MELKYAN, E.K.

Distribution of actinomycetes of the thermophilic group in the soils of Armenia. Vop.mikrobiol. no.1:205-218 '61.

(MIRA 17:10)

AFRIKYAN, E.K.; BOBIKYAN, R.A.; AVAKYAN, Z.G.

Determination and distribution of vitamin B_{12} in various types of soils. Vop.mikrobiol. no.1:271-280 '61. (MIRA 17:10)

TUMANYAN, V.G.; SARUKHANYAN, L.B.; BOBIKYAN, R.A.; AFRIKYAN, E.K.

Effect of antibiotic feeding on the development and productivity of the silkworm. Vop. mikrobiol. no.2:319-331 '64.
(MIRA 18:3)

AVAKYAN, Z.G.; CHIL-AKOPYAN, L.A.; AFRIKYAN, E.K.

Effect of feeding with vitamins and other growth substances on the development and productivity of the silkworm. Vop. mikrobiol. no.2:333-354 '64. (MIRA 18:3)

AFRIKYAN, S.; DAVTYAN, A.

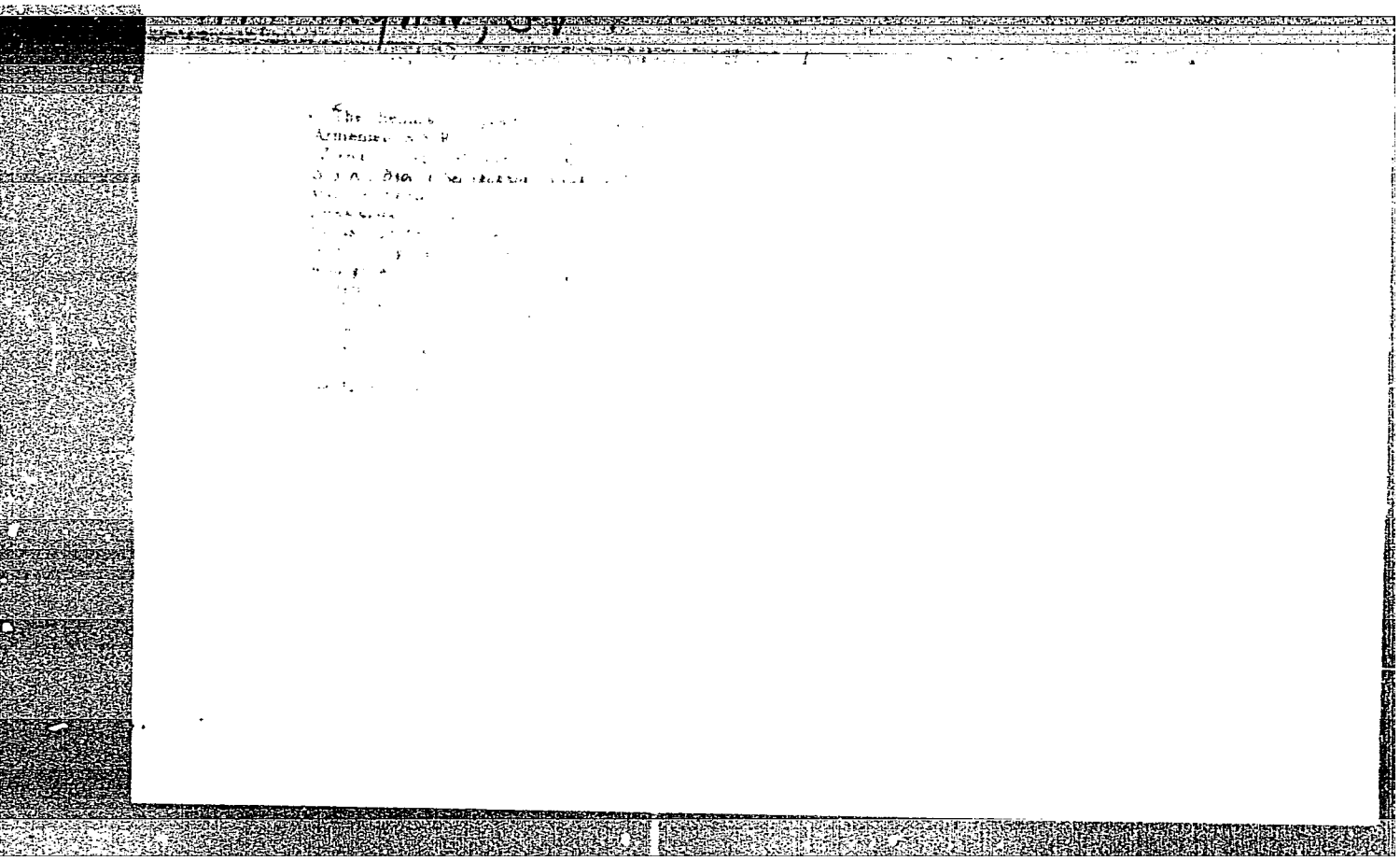
Automatic pressing line. Prom. Arm. 4 no.7:27-29 Jl '61.
(MIRA 14:7)

1. Yerevanskiy tabachno-fermentatsionnyy zavod.
(Tobacco processing machinery)

MAGAK'YAN, A.K. [deceased]; AFRIKYAN, S.V.

Lotus strictus F. et M. in the Armenian S.S.R. Izv.AN Arm.SSR. Biol.i sel'khoz.nauki 7 no.5:61-69 My '54. (MLRA 9:8)

1. Yerevanskiy zooveterinarnyy institut.
(Aras Valley--Lotus)



AFRIKYAN, S. V., Cand of Bio Sci -- (diss) "Lotus of the Armenian SSR and their biological-ecological and dietary characteristics." Yerevan, 1957 27 pp (Yerevan State University im Molotov) 160 copies (KL, 31-57, 104)

Abs Jour : Ref Zhur - Biol., No 7, 1958, 30895

Author : Afrikyan S.V.
Inst : -
Title : Consumability of Cultivated and of Wild Lotuses by Farm Animals.
(Poyedayemost' kul'turnykh i dikorastushchikh lyadventsev sel'skokhozyaystvennymi zhivotnymi).

Orig Pub : Izv. AN ArmSSR, biol. i s.-kh. n., 1957, 10, No 6, 89-95.

Abstract : The observations conducted on the pastures, as well as the special experiments carried out, established that the consumability of different species of lotuses is unequal. Lotus corniculatus of the Voronezh variety, Moscow variety 287, and "thin" lotus, are perfectly consumable; also good are "sticking out" lotus, and Lotus corniculatus; "pilose" lotus is moderately

AFRIKYAN, S.V., kand.biol.nauk

Formation of nodules in wild and cultivated species of bird's foot trefoil. Agrobiologiia no.4:132-133 Jl-Ag '58. (MIRA 11:9)
(Micro-organisms, Nitrogen--Fixing)

AFRIKYAN, S.V.; KAZARYAN, V.A.

High carotene content of new feed plants. Izv.AN Arm.SSR. Biol. nauki 12 no.11:37-45 N '59. (MIRA 13:5)

1. Yerevanskiy zooveterinarnyy institut.
(FORAGE PLANTS) (CAROTENE)

AMBIKYAN, S.V.

Lotus gebella Vent. Bot.zhur. 44 no.5:687-693 My '59.
(MIRA 12:11)

1. Orenburgskiy sel'skokhozyaystvennyy institut.
(Armenia--Lotus)

AFRIKYAN, S.V.

