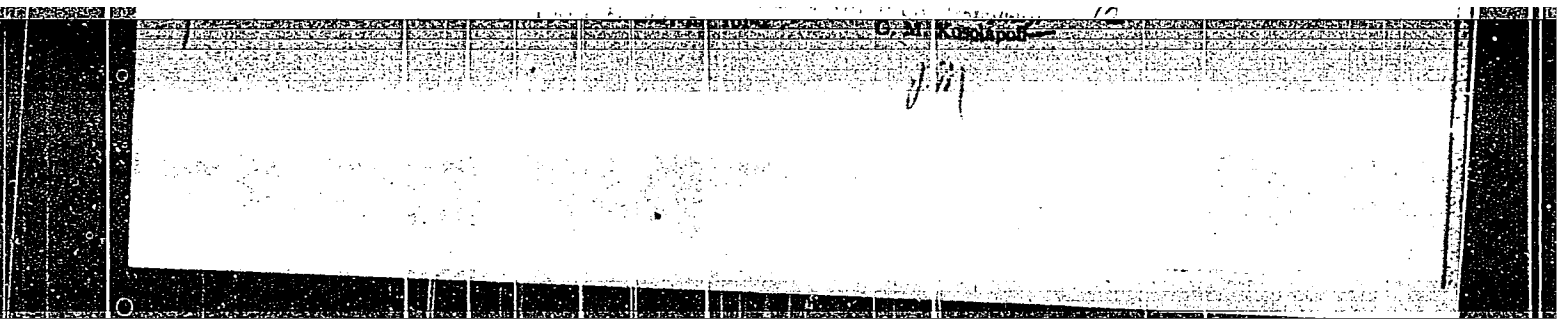
1/2

*[Faint text in the lower portion of the grid:]*

... gave after 16 hrs at 60-70° some 30% yield of the ester of benzoyl phenylalanine. Heating the Et ester of benzoyl phenylalanine and  $H_2NCH_2CO_2Et$  16 hrs at 60-70° gave a low yield of Et ester of the peptide in 97%. Similarly were obtained Et ester of O-benzoyl tyrosine in 86% and Et ester of O-benzoyl tryptophan in 84%. The benzyl ester of tyrosine was also converted to the benzoyl ester in 71% yield.

"APPROVED FOR RELEASE: 06/05/2000

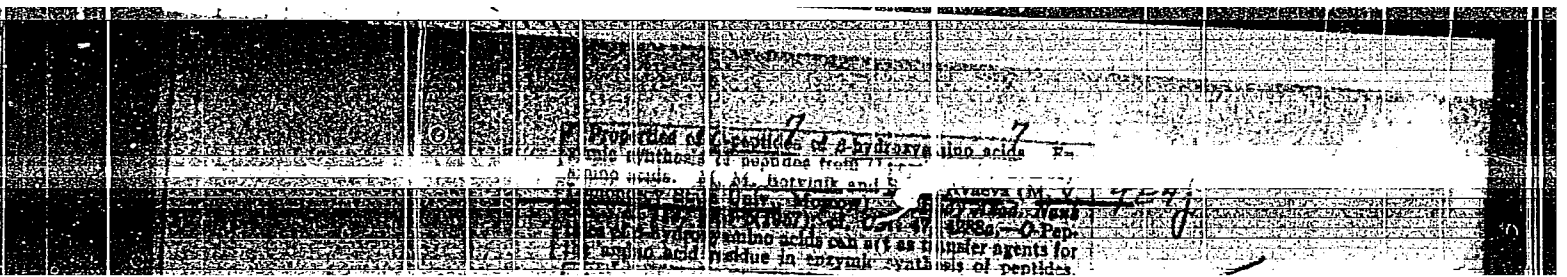
CIA-RDP86-00513R000102520017-3



APPROVED FOR RELEASE: 06/05/2000

CIA-RDP86-00513R000102520017-3"





AUTHORS:

Botvinik, M. M., Avayeva, S. M.

SOV/ 79-28-6-21/63

TITLE:

On the Fermentative Synthesis of N-Peptides of Orthopeptides of  $\beta$ -Oxyamino Acids (O fermentativnom sinteze N-peptidov iz o-peptidov  $\beta$ -okksamino kislot)

PERIODICAL:

Zhurnal obshchey khimii, 1958, Vol. 28, Nr 6, pp. 1534-1539 (USSR)

ABSTRACT:

In the investigation of the characteristic features of N-peptides of serine and threonine the authors showed that (Ref 1) they are not only capable of an inter- but also of a mutual molecular regrouping (see scheme 1). In the conversion of the O-peptides of the N-benzoyl serine and threonine with ammonia the reaction takes place immediately, however, the process with the esters of the amino acids and peptides takes place slowly also at higher temperature, and in a small yield. The reaction in the presence of chemotrypsine, however, takes easily place under the final formation of peptide derivatives of the L-series. It may be assumed that a reaction in which the O-peptides of the  $\beta$ -oxyamino acids occur as transporting media of the amino acid radicals in the fermentative synthesis of the peptides is of interest as the possibility of similar

Card 1/3

On the Fermentative Synthesis of N-Peptides of Orthopeptides of  $\beta$ -Oxy-  
amino Acids

SOV/79-28-6-21/63

processes in nature exists. In the present paper the investigations in this direction are extended to a number of other compounds. The authors used: N-benzoyl-O-benzoylphenylalanyl serine, N-benzoyl-O-benzoylglycyl serine and N-benzoyl-O-benzoylphenylalanyl threonine. The ethyl esters of glycine, phenylalanine, glycylglycine and leucylglycine served as acceptors of the acylamino acid radicals. All initial products were racemic. In all cases optically active peptides were obtained. The results are given in a table and differ from those described in other publications. The experiments were carried out with esters of the amino acids in which  $\beta$ -oxyamino acids occurred as alcohol radicals, as the compounds to be investigated are closer to the natural ones. The esters used were those of the benzoyl derivatives, not of the amino acids themselves, which limits the reaction at the stage of the dipeptides. The reactions took place within shorter time with a smaller percentage and a smaller amount of ferment. There are 1 figure, 1 table, and 8 references, 5 of which are Soviet.

Card 2/3

On the Fermentative Synthesis of N-Peptides of Orthopeptides of  $\beta$ -Oxy-  
amino Acids

SOV/79-28-6-21/63

ASSOCIATION: Moskovskiy gosudarstvennyy universitet  
(Moscow State University)

SUBMITTED: May 3, 1957

1. Peptides--Synthesis

Card 3/3

AUTHORS: Eotvinik, M. M., Avayeva, S. M.

SOV/ 79-28-6-21/63

TITLE: On the Fermentative Synthesis of N-Peptides of Orthopeptides of  $\beta$ -Oxyamino Acids (O fermentativnom sinteze N-peptidov iz o-peptidov  $\beta$ -oksiaminokislot)

PERIODICAL: Zhurnal obshchey khimii, 1958, Vol. 28, Nr 6, pp 1934-1539 (USSR)

ABSTRACT: In the investigation of the characteristic features of N-peptides of serine and threonine the authors showed that (Ref 1) they are not only capable of an inter- but also of a mutual molecular regrouping (see scheme 1). In the conversion of the O-peptides of the N-benzoyl serine and threonine with ammonia the reaction takes place immediately, however, the process with the esters of the amino acids and peptides takes place slowly also at higher temperature, and in a small yield. The reaction in the presence of chemotrypsine, however, takes easily place under the final formation of peptide derivatives of the L-series. It may be assumed that a reaction in which the O-peptides of the  $\beta$ -oxyamino acids occur as transporting media of the amino acid radicals in the fermentative synthesis of the peptides is of interest as the possibility of similar

Card 1/3

On the Fermentative Synthesis of N-Peptides of Orthopeptides of  $\beta$ -Oxy-  
amino Acids

SOV/79-28-6-21/63

processes in nature exists. In the present paper the investigations in this direction are extended to a number of other compounds. The authors used: N-benzoyl-O-benzoylphenylalanyl serine, N-benzoyl-O-benzoylglycyl serine and N-benzoyl-O-benzoylphenylalanyl threonine. The ethyl esters of glycine, phenylalanine, glycyglycine and leucylglycine served as acceptors of the acylamino acid radicals. All initial products were racemic. In all cases optically active peptides were obtained. The results are given in a table and differ from those described in other publications. The experiments were carried out with esters of the amino acids in which  $\beta$ -oxyamino acids occurred as alcohol radicals, as the compounds to be investigated are closer to the natural ones. The esters used were those of the benzoyl derivatives, not of the amino acids themselves, which limits the reaction at the stage of the dipeptides. The reactions took place within shorter time with a smaller percentage and a smaller amount of ferment. There are 1 figure, 1 table, and 8 references, 5 of which are Soviet.

Card 2/3

On the Fermentative Synthesis of N-Peptides of Orthopeptides of  $\beta$ -Oxy-  
amino Acids

SOV/79-28-6-21/63

ASSOCIATION: Moskovskiy gosudarstvennyy universitet  
(Moscow State University)

SUBMITTED: May 3, 1957

1. Peptides--Synthesis

Card 3/3

AVAYEVA, S.M.; BOFVINIK, M.M.; KARA-MURZA, S.N.

Enzymatic synthesis of benzoyl-phenylalanine peptides through serine and threonine O-peptides. Vop.med.khim. 5 no.2:102-106 Mr-Apr '59. (MIRA 12:5)

1. The "N.D.Zelinsky" Laboratory for Protein Chemistry, Moscow State University.

(PEPTIDES,

synthesis of benzoyl-phenylalanine peptides with serine & threonine O-peptides (Rus))

(PHENYLALANINE,

same)

(AMINO ACIDS,

same)



BOTVINIK, M.M.; AVAYEVA, S.M.; KOKSHAROVA, I.M.; OLADKINA, V.A.

Stability of the O-peptide bond in O-dipeptidyl derivatives of serine  
and glycolic acid. Zhur. ob. khim. 30 no.12:3883-3890 D '60.  
(MIRA 13:12)

1. Moskovskiy gosudarstvennyy universitet.  
(Glycolic acid) (Serine)

AVAYEVA, S.M.; BOTVINIK, M.M.; SYROMYATNIKOVA, I.F.

Synthesis of substituted diseryl pyrophosphates. Zhur.ob.khim.  
33 no.2:709-710 F '63. (MIRA 16:2)  
(Serine) (Pyrophosphates)

AVAYEVA, S. M.; BOTVINIK, M. M.; SYROMYATNIKOV, I. F.

"Serylpyrophosphates and serylphosphates."

report submitted for 7th European Peptide Symp, Budapest, 3-8 Sep 64.

AVAYEVA, S. M.; BOTVINIK, M. M.; SYROYATNIKOVA, I. F.

Seryl phosphates and pyrophosphates. Part 1: Synthesis of P P  
-di(benzyl ester of N-carbobenzoxyseryl)-P P-dibenzylpyrophosphate  
and P P-di(methylamide of N-benzoylseryl)-P P-dibenzylpyrophosphate.  
Zhur. ob. Khim. 34 no.6:1749-1754 Je '64. (MIRA 17:7)

AVAYEVA, S. M.; BOTVINIK, M. M.; VAFINA, M. G.; MATYAZH, L. F.