New forage plants for the improvement of mountain meadows and pastures. Bot. zhur. 48 no.6:861-866 Je '63.
(MIRA 17:1)

1. Khar'kovskiy zooveterinarnyy institut.

USSR

p-Alkoxybenzoic acids. I. γ-Methyl-γ-dimethylaminopropyl esters of p-alkoxybenzoic acids and their derivatives. A. L. Mndzhoyan, V. G. Afrikyan, A. A. Dokhikyan, and A. N. Oganesyan. *Doklady Akad. Nauk Armyan. S.S.R* 18, 7–8(in Russian; 9, in Armenian)(1954).—The following p-ROC$_6$H$_4$CO$_2$CHMeCH$_2$CH$_2$NMe$_2$ (I) and salts were prepd. for biol. tests (R, b.p./mm., and the m.ps. of the HCl, MeI, and EtI salts given): Me, 170–1°/2, 185–6°, 188–7°, 135–5.5°; Et, 165–6°/1, 138–8°, 162–3°, 143–4°; Pr, 195–6°/2, 118–19°, 151–52°, 119–20°; iso-Pr, 165–6°/2.5, 110–11°, 169–70°, 141–2°; Bu, 191–2°/1, 53–54°, 154–5°, 110–17°; iso-Bu, 174–5°/3, 125–6°, 170–1°, 128–9°; Am, 180–7°/1, 112–13°, 189–3°, 108–9°; iso-Am, 196–7°/2, 116–17°, 145–6°, 118–19°; Me(CH$_2$)$_5$, 253–4°/3, —, 143–4°, 133–4°; Me$_2$CH(CH$_2$)$_5$, 204–5°/2.5, 123–4°, 142–3°, 95–6°; Me(CH$_2$)$_6$, 214–15°/1, 94–5°, 151–2°, 135–6°, Me$_2$CH(CH$_2$)$_6$, 230–21°/2.5, —, 146–7°, 107–8°; Me(CH$_2$)$_7$, 214–15°/2.5, 80–1°, 154–5°, 130–1°. PhCH$_2$, 241–2, 144–5°, 189–90°, 105–6°; PhCH$_2$CH$_2$, 245–6°/2, 54–5°, 135–6°, 127–8°.

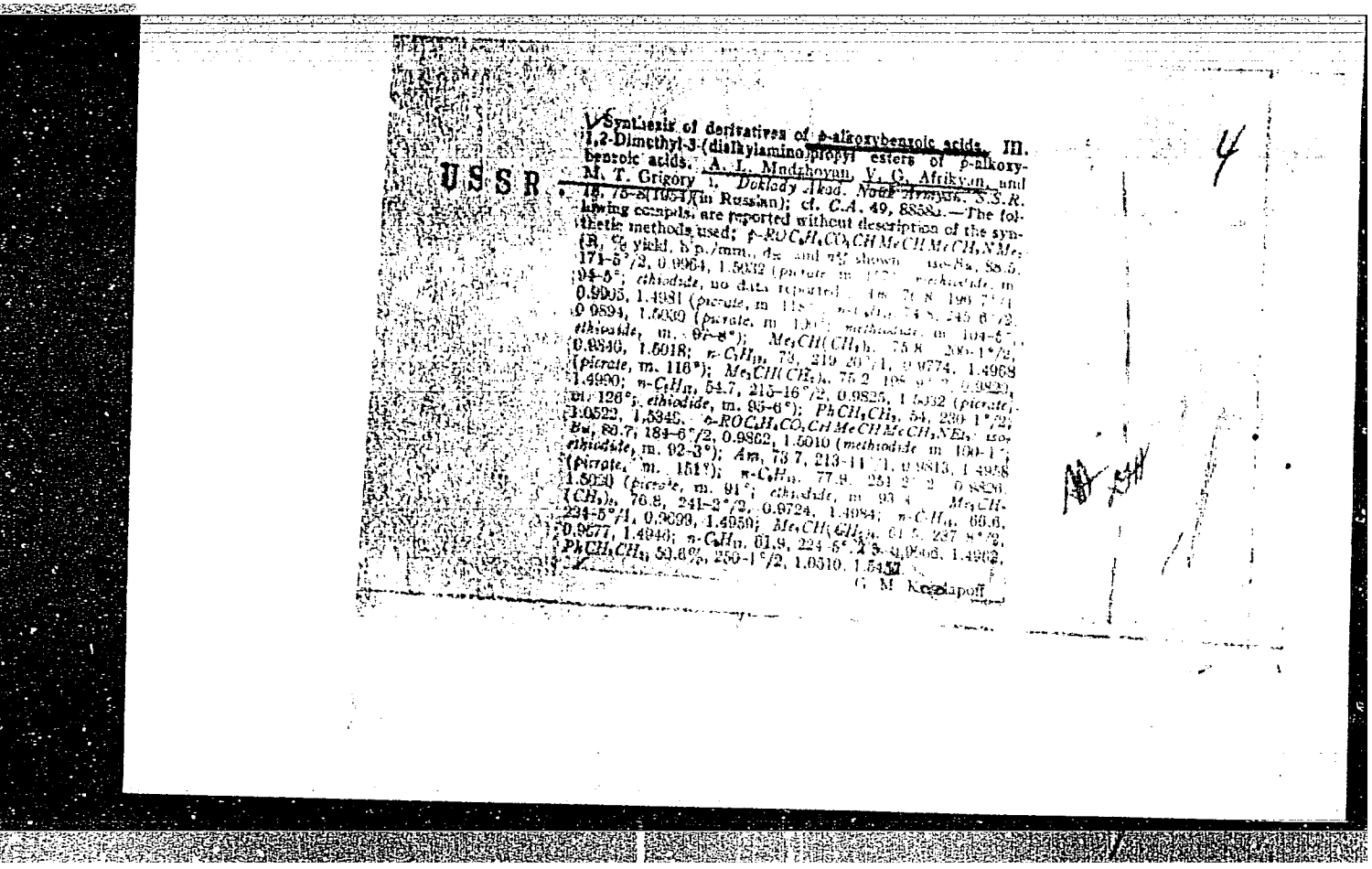
A. Sharlin

MNDZHOYAN, A.L.; AFRIKYAN, V.G.; DOKHIKYAN, A.A.

Investigation of the synthesis of p-alkoxy benzoic acid derivatives. Part 2. Dokl. AN Arm. SSR 18 no.2:39-43 '54. (MLRA 8:3)

1. Deystvitel'nyy chlen Akademii nauk Arm. SSR (for Mndzhoyan).
2. Laboratoriya farmatsevticheskoy khimii Akademii nauk Armyanskoy SSR.

(Benzoic acid)



USSR

Synthesis of derivatives of p-alkoxybenzoic acids. III. 1,2-Dimethyl-3-(dialkylamino)propyl esters of p-alkoxybenzoic acids. A. L. Mndzhoyan, V. G. Afrikyan, and M. T. Grigory a. *Doklady Akad. Nauk Armyan. S.S.R.* 18, 75–8(1954)(in Russian); cf. *C.A.* 49, 8858i.—The following compds. are reported without description of the synthetic methods used; *p*-$ROC_6H_4CO_2CHMeCHMeCH_2NMe_2$ (R, % yield, b.p./mm., d_4^{20}, and n_D^{20} shown): Me, 58.5, 173–5°/2, 0.9964, 1.5032 (*picrate*, m. [illegible], *methiodide*, m. 94–5°, *ethiodide*, no data reported); Et, 70.8, 190–7°/1, 0.9905, 1.4981 (*picrate*, m. 118–[illegible], *methiodide*, m. 74–5, 245–6°/2, 0.9894, 1.5030 (*picrate*, m. 100–[illegible], *methiodide*, m. 104–5°, *ethiodide*, m. 92–3°); $Me_2CH(CH_2)_2$, 75.8, 205–7°/2, 0.9846, 1.5018; *n*-C_5H_{11}, 73, 219–20°/1, 0.9774, 1.4968 (*picrate*, m. 116°); $Me_2CH(CH_2)_3$, 75.2, 105–[illegible], 0.9823, 1.4990; *n*-C_6H_{13}, 54.7, 215–16°/2, 0.9825, 1.5032 (*picrate*, m. 126°, *ethiodide*, m. 95–6°); $PhCH_2CH_2$, 54, 230–1°/2, 1.0522, 1.5345. *o*-$ROC_6H_4CO_2CHMeCHMeCH_2NEt_2$: Et, 80.7, 184–6°/2, 0.9862, 1.5010 (*methiodide* m. 100–1°, *ethiodide*, m. 92–3°); Am, 73.7, 213–14°/1, 0.9815, 1.4958 (*picrate*, m. 151°); *n*-C_6H_{13}, 77.8, 231–2°/2, 0.9826, 1.5020 (*picrate*, m. 91°; *ethiodide*, m. 93–4°). $Me_2CH(CH_2)_2$, 76.8, 241–2°/2, 0.9724, 1.4984; *n*-C_7H_{15}, 66.6, 234–5°/1, 0.9699, 1.4950; $Me_2CH(CH_2)_3$, 61.5, 237–8°/2, 0.9677, 1.4946; *n*-C_8H_{17}, 61.9, 224–6°/1.5, 0.9566, 1.4902, $PhCH_2CH_2$, 53.6%, 250–1°/2, 1.0510, 1.5457.