Seryl phosphates and pyrophosphates. Part 2: Behavior of bis  
(methyl ester of N-carbonyloxy) -phenyl phosphate in HBr  
solution in organic solvents. Zhur. ob. Khim. 34 no.6:1754-1757  
Je '64. (MIRA 17:7)

BOTVINIK, M. M.; KARA-MURZA, S. N.; AVAYEVA, S. M.; NIKITIN, V. Ya.

Infrared spectroscopy study of the mechanism underlying the formation of p-nitrophenyl esters of benzoyl amino acids and acyl peptides by the carbodiimide method. Dokl. AN SSSR 156 no. 1:88-91 My '64. (MIRA 17:5)

1. Moskovskiy gosudarstvennyy univertsitet. Predstavleno akademikom A. N. Nesmeyanovym.

STEPANOV, V.M.; VAKHITOVA, E.A.; YEGOROV, TS.A.; AVAYEVA, S.M.

Phosphoserine-containing peptide fragment of pepsin. Izv. AN SSSR.  
Ser. khim. no.4:759 '65. (MIRA 18:5)

1. Institut khimii prirodnykh soyedineniy AN SSSR.





L 27289-66

ACC NR: AP6016874

SOURCE CODE: UR/0189/65/003/0078/0082

AUTHOR: ~~Avayeva, S. M.~~; Botvinik, M. M.; Syromyatrikova, N. F.; Grigorovich, V. I. <sup>30</sup>  
ORG: Department of Organic Chemistry, Moscow State University (Kafedra organicheskoy khimii Moskovskogo gosudarstvennogo universiteta)

TITLE: Seryl-phosphates and pyrophosphates

SOURCE: Moscow. Universitet. Vestnik. Seriya II. Khimiya, no. 3, 1965, 78-82

TOPIC TAGS: organic synthetic process, serine, polypeptide, hydrolysis, organic phosphorus compound, ester

ABSTRACT: The synthesis of  $\text{plp}_2\text{-di}(\text{benzyl ester-carbobenzoxylglycylseryl})\text{-P-P}_2\text{-dibenzylpyrophosphate}$  and study of its hydrolysis are described. In continuation of previous investigations, this paper reported the synthesis of a new compound which incorporates a pyrophosphate group and a dipeptide of serine. The benzyl ester of N-carbobenzoxylglycylserine was boiled together with NaI in absolute acetone to remove one benzyl group. Since the monosodium salt of the benzyl ester of N-carbobenzoxylglycyl-O-(benzylphospho)-serine formed is quite soluble in acetone and does not precipitate in the reaction mixture, the reaction was continued somewhat longer than usual. Upon boiling of the reaction mixture for four hours, the yield of the sodium salt of the benzyl ester of N-carbobenzoxylglycyl-O-(benzylphospho)-serine was 85%. The properties of the compound were studied, including its hydrolysis at 21° in neutral and in weakly alkaline media at pH 6.8 and 8.5, with the formation of the benzyl ester of N-carbobenzoxylglycyl-O-(benzylphospho)-serine. Orig. art. has: 1 figure and 1 table. [JPRS]

SUB CODE: 07 / SUBM DATE: 22Jul64 / ORIG REF: 003 / OTH REF: 002

Card 1/1

cc 2

ACC NR: AP7003669

SOURCE CODE: UR/0079/66/036/008/1509/1510

AUTHOR: Avayeva, S. M.; Kara-Murza, S. N.; Botvinik, M. M.ORG: Moscow State University im. M. V. Lomonosov (Moskovskiy gosudarstvennyy universitet)TITLE: Synthesis of o-pyrophospho-D,L-serine and glycyl-o-pyrophospho-d,l-serine  
SOURCE: Zhurnal obshchey khimii v. 36, no. 8, 1966, 1509-1510

TOPIC TAGS: organic synthetic process, phosphorylation, pyridine, chromatography

ABSTRACT: Two methods of synthesizing serylpyrophosphates were developed: carbodiimide and acid chloride methods. In both cases benzyl esters of N-carbobenzyloxy- and N-carbobenzyloxylglycyl-O-benzylphospho-D,L-serine were the starting materials. In the carbodiimide method, the reaction was conducted in acetone at room temperature, with a fivefold excess of the dibenzylphosphoric acid and a tenfold excess of N,N'-dicyclohexylcarbodiimide. In the acid chloride method, phosphorylation was carried out at  $-40^{\circ}$ , with a sixfold excess of dibenzyl chlorophosphate in acetone in the presence of an amount of pyridine equimolar to the chlorophosphate. Ion-exchange chromatography on the resin Dowex 1 x 2 was used to separate the reaction products. The yields of the serine pyrophosphates were 40-50% in the carbodiimide method and 60-70% in the acid chloride method. [JPRS: 38,970]

SUB CODE: 07 / SUBM DATE: 27Jan66 / ORIG REF: 003 / OTH REF: 002

Card 1/1 jb

UDC: 547.466

0926 0299

AVAZASHVILI, D. Z.

~~Avazashvili, D. Z.~~ On the first boundary problem of electro-  
dynamics for a half-space. Akad. Nauk SSSR. Prikl.  
Mat. Mech. 15, (18-620 (1951)). (Russ. aut.)  
Some extensions of the formulae of Lanchberg [Mathem-  
atical theory of optics, Brown Univ., Providence, 1941;  
que di Rev. 6, 107] al caso che sia presente una corrente  
impressa. G. Tinelli di Francia (Firenze).