G. M. Kosolapoff

AFRIKYAN, V. G.

USSR.

Synthesis of derivatives of benzimidazole. I. Some 2-(*p*-alkoxyphenyl, *p*-alkoxybenzyl, and *p*-alkoxyphenylethyl)benzimidazoles. A. L. Mndzhoyan, V. G. Afrikyan, A. N. Oganesyan, and S. M. Davtyan. *Izvestiya Akad. Nauk Armyan. S.S.R.* 18, 111-17(in Russian; Armenian summary, 117-18)(1954).—The following substances were prepd. without details of synthesis in the present paper (% yield, m.p. and m.p. of HCl salt given): benzimidazole, (I) 86.9, 171-2°, 113°; *2-phenyl*-I, 93.8, 294-5°, 306°; *2-p-anisyl*-I, 71.4, 269-60°, 255-6°; *2-p-phenetsyl*-I, 84.1, 263-4°, 233-4°; *2-p-propoxyphenyl*-I, 81.5, 255-6°, 275-6°; *2-p-isopropoxyphenyl*-I, 41.9, 269-1°, 273-4°; *2-p-butoxyphenyl*-I, 58.2, 275-6°, 277-8°; *2-p-isobutoxyphenyl*-I, 36.5, 274°, 280-1°; *2-methyl*-I, 75.2, 176°, 293°; *2-benzyl*-I, 95.6, 187°, 92-4°; *2-p-methoxybenzyl*-I, 80.4, 271-2°, 260-1°; *2-p-ethoxybenzyl*-I, 79.4, 274-5°, 263-4°; *2-p-propoxybenzyl*-I (III), 75.8, 239-40°, 242-3°; *2-p-isopropoxybenzyl*-I, (II), 70.2, 237-8°, 240-8°; *2-p-butoxybenzyl*-I, 69.5, 246-7°, 230-1°; *2-p-isobutoxybenzyl*-I, 68.5, 223-4°, 274-5°; *2-ethyl*-I, 81.0, 171°, 245°; *2-phenethyl*-I, 89.8, 189-90°, 209-70°; *2-p-anisylethyl*-I, 82.7, 220-1°, 262-3°; *2-p-phenethylethyl*-I, 78.6, 209-10°, 276-7°; *2-p-propoxyphenethyl*-I, 73.9, 177-8°, 280-1°; *2-p-isopropoxyphenethyl*-I, 69.6, 144-5°, 269-70°, *2-p-butoxyphenethyl*-I, 72.1, 221-2°, 284-6°; *2-p-isobutoxyphenethyl*-I, 68.6, 174-5°, 279-80°. The most effective substances in this group in their ability to block the acetylcholine contractions of frog gastric muscle are: II and III. Phenethyl derivs. are less effective, and the Ph derivs. are least effective.

G. M. Kosolapoff

MNDZHOYAN, A.L.; AFRIKYAN, V.G.; DOKHIKYAN, A.A.

Investigation on the synthesis of derived p-alkoxy benzoic acids. Dokl. AN Arm. SSR. 19 no.3:85-91 '54. (MLRA 8:7)

1. Deystvitel'nyy chlen Akademii nauk Armyanskoy SSR. (for Mndzhoyan)
2. Laboratoriya farmaticheskoy khimii Akademii nauk Armyanskoy SSR. (Benzoic acid)

MNDZHOYAN, A.L.; AFRIKYAN, V.G.; PAPAYAN, G.L.

Investigation on the synthesis of derived p-alkoxy benzoic acids. Dokl. AN Arm. SSR 19 no.4:105-109 '54. (MIRA 8:7)

1. Deystvitel'nyy chlen Akademii nauk Armyanskoy SSR. (for Mndzhoyan).
2. Laboratoriya farmatsevticheskoy khimii Akademii nauk Armyanskoy SSR.

MNDZHOYAN, A.L.; AFRIKYAN, V.G.; PAPAYAN, G.L.

Investigation on the synthesis of derived p-alkoxy benzoic acids.
Dokl. AN Arm. SSR 19 no.5;137-142 '54. (MLRA 8:7)

1. Deystvitel'nyy chlen Akademii nauk Armyanskoy SSR. (for Mndzhoyan)
2. Laboratoriya farmatsevticheskoy khimii Akademii nauk Armyanskoy SSR.
(Benzoic acid)

AFRIKYAN, V. G.

Derivatives of benzimidazole. II. Some 2-benzylalkylmethylbenzimidazoles. A. L. Mndzhoyan, V. G. Afrikyan, and G. L. Papayan. *Doklady Akad. Nauk Armyan. S.S.R.* 20, 133–7(1955); cf. *C.A.* 49, 10932*d*.—The following $C_6H_4.N:C(CHRCH_2Ph).NH$ were prepd. (R, % yield, and m.p. given): Me, 83.1, 193–4°; Et, 86.3, 198–9°; Pr, 70.4, 196–7°; iso-Pr, 65.1, 209–10°; Bu, 66.6, 189–90°; iso-Bu, 61.8, 195–6°; Am, 63.6, 203–4°; iso-Am, 62.8, 211–12°. The compds. are cholinolytic.

A. S. Mirkin

CH

Synthesis of derivatives of *p*-alkoxybenzoic acids. X. 2-Dialkylaminoethyl thioesters of *p*-alkoxybenzoic acids and their quaternary salts. A. L. Mndzhoyan, V. G. Afrikyan, and A. A. Dokhikyan. *Doklady Akad. Nauk Armyan. S.S.R.* 21, 27–32 (1955) (in Russian; Armenian summary); cf. *C.A.* 50, 245a, 4073g.—The following esters are reported for pharmacol. tests. *p*-$ROC_6H_4C(O)SCH_2CH_2NMe_2$ (*R*, %, yield, b.p., d_{20}, n_D^{20}, and m.p. of HCl salt shown): *Me*, 70.6, b_4 170–2°, 1.4147, 1.5680, 173°; *Et*, 79.2, b_2 178–80°, 1.0997, 1.5588, 152°; *Pr*, 61.5, b_3 180°, 1.0735, 1.5466, 149°; *iso-Pr*, 70.1, b_3 182–4°, 1.0735, 1.5484, 159°; *Bu*, 62.7, b_4 210°, 1.0584, 1.5385, 142°; *iso-Bu*, 68.5, b. 200°, 1.0581, 1.5383, 148°; *Am*, 73.5, b_3 195–6°, 1.0514, 1.5432, 134°; *iso-Am*, 81.3, b_3 183–5°, 1.0444, 1.5359, 110°. *p*-$ROC_6H_4C(O)SCH_2CH_2NEt_2$: *Me*, 64.5, b_4 215°, 1.0788, 1.5492, 119°; *Et*, 72.3, b_4 188–8°, 1.0571, 1.5434, 130°; *Pr*, 70, b_4 188–90°, 1.0436, 1.5351, 132–3°; *iso-Pr*, 63, b_4 195°, 1.0440, 1.5405, 148–9°; *Bu*, 63.6, b_4 188–90°, 1.0333, 1.5340, 139°; *iso-Bu*, 64.3, b_3 210–12°, 1.0343, 1.5340, 130–1°; *Am*, 60, b_3 195°, 1.0229, 1.5332, 94°; *iso-Am*, 86.4, b_3 200°, 1.0355, 1.5352, 128–9°. *p*-$ROC_6H_4C(O)SCH_2CH_2NMe_2R'I$ (*R*, *R'*, and m.p. given): *Me*, *Me*, 233–4°; *Me*, *Et*, 207–8°; *Et*, *Me*, 218–19°; *Et*, *Et*, 172–3°; *Pr*, *Me*, 203°; *Pr*, *Et*, 153–4°; *iso-Pr*, *Me*, 208–9°; *iso-Pr*, *Et*, 155–6°; *Bu*, *Me*, 201–2°; *Bu*, *Et*, 149–50°; *iso-Bu*, *Me*, 212°; *iso-Bu*, *Et*, 150°; *Am*, *Me*, 182–3°; *Am*, Et, 148–7°; *iso-Am*, *Me*, 166–7°; *iso-Am*, *Et*, 125–6°; *p*-$ROC_6H_4C(O)SCH_2CH_2NEt_2R'I$: *Me*, *Me*, 193°; *Me*, *Et*, 153°; *Et*, *Me*, 139°; *Et*, *Et*, 135°; *Pr*, *Me*, 167–8°; *Pr*, *Et*, 150–1°; *iso-Pr*, *Me*, 178 9°; *iso-Pr*, *Et*, 190°; *Bu*, *Me*, 130°; *Bu*, *Et*, 160–2°; *iso-Bu*, *Me*, 174–5°; *iso-Bu*, *Et*, 181–2°; *Am*, *Me*, 132–3°; *Am*, *Et*, 160°; *iso-Am*, *Me*, 170–1°; *iso-Am*, *Et*, 120 [illegible]

G. M. Kosolapoff

(2)

ALKYLCN - VG

Derivatives of p-alkoxybenzoic acids. XI. 1-Methyl-3-dialkylaminopropyl thio esters of p-alkoxybenzoic acids and their quaternary salts. A. L. Mndzhoyan, V. G. Afrikyan, and A. N. Oganesyan. *Doklady Akad. Nauk Armyan. S.S.R.* 21, No. 3, 121–8(1955); cf. *C.A.* 50, 4845c.—The following substances were prepd. for biological tests (no details of procedures): *p*-$ROC_6H_4C(O)SCHMeCH_2CH_2NMe_2$ (*R*, % yield, b.p./mm., d_{20}, n_D^{20}, and m.p. of HCl salt shown): *Me*, 42, 188–9°/2, 1.0849, 1.5540, 168°; *Et*, 68.4, 200°/4, 1.0243, 1.5340, 121°; *Pr*, 40, 212°/5, 1.0512, 1.5420, 144°; *iso-Pr*, 60, 187–90°/3, 1.0452, 1.5395, 103°; *Bu*, 48, 225°/4, 1.0400, 1.5380, 140°; *iso-Bu*, 50, 205°/3, 1.0707, 1.5470, 120°; *Am*, 50, 233°/4, 1.0297, 1.5330, 138–9°; *iso-Am*, 50.5, 215–20°/4, 1.0270, 1.5330, 143°. *p*-$ROC_6H_4C(O)SCHMeCH_2CH_2NEt_2$ (same notation): *Me*, 45, 210°/4, 1.0448, 1.5335, 93°; *Et* 50, b. 212°, 1.0425, 1.5300, 129°; *Pr*, 54.5%, 192–5°/1, 1.0316, 1.5313, 106°; *iso-Pr*, 50, 225°/5, 1.0278, 1.5319, 115–16°; *Bu*, 50, 235°/3, 1.0177, 1.5286, 120°; *iso-Bu*, 43.3, 240°/5, 1.0138, 1.5290, 118°; *Am*, 60, 245°/4, 1.0142, 1.5280, 109°; *iso-Am*, 45, 220°/2, 1.0064, 1.5245, 90°. *p*-$ROC_6H_4C(O)SCHMeCH_2CH_2NEt_2R'I$ (*R*, *R'*, m.p., resp.): *Me*, *Me*, 128–9°; *Et*, *Me*, 131–2°; *Et*, *Et*, 144–5°; *Pr*, *Me*, 139–40°; *iso-Pr*, *Me*, 122–3°; *iso-Pr*, *Et*, 99–100°; *Bu*, *Me*, 130–1°; *Bu*, *Et*, 141–2°; *iso-Bu*, *Me*, 140–1°; *iso-Bu*, *Et*, 120–1°; *Am*, *Me*, 139–40°; *iso-Am*, *Me*, 132–3°. *p*-$ROC_6H_4C(O)SCHMeCH_2CH_2NMe_2R'I$ (*R*, *R'*, and m.p. given): *Me*, *Me*, 197–8°; *Me*, *Et*, 144–5°; *Et*, *Me*, 169–70°; *Et*, *Et*, 146–7°; *Pr*, *Me*, 170–1°; *Pr*, *Et*, 126–7°; *iso-Pr*, *Me*, 156–7°; *iso-Pr*, *Et*, 114–15°; *Bu*, *Me*, 164–5°; *Bu*, *Et*, 135–6°; *iso-Bu*, *Me*, 168–9°; *iso-Bu*, *Et*, 154–5°; *Am*, *Me*, 159–60°; *Am*, *Et*, 122–3°; *iso-Am*, *Me*, 160–1°; *iso-Am*, *Et*, 118–19°.

G. M. Kosolapoff

AFRIKYAN, V. G. (Thru-out)

Call Nr: AF 1135663

AUTHOR: None given

TITLE: Syntheses of Heterocyclic Compounds (Sintezy geterotsiklicheskikh soyedineniy)

PUB. DATA: Izdatel'stvo AN Armyanskoy SSR, Yerevan, 1956, 84 pp., 2000 copies

ORIG. AGENCY: Akademiya nauk Armyanskoy SSR. Institut tonkoy organicheskoy khimii

EDITOR: A. L. Mndzhoyan, Editor-in-Chief
Editorial Staff: Aroyan, A. A., Afrikyan, V. G., Babiyan, N. A., Mndzhoyan, O. L., Tatevosyan, G. T.

PURPOSE: The purpose of this book is to facilitate the work of scientists engaged in the preparation of compounds frequently used as initial substances.

COVERAGE: The Institute of Fine Organic Chemistry of the Academy of Sciences of the Armenian SSR is publishing new series of methods for the synthesis of heterocyclic compounds. Not only methods developed by the Institute, but also methods developed by other institutions will be included. All the published methods will be tested at the Institute

~~Card 1/25~~

Syntheses of Heterocyclic Compounds (Cont.)

of Fine Organic Chemistry of the Academy of Sciences of the Armenian SSR. Because of the great interest in furan derivatives as raw material for many intermediates and for products used in medicine and agriculture, this issue is devoted to the synthesis of furan derivatives exclusively. The description of "Methods" covers the literature up to 1956. The description of "Other Methods of Preparation" covers the literature up to 1954. Names of scientists concerned with the development and testing of the methods are in the abstracts of the individual methods.

Synthesis of 5-benzyl-furan-2-carboxylic acid: Proposed by A. L. Mndzhoyan and V. G. Afrikyan; verified by G. T. Tatevosyan and N. M. Divanyan. The product was prepared from methyl ester of 5-benzylfuran-2-carboxylic acid and a 10% NaOH solution by heating the mixture on a water bath for 3-4 hrs. M.p. 104-105°C; yield, 84.1-89.1%. The authors state that H. J. H. Fenton and F. Robinson (1909) prepared a substance which they assumed to be 5-benzylfuran-2-carboxylic acid by condensation of 5-chloromethyl-furfural

with benzene followed by oxidation of the aldehyde formed. However, this product had a m.p. of 167-169°C; thus it could not be 5-benzylfuran-2-carboxylic acid. Three references, one Slavic (1953).

Synthesis of 3-(5'-benzyl-2'-furyl)-5-mercapto-1,2,4-triazole: Proposed by A. L. Mndzhoyan and V. G. Afrikyan; verified by N. A. Babiyan and A. A. Dokhikyan. The product was obtained by heating a mixture of 5-benzyl-2-furoyl-thiosemicarbazide, sodium methylate, and methyl alcohol in an autoclave at 145-150°C for 3 hrs. M.p. 232°C; yield, 83.6-87.6%. One Slavic reference (1953). 13

Synthesis of 5-bromofuran-2-carboxylic acid: Proposed by A. L. Mndzhoyan and V. G. Afrikyan; verified by M. G. Grigoryan and Yu. O. Martirosyan. A mixture of furan-2-carboxylic acid, red phosphorus and chloroform is heated to boiling on a water bath, and bromine is added dropwise over a period of 5-6 hrs. The solvent is 15

and conc. H_2SO_4 at 10°C. In 20-30 min., the temperature of the mixture reaches room temperature; sodium acetate is added, and the mixture is distilled in vacuo. The 140-142°/20 mm fraction is collected; yield 65-70%. Other methods of preparation: furfural diacetate can be obtained from furfural and acetic anhydride in the presence of sulfuric acid, zinc chloride, tin chloride, acetic acid, and other catalysts. Six references, none Slavic.