*Smul 1951*

Source: Mathematical Reviews, Vol 13 No. 6

AVAZASHVILI, D. Z.

*Судовата А. 3.07.5056 - 28 Feb 57  
230173*

Avazashvili states he has already demonstrated uniqueness theorem for the spatial problem of diffraction (cf. "Trudy Tbilist Matemat Inst" 2, 143, 1937). Submitted by Acad V. A. Pok 3 Nov 51.

"Dok Ak Nauk SSSR" Vol 82, No 1, pp 29-32  
Establishes the existence theorem for the complete solution of the spatial problem of diffraction, and constructing the integral eqs for the electromagnetic field's vector and scalar potentials did. not for its components, as V. D. Kupradze did. 230173

SR/Mathematics - Diffraction Problem  
Spatial Problem of Diffraction of Monochromatic Electromagnetic Waves, D. Z. Avazashvili, Tbilist Inst of Railroad Transport Engineers imeni Lenin

1 Jan 52

AVAZASHVILI, D. Z.

Differential Equations, Partial Differential Equations: (1672)  
Sobshch. AN Gruz. SSR, Vol 14, No 6, 1953, pp 321-328

Avazashvili, D. Z.

"Spatial Problem of Diffraction for Electromagnetic Vibrations"

Works out a solution of the problem of determining an electromagnetic field in a stratified medium with regular surfaces as boundaries. Proves an existence theorem. The uniqueness theorem had been proved in an earlier article (Tr. Tbilisskogo mat. in-ta, Vol 8, 1940, pp 109-134).

SO: Referativnyy Zhurnal--Matematika, No 1, Jan 54; SO: (W-30785, 28 July 1954)

SOV/58-59-9-20955

Translation from: Referativnyy Zhurnal Fizika, 1959, Nr 9, p 218 (USSR)

AUTHOR: Avazashvili, D.Z.

TITLE: The Problem of the Diffraction of Electromagnetic Oscillations in a Multiply Connected Region

PERIODICAL: Sb. tr. Tbilissk. in-ta inzh. zh.-d. transp., 1956, Nr 29, pp 63 - 70

ABSTRACT: The author gives a general mathematical proof of the existence of a solution to the problem of the diffraction of electromagnetic oscillations in a three-dimensional space for a multiply connected region. He assumes that the field sources are situated outside of closed non-intersecting regular surfaces. He shows that the solution of Maxwell's equations with the appropriate boundary conditions is equivalent to a solution of a system of integral equations with respect to vector and scalar potentials. A solution of the latter type is always possible.

A.A. Fedorov

Card 1/1

AVAZASCHWILI D.Z.

SUBJECT USSR/MATHEMATICS/Differential equations CARD 1/1 PG - 800  
 AUTHOR AVAZASCHWILI D.Z.  
 TITLE The problem of diffraction in a multiply connected domain.  
 PERIODICAL Doklady Akad.Nauk 110, 889-892 (1956)  
 reviewed 5/1957

The author considers the problem of diffraction of electromagnetic oscillations in the infinite three-dimensional space with the electromagnetic constants  $\epsilon_0, \mu_0, \sigma_0$  under the assumption that in this space there exist  $n$  non-intersecting domains which are bounded by regular closed surfaces and in which the electromagnetic constants have the values  $\epsilon_j, \mu_j, \sigma_j$ . Here it is assumed  $\mu_0 = \mu_1 = \dots = \mu_n = 1$  and in the source of oscillation  $\xi = \epsilon_0, \sigma = \sigma_0$ . The existence of the solution is proved. The paper joins earlier investigations of the author (Doklady Akad.Nauk 82, 1 (1952)) where the case  $n = 1$  was treated.

Tblisi,  
 INSTITUTION: Engineering Institute of the railroad transport organization.

AVAZASHVILI, D. Z. Doc Phys-Math Sci -- (diss) "The Problem of  
~~the~~ Diffraction of Electromagnetic Oscillations." Tbilisi, 1957.  
14 pp 22 cm. (Tbilisi Mathematical Inst im A. M. Razmadze,  
Academy of Sciences Georgian SSR), 100 copies (KL, 27-57, 104)



24,2500

26626

S/044/60/000/002/003/009  
C111/C222

AUTHOR: Avazashvili, D.Z.

TITLE: On the second boundary problem of the electrodynamics

PERIODICAL: Referativnyy zhurnal. Matematika, no. 2, 1960, 107  
abstract 1736. (Tr. Tbilissk. in-ta inzh. zh.-d. transp., 1957,  
vyp 31, 5 - 12)

TEXT: The author investigates the existence of the solution of the second boundary problem of the electrodynamics for regions T bounded by closed Lyapunov surfaces. In the case of the outer region the problem consists in the determination of two vectors E and H satisfying the

$$\left\{ \begin{array}{l} \operatorname{rot} H = \frac{4\pi\sigma - i\omega\epsilon}{c^2} E + \frac{4\pi}{c} J, \\ \operatorname{div} E = \frac{4\pi}{\epsilon} \rho \quad (\rho = -\frac{1}{4\pi\sigma - i\omega\epsilon} \operatorname{div} J), \\ \operatorname{rot} E = \frac{i\omega\mu}{c} H, \\ \operatorname{div} H = 0, \\ H_t = f \text{ на } S, \end{array} \right.$$

Card 1/5

26626  
S/044/60/000/002/003/009  
C111/0222

On the second boundary problem ...

$$\begin{cases} H = e^{ikr} O(r^{-1}), & \frac{\partial H}{\partial r} - ikH = e^{ikr} O(r^{-1}), \\ E = e^{ikr} O(r^{-1}), & \frac{\partial E}{\partial r} - ikE = e^{ikr} O(r^{-1}). \end{cases}$$

where  $k^2 = \frac{\omega^2 \epsilon \mu + 4\pi \sigma \mu \omega i}{c^2}$ ,  $\text{Im } k > 0$ ,  $f$  - - given continuous tangential

component of  $H$  on  $S$ ,  $j$  - - given density of the field sources being sufficiently often continuously differentiable in  $T$ . The uniqueness of the solution of the problem I was proved in an earlier paper. In the investigation of the existence the author considers two cases.