Synthesis of 5-diethylaminomethylfuryl-2-carbinol: Proposed by A. L. Mndzhoyan and M. T. Grigoryan; verified by N. A. Babiyan and N. M. Ogandzhanyan. Methyl ester of 5-diethylaminomethylfuran-2-carboxylic acid is added to lithium aluminum hydride. The mixture is allowed to stand overnight and the excess of lithium aluminum hydride is decomposed by addition of water. After filtration, drying, and vacuum-distillation, the 120-122°/1 mm fraction is collected. Yield, 80.2-83.5%. Three references, one Slavic (1953). 20

Synthesis of methyl ester of 5-benzylfuran-2-carboxylic acid: Proposed by A. L. Mndzhoyan, V. G. Afrikyan, and A. A. Dokhikyan; verified by G. T. Tatevosyan and N. M. Divanyan. Anhydrous aluminum chloride is slowly added to a benzene solution of methyl ester of 5-chloromethylfuran-2-carboxylic acid. The mixture is heated for 4-5 hrs., at 80-85°C, cooled, and dilute HCl is added in order to dissolve the formed $Al(OH)_3$. After removal of the solvent by distillation, the product is distilled in vacuo, and the 150-155°/1 mm fraction is collected. Yield, 62.3-63.8%. On cooling, the product crystallizes; m.p. 43-44°C. One Slavic reference (1953). 22

Synthesis of methyl ester of 5-bromomethylfuran-2-carboxylic acid: Proposed by A. L. Mndzhoyan and V. G. Afrikyan; verified by G. T. Tatevosyan and S. G. Agbalyan. A rapid stream of hydrogen bromide is passed through a mixture consisting of methyl ester of furan-2-carboxylic acid, dry dichloroethane, paraformaldehyde, and zinc chloride. The reaction time is 2.0-2.5 hrs.; reaction temperature, 24-26°/2.5 mm; yield, 78.9-79.9%.

Syntheses of Heterocyclic Compounds (Cont.)

Syntheses of Heterocyclic Compounds (Cont.)

Synthesis of methyl ester of furan-2-carboxylic acid: Proposed by V. G. Afrikyan and M. T. Grigoryan; verified by G. T. Tatevosyan and S. G. Agbalyan. Method I. A rapid stream of hydrogen chloride is passed through a boiling solution of furan-2-carboxylic acid in methyl alcohol over a period of 2.5-3.0 hrs. The obtained methyl ester of furan-2-carboxylic acid has a b.p. of 176-177°/680 mm; yield, 79.3-81.6%. Method II. Conc. sulfuric acid is added to a mixture of furan-2-carboxylic acid in methyl alcohol. The mixture is heated to boiling for 4 hrs. The yield of methyl of methyl ester of furan-2-carboxylic acid obtained by Method II is lower than that obtained by method I (79.3-81.6% and 75.4-76.2% resp.). Other methods of preparation: Methyl ester of furan-2-carboxylic acid may also be obtained by esterification of the acid; methylation of the acid with dimethyl sulfate in alkaline medium; reaction of furoyl chloride with magnesium methylate in methyl alcohol. Four references, none Slavic.

butyl, and isobutyl esters of 5-chloromethylfuran-2-carboxylic acid were obtained by the same method with yields of 80-90%. Four references, 1 Slavic (1953).

Synthesis of 2-methylfuran (sylvan): Proposed by A. L. Mndzhoyan and G. T. Tatevosyan; verified by V. G. Afrikyan and G. L. Papayan. 5-Methylfuran-2-carboxylic acid is decomposed by heating at 170-175°C. The sylvan formed has a b.p. of 61°/680 mm; yield, 80.1-84.8%. Other methods of preparation: Dry distillation of wood; catalytic hydrogenation of furfural over catalysts (Cu or Cu-Cr) at temperatures >200°C, a mixture of furfural, furan, and sylvan is obtained by passing furfuryl alcohol over aluminum oxide at 390°C or heating it with a nickel catalyst at 150°C. Six references, 1 Slavic (1939).

is then heated to boiling for 2.5-3.0 hrs., cooled and the reaction product decomposed with an aqueous solution of ammonium chloride. Phenylfurylcarbinol is obtained with a yield of 59.4-62.1%; b.p., 125-126°/0.5 mm. Three references, 1 Slavic (1956)

Synthesis of furan: Verified by G. T. Tatevosyan and S. P. Ekmekdzhyan. An illustration and description of an apparatus used for the synthesis are given. Furan-2-carboxylic acid is decarboxylized by heating to 200-205°C. Yield of furan, 74.7-80.2%; b.p., 31-32°/760 mm. Other methods of preparation: Furan can be obtained by removing the carbonyl group from furfural either by adding furfural to a molten mixture of KOH and NaOH or by passing its vapors over hot soda lime in the presence of catalysts (such as zinc and copper chromites and molybdates) at 300-400°C; nickel, iron, platinum, and palladium catalysts are also mentioned. A laboratory method for preparation of furan is based on decarboxylation of furan-2-carboxylic acid by 50

dry distillation of the barium salt or by heating barium salt with soda lime. Furan-2-carboxylic acid can be decarboxylated by heating it in quinoline in the presence of cupric oxide. Ten references, two Slavic (1949-53)

Synthesis of furan-2-carboxylic acid and of furfuryl alcohol: Verified by V. G. Afrikyan and M. T. Grigoryan. 54
A 30% solution of sodium hydroxide is slowly added to furfural (at 15°C). Water is then added to the mixture to dissolve the precipitated sodium salt of furan-2-carboxylic acid. Furfuryl alcohol is extracted from the solution with ether; yield 63.5-64.5%; b.p. 75-77°/15 mm. The aqueous solution containing the sodium salt of furan-2-carboxylic acid is acidified with dilute H_2SO_4 or conc. HCl, and furan-2-carboxylic acid is precipitated. Yield,

78.4-80.1%; m.p. 132-133°C. Other methods of preparation: Furan-2-carboxylic acid is obtained by oxidation of furfural with $KMnO_4$ and alkali metal dichromates or with atmospheric oxygen in the presence of catalysts containing silver oxide. Sodium hypochlorite was also used to oxidize furfural and 2-propionylfuran. Furan-2-carboxylic acid is obtained from furfural along with furfuryl alcohol by the reaction with sodium amide and conc. solutions of alkalies. Furfuryl alcohol may be obtained by reduction of furfural with sodium amalgam. Catalytic reduction of furfural in liquid phase under pressure at 130-160°C in the presence of copper and copper-chrome catalysts containing alkaline earth oxides is widely used. Furfuryl alcohol was obtained by reduction of furan-2-carboxylic acid with lithium aluminum hydride; yield, 85%. Furfuryl alcohol and furan-2-carboxylic acid are obtained by dismutation of furfural with sodium amide and alkalies. Thirteen references, two Slavic (1939-49)

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Syntheses of Heterocyclic Compounds (Cont.)

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Syntheses of Heterocyclic Compounds (Cont.)

5-methyl-furan-2-carboxylic acid with PCl_3 or PCl_5. Two references, none Slavic.