1. The normal component  $H_n$  of the vector  $H$  on  $S$  is equal to zero. Then the author puts

$$H(M) = \frac{1}{2\pi} \int_S \mu(N) \frac{\partial}{\partial n} \left( \frac{e^{ikr}}{r} \right) dS + \frac{1}{c} \int_T F(N) \frac{e^{ikr}}{r} dV, \quad (1)$$

Card 2/5

On the second boundary problem ... <sup>26626</sup>  
 S/044/60/000/002/003/009  
 C111/C222

where  $n$  - - inner normal,  $F = \text{rot } J$ , and he obtains the integral equation

$$-\mu(P) + \int_S K(P,N)\mu(N)dS = \varphi(P), \quad (2)$$

where

$$K(P,N) = \frac{1}{2\pi} \frac{\partial}{\partial n_N} \left( \frac{e^{ikr(P,N)}}{r(P,N)} \right),$$

$$\varphi(P) = f(P) - \frac{1}{c} \int_T F(N) \frac{e^{ikr(P,N)}}{r(P,N)} d\tau_N$$

It is proved that (2) has a unique solution for an arbitrary right side.

2. The normal component  $H_n$  of  $H$  on  $S$  is not equal to zero. Then the

author puts

$$H(M) = \frac{1}{2\pi} \int_S H_n(N) \frac{\partial}{\partial n} \left( \frac{e^{ikr}}{r} \right) ds + \frac{1}{c} \int_T H(N) \frac{e^{ikr}}{r} d\tau, \quad (3)$$

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On the second boundary problem ... <sup>26626</sup> S/044/60/000/002/003/009  
 C111/C222

and for  $H_n$  he obtains the integral equation

$$- H_n(P) + \int_S K(P,N) H_n(N) dS = \psi(P) \quad (4)$$

where

$$K(P,N) = \frac{1}{4\pi} \frac{\partial}{\partial n_N} \left( \frac{e^{ikr(P,N)}}{r(P,N)} \right),$$

$$\psi(P) = \frac{1}{2} f(P) - \frac{1}{2c} \int_T F(N) \frac{e^{ikr(P,N)}}{r(P,N)} d\tau.$$

It is proved that (4) has a unique solution for an arbitrary right side if  $k^2$  is no characteristic number of the following inner boundary value problem :

$$\begin{cases} \Delta H + k^2 H = 0 & \text{in } T^+ \\ \phi_t = 0 & \text{on } S \end{cases};$$

Card 4/5

26626

S/044/60/000/002/003/009  
C111/C222

On the second boundary problem ...

here  $\phi_t$  is the tangential component of the vector  $\phi = dH/dn$ .

In the cases 1 and 2, the inner boundary value problem of the type (I) leads to integral equations of the type (2) and (4).

Reviewer's remark : The case 2 is treated incorrectly by the author. The formulas of Stretton - Chu show that the magnetic field in an arbitrary region T in general cannot be represented by a sum (3) of a volume integral and a surface integral containing only the normal component of  $H$ .

[Abstracter's note : Complete translation.]

Card 5/5

24.4100

S/044/62/000/007/041/100  
C111/C222

AUTHOR: Avazashvili, D.Z.

TITLE: On some properties of oscillatory vector potentials

PERIODICAL: Referativnyy zhurnal, Matematika, no. 7, 1962, 67,  
abstract 7B325. ("Tr. Gruz. politekhn. in-t", 1961, no. 6,  
(77), 29-34)

TEXT: The author investigates the wave potential of a simple layer with vector-valued density which has the direction of the normal of the supporting surface, and the vectorial volume-wave potential. The rotor and the divergence of these potentials are calculated. ✓A

[Abstracter's note : Complete translation.]

Card 1/1

AVAZASHVILI, D.Z. (Tbilisi)

A boundary value problem in optics. Izv.vys. ucheb. zav.; mat. no.2:3-11  
'63. (MIRA 16:3)

(Optics, Physical)

(Boundary value problems)

RUSIYA, Zaur; KHURTSILAVA, Gigla; SMAKHARADZE, Kukuri; MIKAYA, Zurab;  
SIFADZE, Bondo; AVAZASHVILI, Guguli; PIRTSKHALASHVILI, Pavle;  
TATUASHVILI, Anzor

Search goes on. Sov. profsoiuzy 18 no.5:16-18 Mr '62.  
(MIRA 15:3)

1. Zavod "Elektroavtomat", g. Tbilisi.  
(Tiflis--Labor and laboring classes)



AVAZBAKIYEVA, Maginur Fatkullovna

Kazakh State U. - Academic degree of Doctor of Biological Sciences based on her defense, 6 May 1955, in the Council of the Institute of Physiology imeni Pavlov Acad Sci USSR, of her dissertation entitled: "Climato-Physiological Study of Human Beings under Conditions in Kazakhstan and Kirgiziya."

Academic degree and/or title: Doctor of Sciences

SO: Decisions of VAK, List no. 25, 10 Dec 55, Byulleten' MVO SSSR, Uncl.  
JPRS/NY-548

AVAZBAKIYEVA, M.F.

GALUZO, I.G.; GVOZDEV, Ye.V.; DOLGUSHIN, I.A.; AGAPOVA, A.I.; SOKOLOVA, I.B.;  
USHAKOVA, G.V. AVAZBAKIYEVA, M.F.; IBHACHEVA, S.I.

V.A.Dogel'; obituary. Vest.AN Kazakh.SSR 11 no.9:89-90 S '55. (MLRA 9:1)  
(Dogel', Valentin Aleksandrovich, 1882-1955)

AVAZBAKIYEVA, Meganur Fatkulovna; GORSHEININ, D.S., red.; VELICHKO,  
G.N., tekhn. red.

[Influence of the climate of Kazakhstan and Kirghizistan on  
the human body] Vliianie klimata Kazakhstana i Kirgizii na  
organizm cheloveka. Alma-Ata, Izd-vo Akad.nauk Kazakhskoi  
SSR, 1958. 204 p. (MIRA 12:9)  
(Soviet Central Asia--Man--Influence of climate)

AVAZBAKIYEVA, M.F.

A short study on the effect of mountains and deserts on  
physiological changes in the organism of man in Kazakhstan.  
Uch.zap.Kazakh. un. 41:132-146'61. (MIRA 16:6)  
(KAZAKHSTAN--MAN--INFLUENCE OF CLIMATE)

AVAZBAKIYEVA, M.F.; DEMINA, G.I.

Indices of the cardiovascular system and respiration of athletes  
in high mountains. Uch.zap. Kazakh. vn. 41:147-160'61.

(MIRA 16:6)

(TIEN SHAN--ALTITUDE, INFLUENCE OF)  
(SPORTS MEDICINE)

AVAZBAKIYEVA, M.F.; DZHANTLEUOVA, R.O.; SKRYNNIKOVA, Z.A.; SHIYANOV, Yu.I.

Effect of muscular activity under different climatic conditions  
on changes in some physiological indices of the human organism.  
Uch. zap. Kazakh. un. 41:161-170'61. (MIRA 16:6)  
(KAZAKHSTAN--MAN--INFLUENCE OF CLIMATE)

AVAZHANSKIY, Aleksandr Yevokhovich; NOVIKOVA, M.M., ved. red.; POLOSINA,  
A.S., tekhn. red.

[Use of precast reinforced concrete in the petroleum and gas  
industries] Sbornik zhelezobeton v nef'tianoi i gazovoi promyshlennosti.  
Moskva, Gos. nauchno-tekhn. izd-vo nef't. i gorno-toplivnoi lit-ry,  
1958. 232 p. (MIRA 11:11)

(Precast concrete construction)  
(Industrial buildings)

AVAZHANSKIY, Yu.S.; EPSHTEYN, A.A.

Selecting the form of the signal carrying information in a wireless communication channel. Za tekh.prog. 3 no.8:9-11 Ag '63. (MIRA 17:1)

1. Azerbaydzhanskiy nauchno-issledovatel'skiy institut po bireniyu nef'tyanykh i gazovykh skvashin.



EPSHTEYN, A.A.; AVAZHANSKIY, Yu.S.; IBRAGIMOVA, Ye.M.; PETROV, Yu.S.

Study of an electric wireless communication channel between  
the well bottom and the surface. Mash. i nef. obr. no.5:  
28-33 '64. (MIRA 17:6)

1. AzNIIneft'.

ZINDEL', L.A., AVAZKHODZHAYEV, Kh. Kh.

Lithology of Jurassic sediments in the Yassy Basin  
(Fergana Range). Uzb. geol. zhur. no.6:32-42 '59.  
(MIRA 13:6)

1. Institut geologii i razrabotki neftyanykh i gazovykh  
mentorozhdeniy AN UeSSR.  
(Yassy Valley--Rocks, Sedimentary)

AVAZKHODZHAYEV, Kh.Kh.

Minerogeochemical characteristics and conditions governing the  
formation of oil- and gas-bearing Cretaceous formations in the  
Gazli region. Nauch. trudy TashGU no.256 Geol. nauki no.22:  
151-154 '64 (MIRA 18:2)

- AVAZKHODZHAYEV, Kh., Kh.

Granulometry and conditions of the formation of sand rocks  
in Lower Cretaceous sediments of the Gazli structure. Vop.  
geol. Uzb. no.3:114-120 '62. (MIRA 1686)

(Gazli region--Particle size determination)

AVAZKHODZHAYEV, Kh. Kh.

Petrographic characteristics of Cretaceous sediments in the Gazli uplift.  
Uzb.geol. zhur. 7 no.1:15-25 '63. (MIRA 16:4)

1. Institut geologii i razrabotki neftyanykh i gasozykh mestorozhdeniy  
AN UzSSR.  
(Gazli region—Rocks, Sedimentary)

AVAZKHODZHAYEV, Kh.Kh.

Petrographic and mineralogical characteristics of Cretaceous  
clay rocks of the Gazli uplift, Uzb. geol. zhur. 7 no. 6: 76-82  
'63. (MIRA 17:8)

1. Institut geologii i razrabotki neftyanykh i gazovykh  
mestorozhdeniy AN U.S.S.R.

AVAZMATOV, Kh.B.; AVAZKHODZHAYEV, Kh.Kh.

Organic matter in Cretaceous deposits of the Gazli uplift.  
Dokl. AN Uz. SSR 21 no.8:38-41 '64. (MIRA 19:1)

1. Institut geologii i razrabotki neftyanykh i gazovykh mestorozhdeniy Gosudarstvennogo geologicheskogo komiteta SSSR.  
Submitted April 18, 1963.