Synthesis of 2-furoyl chloride: Proposed by A. L. Mndzhoyan; verified by V. G. Afrikyan and M. T. Grigoryan. A benzene solution of thionyl chloride is added to furan-2-carboxylic acid, and the mixture is heated to boiling for 10-12 hrs. The yield of 2-furoyl chloride is 91.1-92.0%; b.p. 89-90°/32 mm in vacuo. Other methods of preparation: 2-furoyl chloride was also obtained by heating furan-2-carboxylic acid with PCl_5 to 160°C without a solvent, but a lower yield was obtained. Chloroform was used as solvent. A patent was issued on preparation of 2-furoyl chloride by the reaction of pyromucic acid with excess of phosgene under pressure at temperatures up to 100°C. The reaction of a benzene solution of furan-2-carboxylic acid with excess of thionyl chloride is also mentioned. Five references, 1 Slavic (1946). 68

Synthesis of furfuryl chloride: Proposed by G. T. Tatevosyan and S. P. Ekmekdzhyan. Pyridine and ether are added to furfuryl alcohol. After cooling the mixture to -8°, -10°C, an ether solution of thionyl chloride is added. The temperature of the reaction mixture should not exceed 2-3°C. The product is extracted with ether. Furfuryl chloride is obtained with a yield of 39.4-41%; b.p. 49.1-49.4°/26 mm. The product cannot be stored even in sealed flasks; it must be used immediately. Other methods of preparation: The ether solution of furfuryl chloride can be prepared by the reaction of thionyl chloride with a cooled ether solution of furfuryl alcohol. The obtained solution contains about 10% furfuryl chloride. Hydrogen chloride in the presence of calcium carbide (dehydrating agent) was used instead of thionyl chloride. The amount of furfuryl in the obtained solution did not exceed 5%. The

use of chloroform as a solvent instead of ether was proposed. However, furfuryl chloride in pure state cannot be separated from solutions obtained by these methods. Three references, none Slavic.

Synthesis of β-chloroethyl ester of furan-2-carboxylic acid: Proposed by A. L. Mndzhoyan and M. T. Grigoryan; verified by O. L. Mndzhoyan and E. R. Bagdasaryan. A mixture of furan-2-carboxylic acid and ethylene chlorohydrin is heated to boiling, and a rapid stream of hydrogen chloride is passed into the boiling solution for 5-6 hrs. The mixture is then cooled to room temperature and transferred to a flask containing water. The β-chloroethyl ester of furan-2-carboxylic acid is distilled in vacuo at 126-128°/10 mm; yield, 71.9-72.7%. One Slavic reference (1953). 74

β-Chloroethyl ester of 5-chloromethylfuran-2-carboxylic acid: Proposed by A. L. Mndzhoyan, V. G. Afrikyan, and M. T. Grigoryan; verified by O. L. Mndzhoyan and E. R. Bagdasaryan. A rapid stream of hydrogen chloride is passed into a mixture of β-chloroethyl ester of 75

Syntheses of Heterocyclic Compounds (Cont.)

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bath for 8-12 hrs. at 90-95°C. The content of the flask is cooled and decomposed with ice water. Then the reaction mixture is added to dilute HCl, the benzene layer is separated, and the water layer is extracted with ether (three times). The ether solutions are added to the benzene solution, dried, the solvent removed, and the residue distilled in vacuo. The 119-125°/2 mm fraction is redistilled. The product obtained has a b.p. of 123-124°/2 mm; yield, 77.6-83.8%. Other methods of preparation: The ethyl ester of furoyl-2-acetic acid may be obtained by condensation of ethyl acetate with methyl ester of furan-2-carboxylic acid in the presence of sodium methylate; yield, 68.2%. Ethyl furoyl-2-acetate may be obtained by heating ethyl tert-butyl furoyl malonate with p-toluenesulfonic acid; yield 70%. Four references, none Slavic.

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MNDZHOYAN, A.L.; AFRIKYAN, V.G.; OGANESYAN, A.N.; PAPAYAN, G.L.

Investigations in the field of furan derivatives. Report no.9. Some amino esters of 5-aryl, aralkyloxymethyl furan-2-carboxylic acids. Dokl.AN Arm.SSR.23 no.5:205-213 '56. (MLRA 10:2)

1. Deystvitel'nyy chlen Akademii nauk ArmSSR (for Mndzhoyan).
2. Laboratoriya farmatsevticheskoy khimii Akademii nauk Armyanskoy SSR.

(Furan)

MNDZHOYAN, A.L.; AFRIKYAN, V.G.

2-benzylfuran. Sint. geterotsikl. soed. no. 2:17-18 '57.
(MIRA 11:7)
(Furan)

MNDZHOYAN, A.L.; AFRIKYAN, V.G.

5-benzylfuroyl-2-thiosemicarbazide. Sint. geterotsikl. soed. no. 2:19-20 '57. (MIRA 11:7)

(Semicarbazide)

MNDZHOYAN, A.L.; AFRIKYAN, V.G.

5-benzylfurfuryl alcohol. Sint. geterotsikl. soed. no. 2:21-27 '57. (MIRA 11:7)
(Furfuryl alcohol)

AFRIKYAN, V.G.; BADALYAN, V.

Furylacrylic acid. Sint. geterotsikl. soed. no. 2:55-57 '57.
(MIRA 11:7)
(Furanacrylic acid)

AFRIKYAN, V.O.; BADALYAN, V.Ye.

2-furanpropionic acid. Sint. geterotsikl. soed. no. 2:64-66 '57. (MIRA 11:7)
(Furanpropionic acid)

MNDZHOYAN, A.L.; AFRIKYAN, F.G.; DOKHIKYAN, A.A.

Furfurylbenzylamine. Sint. geterotsikl. soed. no. 2:71-73 '57.
(MIRA 11:7)
(Furfurylamine)

MNDZHOYAN, A.L.; AFRIKYAN, V.G.

Chloroanhydride of 5-bromo-2-furoic acid. Sint. geterotsikl. soed. no. 2:82-83 '57. (MIRA 11:7)

(Furoic acid)

AFRIKYAN, V. G.

MNDZHOYAN, A.L.; AFRIKYAN, V.G.

Investigating a series of amides with pyridine and thiazole rings.
Izv. AN Arm. SSR Ser. khim. nauk 10 no.2:143-157 '57. (MIRA 10:12)

1. Institut tonkoy organicheskoy khimii AN ArmSSR.
(Amides)

AFRIKYAN, V.G.

MNDZHOYAN, A.L.; AFRIKYAN, V.G.; DOKHIKYAN, A.A.

Synthesis of 1,2,4 - triazole derivatives. Report No.1: Some 3-(p - alkoxyphenyl) - 5- mercapto- 1,2,4-triazoles. Izv. AN Arm. SSR. Ser. khim. nauk v.10 no.5:357-362 '57. (MIRA 11:1)

1. Institut tonkoy organicheskoy khimii AN ArmSSR.
(Triazole)

AFRIKYAN, V. G.

MNDZHOYAN, A.L.; AFRIKYAN, V.G.; DOKHIKYAN, A.A.