HEREZENKO, G.Z.; AVAZKHODZHAYEV, M.Kh.; GLADYSHEV, D.A.

Portable device for measuring the biopotentials of plants under field conditions. Uzb. biol. zhur. 8 no.6:66-67 '64.

(MIRA 18:3)

1. Institut yaderncy fiziki AN UzSSR.



BEREZENKO, G.Z.; AVAZKHODZHAYEV, M.Kh.

Role of tanning substances in rendering salts harmless to  
grapevires. Uzb. biol. zhur. 9 no.2:82-83 '65.

(MIRA 18:5)

1. Institut eksperimental'noy biologii tekhnicheskikh i  
zernovykh kul'tur AN UzSSR.

KARIMOV, A.K.; LEBZIN, Ye.V.; AVAZMATOV, Kh.B.

Prospects for finding gas and oil in the Darganata region.  
Neftegaz. geol. i geofiz. no.4:3-7 '64. (MIRA 17:6)

1. Institut geologii i razrabotki' neftyanykh i gazovykh  
mestorozhdeniy AN Uzbekskoy SSR.

AVAZMATOV, Kh.B.

Some characteristics of the distribution of disseminated organic matter and bitumen in the Mesozoic of the Bukhara-Khiva area.  
Geol. nefiti i gaza 9 no.8:11-15 Ag '65.

(MIRA 18:8)

1., Institut geologii i razrabotki neftyanykh i gazovykh mestorozhdeniy AN Uzbekskoy SSR.

KARIMOV, A.K.; AVAZMATOV, Kh.R.; SIMONENKO, A.N.; ISMATULLAYEV, Kh.K.

Affiliation of oil and gas pools and disseminated bitumens with  
Mesozoic sediments in the Kagan region. Geol. nefti i gaza 9  
no.8:16-21 Ag '65. (MIRA 18:8)

1. Institut geologii i razraborki nefnyanykh i gazovykh  
mestorozhdeniy AN Uzbekskoy SSR.

KARIMOV, A.K.; AVAZMATOV, Kh.B.; LEBZIN, Yo.V.

Luminescence study of bitumens contained in Mesozoic sediments  
in the Mubarek oil and gas region. Neftegaz. geol. i geofiz.  
no.4:30-35 '65. (MIRA 18:7)

1. Institut geologii i razrabotki neftyanykh i gazovykh  
mestorozhdeniy AN UzSSR.

AVAZMATOV, Kh.B.; AVAZKHODZHAYEV, Kh.Kh.

Organic matter in Cretaceous deposits of the Gazli uplift.  
Dokl. AN Uz. SSR 21 no.8:38-41 '64. (MLRA 19:1)

1. Institut geologii i razrabotki neftyanykh i gazovykh mestozhdeniy Gosudarstvennogo geologicheskogo komiteta SSSR.  
Submitted April 18, 1963.

ACC NR: AT7002610

SOURCE CODE: UR/0000/66/000/000/0033/0039

AUTHORS: Artykov, T. U.; Avazmulchamedova, K.

ORG: none

TITLE: On two methods for solving Helmholtz and Poisson equations

SOURCE: AN UzSSR. Institut matematiki. Resheniye uravneniy gidrotermodynamiki primenitel'no k zadacham meteorologii (Solution of equations in hydrothermodynamics applied to problems in meteorology) Tashkent, Izd-vo FAN UzSSR, 1966, 33-39

TOPIC TAGS: Poisson equation, weather forecasting, approximation, atmospheric geopotential, weather map, matrix element

ABSTRACT: An experimental study of numerical weather forecasting is made. The work was done to reduce the errors caused by insufficient description of physical processes by mathematical equations and by calculation errors. The method of planes is used. The matrix of the known right sides of the Helmholtz equation

$$\Delta \frac{\partial H}{\partial t} - k^2 \frac{\partial H}{\partial t} = -\frac{\xi}{l} (H, \Delta H) - \beta \frac{\partial H}{\partial x}$$

is found. Its elements are

$$F_{ij} = \frac{\xi}{l} (H, \Delta H)_{ij} + \beta \left( \frac{\partial H}{\partial x} \right)_{ij}$$

Then the method of straight lines with respect to the variable  $y$  is used. The

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ACC NR: AT7002810

obtained system of ordinary differential equations for  $x$  is put in canonical form.

$$\frac{d^2\Phi}{dx^2} - \left(k^2 + \frac{2}{h^2}\right)\Phi + \frac{1}{h^2}L(A)\Phi = M.$$

The influence-function method is examined. A working formula for the Helmholtz and Poisson equations is found as

$$\frac{\partial H}{\partial t} = \sum_{i=1}^n b_i A_i,$$

where  $b_i$  are the weighting factors and  $n = 45$  is the number of points within the selected domain. The Jacobians in this formula are determined. The results obtained show that the Helmholtz equation gives a better description of the prognostic fields. Orig. art. has: 7 formulas, 2 maps, and 2 tables.

SUB CODE: 12, 04/ SUBM DATE: 26May66/ ORIG REF: 005

Card 2/2



L 00921-66 EWT(1)/EWA(j)/EWA(b)-2 JK

ACCESSION NR: AP5018539

UR/0242/65/000/005/0077/0079

AUTHOR: <sup>S5</sup> Avazov, E. N.; <sup>S5</sup> Dzhalilov, A. D.