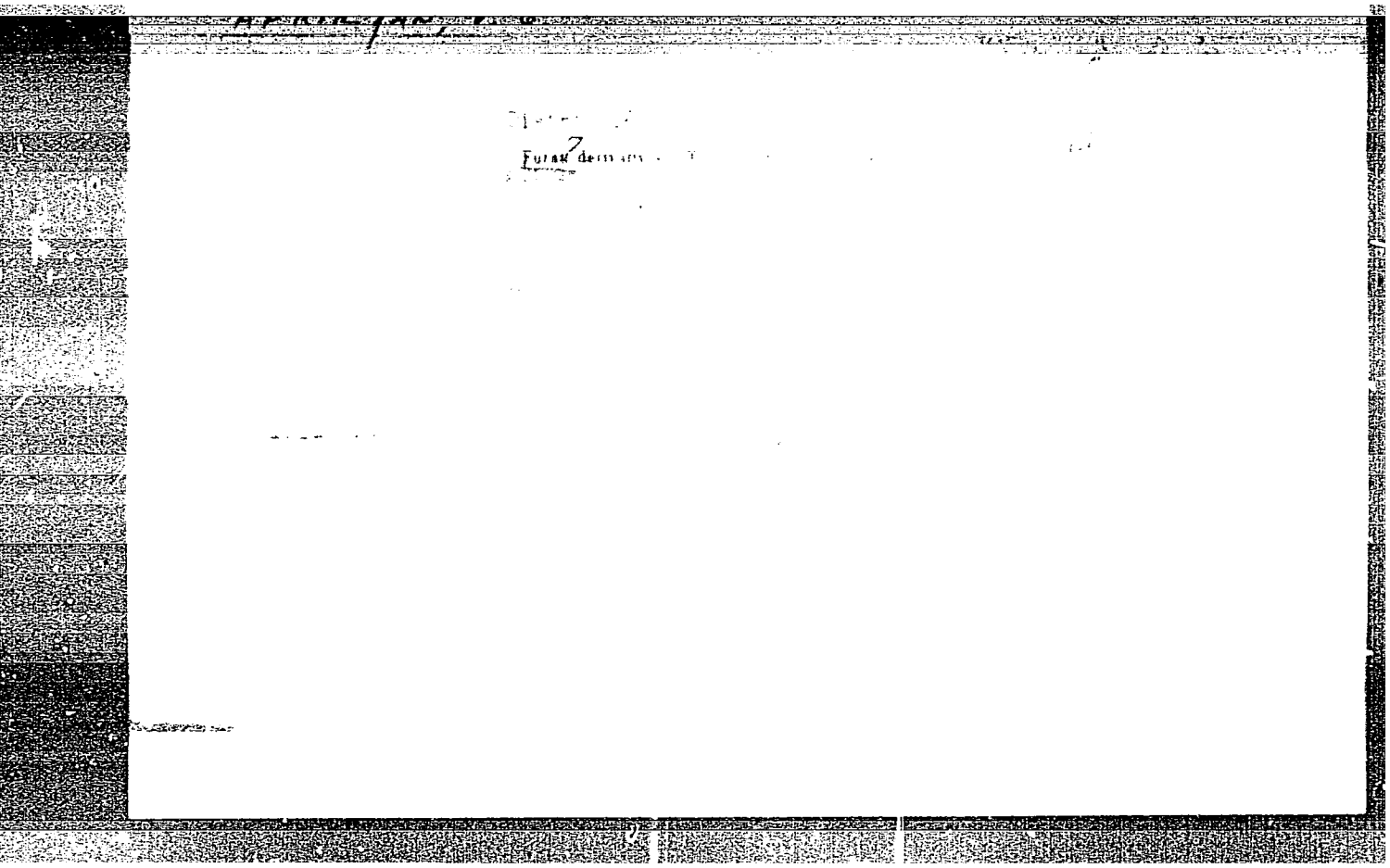
Synthesis of 1,2,4-triazole derivatives. Report No.2: Some 3-(p- alkoxyphenyl) - 5- alkylmercapto- 1,2,4-triazoles. Izv. AN Arm. SSR. Ser. khim. nauk v.10 no.5:363-368 '57. (MIRA 11:1)

1. Institut tonkoy organicheskoy khimii AN ArmSSR.
(Triazole)

MNDZHOYAN, A.L.; AFRIKYAN, V.G.; BADALYAN, V.Ye.

Synthesis of 1,2,4- triasole derivatives. Report No. 3: Synthesis of 3-(2'-furyl)-5-alkylmercapto-1,2,4-triazoles. Izv. AN Arm. SSR ser. khim. nauk 10 no.6:421-425 '57. (MIRA 11:6)

1.Institut tonkoy organicheskoy khimii AN ArmSSR.
(Triazole)



Afrikyan, V.G.

MKDZHOYAN, A.L.; AFRIKYAN, V.G.; OGANESYAN, A.N.

Research in the field of alkoxybenzoic acid derivatives. Report No. 14. Dokl.AN Arm.SSR 24 no.3:105-117 '57. (MLRA 10:5)

1. Akademik Akademii nauk Armyanskoy SSR (for Afrikyan).
(Benzoic acid)

AFRIKYAN, V.G.

MNDZHOYAN, A.L.; AFRIKYAN, V.G.; GRIGORYAN, M.T.

Research in the field of furan derivatives. Dokl. AN Arm.SSR 24 no.5:207-217 '57. (MIRA 10:7)

1. Akademik Akademii nauk Armyanskoy SSR (for Mndzhoyan).
(Furan)

AFRIKYAN, V.G.

MNDZHOYAN, A.L., akademik; AFRIKYAN, V.G.

Research in the field of furan derivatives. Report No.15. Dokl. AN Arm. SSR 25 no.4:201-205 '57. (MIRA 11:2)

1. AN ArmSSR (for Mndzhoyan). 2. Institut tonkoy organicheskoy khimii AN ArmSSR.

(Furan)

MNDZHOYAN, A.L.; AFRIKYAN, V.G.; PAPAYAN, G.L.

Amines and their derivatives. Report No.2: Synthesis of various secondary amines from 5-alkoxymethyl-2-furoic acids. Izv. AN Arm. SSR. Khim.nauki 11 no.4:281-286 '58. (MIRA 11:11)

1. Institut tonkoy organicheskoy khimii AN ArmSSR.
(Furoic acid) (Amines)

MNDZHOYAN, A.L.; AFRIKYAN, V.G.; DOKHIKYAN, A.A.

Investigations of amines and their derivatives. Report No.4: Synthesis of esters of phenyl-, benzyl- and n-alkoxybenzylalkyl-aminoacetic acids. Izv.AN Arm.SSR.Khim.nauki 11 no.5:357-362 '58. (MIRA 12:1)

1. Institut tonkoy organicheskoy khimii AN ArmSSR.
(Glycine)

MNDZHOYAN, A.L.; AFRIKYAN, V.G.; OGANESYAN, A.N.

Investigations of amines and their derivatives. Report No.5: Hydrazides of various n-alkoxybenzylalkylaminoacetic acids as possible antituberculotic compounds. Izv.AN Arm.SSR.Khim.nauki 11 no.5:363-368 '58. (MIRA 12:1)

1. Institut tonkoy organicheskoy khimii AN ArmSSR.
(Glycine) (Hydrazides) (Tuberculosis)

MNDZHOYAN, A.L.; AFRIKYAN, V.G., akademik; BADALYAN, V.Ye.; MARKARYAN, E.A.; KHORENYAN, G.A.

Investigation of derivatives of p-alkoxybenzoic acids. Dokl. AN Arm. SSR 27 no.3:161-177 '58. (MIRA 11:12)

1.AN Armyanskoy SSR.
(Benzoic acid)

MNDZHOYAN, A.L., akademik; AFRIKYAN, V.G.; BADALYAN, V.Ye.; MARTIROSYAN, Yu.O.

Investigations in the field of derivatives of p-alkoxybenzoic acid. Report No.16. Dokl.AN Arm.SSR 27 no.4:243-249 '58.(MIRA 12:1)

1. AN Armyanskoy SSR (for Mndzhoyan). 2. Institut tonkoy organicheskoy khimii AN Armyanskoy SSR.
(Benzoic acid)

MEDZHOYAN, A.L.; AFRIKYAN, V.O.; KHORENYAN, G.A.

2-(1'-piperidyl)propanol. Sint. geterotsikl. soed. no.4:65-67 '59.
(MIRA 13:11)

(Pieridinopropanol)

MNDZHOYAN, A.L.; AFRIKYAN, V.G.; MARKARYAN, E.A.

Furan derivatives. Report No.23: Some amino esters of 5-substituted 2-furancarboxylic acids. Izv.AN Arm.SSR. Khim.nauki 12 no.6:435-442 '59. (MIRA 13:7)

1. Institut tonkoy organicheskoy khimii AN Armyanskoy SSR.
(Furancarboxylic acid)

MNDZHOYAN, A.L.; AFRIKYAN, V.G.; OGANESYAN, A.N.; BADALYAN, V.Ye.

Derivatives of thiophene and tetrahydrothiophene (thiophane). Report No.1: Synthesis of some amino esters of 2,5-tetrahydrothiophenedicarboxylic acid. Izv.AN Arm.SSR Khim.nauki 13 no.1: 63-67 '60. (MIRA 13:7)

1. Institut tonkoy organicheskoy khimii AN ArmSSR.
(Thiophenedicarboxylic acid)

MNDZHOYAN, A.L., akad.; AFRIKYAN, V.G.; BADALYAN, V.Ye.