TITLE: Weakening of reactions to typhoid-paratyphoid B vaccine <sup>b,55</sup>

SOURCE: Meditsinskiy zhurnal Uzbekistana, no. 5, 1965, 77-79

TOPIC TAGS: vaccine, disease control

ABSTRACT: Pyraminal (0.25 pyramidon, 0.03 caffeine, and 0.02 luminal) was administered to children to reduce the reactions to vaccination produced by typhoparatyphoid B vaccine. One group of children (378) received a half or whole tablet of pyraminal, depending on their age, 4-5 hours after vaccination. Another group (348) served as the control. General and local reactions were checked 10-12 and 24 hours later. The intensity of the temperature reaction was much weaker in the experimental group than in the control. The total of moderate (37.6-38.5° C) and severe (over 38.5°) reactions was 18.8 and 76.1%, respectively. Twenty-four hours after vaccination, among those who received pyraminal there was only a moderate decrease in the number of weak reactions (37.1-37.5°), whereas the total moderate and severe reactions were almost identical in both groups. Pyraminal also had a marked

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L 00921-66

ACCESSION NR: AP5018539

analgesic effect. Ten to twelve hours after vaccination, 18% of the experimental group had headaches, 9% had muscle pain, and 22% had pain at the injection site as compared with 89, 18, and 100%, respectively, of the control group. The effect of the drug was somewhat less 24 hours after vaccination. Other reactions - malaise, chill, etc. - paralleled the temperature reaction. Orig. art. has: 2 tables. <sup>2</sup>

ASSOCIATION: Syrdar'inskaya oblastnaya sanitarno-epidemiologicheskaya stantsiya (Syr-Darya Oblast Sanitary-Epidemiological Station)

SUBMITTED: 10Aug64

ENCL: 00

SUB CODE: LS

NO REF SOV: 000

OTHER: 000

Card 2/2 DP

AYUPOV, Arif; AVAZCV, Rakhmatulla; KODIROVA, R., red.

[Large crops in dry farming] Lalmikorlikda mul khosil;  
Sirdare oblasti, Zhizzakh ishlab chikarish boshkarmasi-  
dagi "Udarnik" sovkhozi g'allakorlarining tazhribalaridan.  
Toshkent, Uzdavnashr, 1964. 27 p. (MIRA 17:12)

AVAZOV, T.N.

New data on the hydrogeological conditions of Gazli structures.  
Uzb. geol. zhur. 7 no.4:26-33 '63. (MIRA 16:10)

1. Institut geologii i razrabotki neftyanykh i gazovykh  
mestorozhdeniy AN UzSSR.  
(Gazli region—Water, Underground)

AVAZOV, T.N.

Certain data on the hydrogeology of Gazli structures. Neftegaz, geol.  
o geofiz. no.8:24-31 '63. (MIRA 17:3)

1. Institut geologii razrabotki neftyanykh i gazovykh  
mestorohdeniy AN Uzbekskoy SSR.

AVAZOV, T.N.; KREMMER, A.M.; KHALIDAROV, S.

Phenols in the formation waters of the Gazli gas and oil field and adjacent areas. Dokl. AN Uz. SSR 21 no. 11:46-49 '64.

(MIRA 18:12)

1. Institut geologii i razrabotki neftyanykh i gazovykh mestorozhdeniy Gosudarstvennogo geologicheskogo komiteta SSSR.

Submitted June 21, 1963.

MARKMAN, A.L., doktor khim.nauk; AVAZOVA, M.A., inzh.

Oil from the seeds of *Haplophyllum perforatum* (*Ruta perforata*).  
Masl.-zhir.prom. 30 no.2:10-12 F '64. (MIRA 17:3)

1. Institut khimii rastitel'nykh veshchestv AN UzSSR.

AVAZOVA, M.A.; GLUSHENKOVA, A.I.; MARKMAN, A.L.

Seed oil of *Haplophyllum versicolor*. Uzb. khim. zhur. 9 no.5:  
43-47 '65. (MIRA 18:12)

1. Institut khimii rastitel'nykh veshchestv AN UzSSR. Submitted  
May 23, 1964.



AVBATSKIY, A. V.  
USSR/Chemistry - Dyestuffs

FD-1606

Card 1/1 : Pub. 129-9/23

Author : Yur'yev, Yu. K. and Avbatskiy, A. V.

Title : Dyestuffs containing the pyrrolidine ring

Periodical : Vest. Mosk. un., Ser. fizikom. i yest. nauk, 9, No 8, 63-69, Dec 1954

Abstract : Prepared azo dyes containing the pyrrolidine ring by treating N-phenylpyrrolidine with diazonium salts. Also prepared tri-phenylmethane dyes containing the pyrrolidine ring by treating N-phenylpyrrolidine with benzaldehyde and with Michler's ketones. An indamine dye containing the pyrrolidine ring was obtained through the oxidative condensation of N-phenylpyrrolidine with N-(para-aminophenyl)-pyrrolidine. The absorption spectra of pyrrolidine orange and N, N'(bis)-tetramethyleneindamine salts are further in the long wave region than those of methyl orange and the corresponding Bindshedler's salts. Five references. (all USSR). Equations; graphs.

Institution : Chair of Organic Chemistry

Submitted : June 19, 1954

AVCHEVICH, V. I.

"Camera for Making High Speed Photographic Intersections of Depth Measurements. Trudy Moskovskogo In-ta Inzhenerov Geodezii, Aerofoto'yemki i kartografii , No. 24, pp. 83-94. 1957.

AVCHIN, B., inshener.

Dismountable heavy-duty trailer for moving road machinery. Avt.  
transp. 32 no.1:30 Ja '54. (MLRA 7:8)  
(Automobiles---Trailers)

AVCHIN, B. Ye.; SEMENOV, O. B.

Mechanized charging of cupolas with the help of a suspended  
pushing conveyer. Lit. proizv. no.10:17-20 0 '62.  
(MIRA 15:10)

(Cupola furnaces) (Conveying machinery)