Studies on the derivatives of alkoxybenzoic acids. Report No.17: Synthesis of certain n-alkoxybenzoic esters of α- and β-methyl-γ-dialkylaminoethanols. Dokl.AN Arm.SSR 30 no.5:287-293 '60. (MIRA 13:8)

1. Institut tonkoy organicheskoy khimii Akademii nauk Armyanskoy SSR.
2. Akademiya nauk Armyanskoy SSR (for Mndzhoyan).
(Ethanol)

MNDZHOYAN, A.L.; AFRIKYAN, V.G.; BADALYAN, V.Ye.; DOKHIKYAN, A.A.

Research in the realm of derivatives of p-alkoxybenzoic acids. Report No. 18: Some amino esters of p-alkylmercaptoethoxybenzoic acids. Dokl.AN Arm.SSR 31 no. 2:97-110 '60. (MIRA 13:11)

1. Institut tonkoy organicheskoy khimii Akademii nauk Armyanskoy SSR. 2. Akademiya nauk Armyanskoy SSR (for Mndzhoyan).

(Benzoic acid)

MNDZHOYAN, A.L., akademik; AFRIKYAN, V.G.; DOKHIKYAN, A.A.

Research in the field of derivatives of p-alkoxybenzoic acids. Repprt No.19: Some amino esters of p-alkoxythiobenzoic acids. Dokl.AN Arm.SSR 31 no.3:161-165 '60. (MIRA 13:12)

1. Institut tonkoy organicheskoy khimii Akademii nauk Armyanskoy SSR. 2. AN Armyanskoy SSR (for Mndzhoyan).
(Benzoic acid)

MNDZHOYAN, A.L.; AFRIKYAN, V.G.; KHORENYAN, G.A.

Derivatives of furan. Report No.25: Some amino esters of tetrahydrofuran-2-carboxylic acid. Izv.AN Arm.SSR.Khim.nauki 14 no.1:67-70 '61. (MIRA 15:5)

1. Institut tonkoy organicheskoy khimii AN Armyanskoy SSR.
(Furoic acid)

MNDZHOYAN, A.L.; AFRIKYAN, V.G.

Derivatives of thiophene and tetrahydrothiophene. Report No.2: Synthesis of amino esters of thiobis-(α-methyl)-acetic aced. Izv.AN Arm.SSR. Khim.nauki 14 no.3:273-276 '61. (MIRA 14:9)

1. Institut tonkoy organicheskoy khimii AN Armyanskoy SSR.
(Thiophene) (Acetic acid)

MNDZHOYAN, A.L.; AFRIKYAN, V.G.; KHORENYAN, G.A.

Amines and their derivatives. Report No.12: Some N-furfuryl- and tetrahydrofurfurylamides as possible antispasmodics. Izv. AN Arm.SSR.Khim.nauki 14 no.4:363-368 '61. (MIRA 14:10)

1. Institut tonkoy organicheskoy khimii AN Armyanskoy SSR.
(Amides) (Antispasmodics)

MNDZHOYAN, A.L.; AFRIKYAN, V.G.; DOKHIKYAN, A.A.

Amines and their derivatives. Report No.13: Some 5- and 4, 5-substituted furfuryl- and tetrahydrohyfurfuryldialkylamines as possible cholinomimetics. Izv.AN Arm.SSR.Khim.nauki 14 no.4:369-375 '61. (MIRA 14:10)

1. Institut tonkoy organicheskoy khimii AN Armyanskoy SSR.
(Amines)

MNDZHOYAN, A.L., akademik; AFRIKYAN, V.G.; DOKHIKYAN, A.A.; OGANESYAN, A.N.

Investigations in the field of derivatives of p-alkoxybenzoic acids. Report No.20: Some amino esters of p-butoxybenzoic acids as possible cholinolytic substances. Dokl. AN Arm. SSR 33 no.1: 21-29 '61. (MIRA 14:9)

1. Institut tonkoy organicheskoy khimii AN Armyanskoy SSR.
2. Akademiy nauk Armyanskoy SSR (for Mndzhoyan).

(Benzoic acid) (Parasympathomimetics)

AFRIKYAN, V.G.; BABIYAN, N.A.

History of the development of fine organic chemistry in Armenia.
Iz ist.est.i tekh. 2:121 '62. (MIRA 18:4)

MNDZHOYAN, A.L.; AFRIKYAN, V.G.; KHORENYAN, G.A.; VASIL'YEVA, T.N.; ZHURULI, L.D.; KARAGEZYAN, S.G.

Derivatives of furan. Report No.28: Some thiosemicarbazones and semicarbazones of the furan series as possible antituberculosis drugs. Izv.AN Arm. SSR. Khim.nauki 15 no.4:391-397 '62. (MIRA 15:11)

1. Institut tonkoy organicheskoy khimii AN Armyanskoy SSR.
(Semicarbazones) (Furan) (Tuberculosis)

MNDZHOYAN, A.L.; AFRIKYAN, V.G.; OGANESYAN, A.N.; AKOPYAN, N.Ye.; GERASIMYAN, D.A.; KHECHUMYAN, L.Kh.

Derivatives of p-alkoxybenzoic acids. Report No.21: Some cyclohexylalkylaminoalkyl esters of p-butoxybenzoic acids. Izv. AN Arm. SSR. Khim nauki 16 no.2:163-174 '63 (MIRA 17:8)

1. Institut tonkoy organicheskoy khimii AN ArmSSR.

MNDZHOYAN, A.L.; AFRIKYAN, V.G.; KALAYDZHYAN, A.Ye.; KAZARYAN, L.Z.; MARKARYAN, E.A.

Derivatives of furan. Report No.29: Amino esters of 4,5-substituted 2-furancarboxylic acids. Izv. AN Arm.SSR. Khim. nauki 16 no.2:175-179 '63 (MIRA 17:8)

1. Institut tonkoy organicheskoy khimii AN ArmSSR.

MNDZHOYAN, A.L.; AFRIKYAN, V.G.; OGANESYAN, A.N.; KHORENYAN, G.A.; ALEKSANYAN, R.A.; STEPANYAN, N.O.

Derivatives of p-alkoxybenzoic acids. Report No.22: α,β-Dimethyl-γ-methylpropyl-, and γ'-dipropylaminopropyl esters of p-alkoxybenzoic acids. Izv.AN Arm.SSR. Khim.nauki 16 no.4: 365-372 '63. (MIRA 16:9)

1. Institut tonkoy organicheskoy khimii AN Armyanskoy SSR.

MNDZHOYAN, A.L., red.; AKOPYAN, N.Ye., red.; AFRIKYAN, V.G., red.; MARKARYAN, M.O., red.; MIRZOYAN, S.A., red.; MIDZHOYAN, A.L., red.; RYSS, S.M., red.

[Arpenal and the results of its clinical use] Arpenal i opyt ego klinicheskogo primeneniia. Erevan, Izd-vo AN Armianskoi AAR, 1964. 387 p. (MIRA 17:11)

1. Akademiya nauk Armyanskoy SSR, Erivan. Institut tonkoy organicheskoy khimii.

L 15057-65 EWT(1)/EWG(k)/EPA(sp)-2/EPR/EWP(t)/EWP(b) Pc-4/Pr-4 RM/WW/WH

ACCESSION NR: AP4045273 S/0056/64/046/005/1624/1636

AUTHOR: Afrosimov, V.V.; Gordeyev, Yu.S.; Panov, M.N.; Fedorenko, N.V.

TITLE: Characteristic energy losses in atomic collisions

SOURCE: Zhurnal tekhnicheskoy fiziki, v.34, no.9, 1964, 1624-1636

TOPIC TAGS: inelastic scattering, excitation spectrum, ionization, particle collision

ABSTRACT: Collisions of argon atoms or ions with argon atoms of the type A^{k+} (incident particle) + A → $A^{(k+n)}$ + $A^{(m)}$ + (m + n - k)e (e is the electron charge) were investigated by means of the apparatus described elsewhere by the authors (ZhTF 34, 1613,1964; see Abstract AP4045272). The collisions were investigated at impact parameters (closest approach distances) from [illegible] incident particle energies of 12.4 and 50 keV, for the values [illegible] and [illegible] for values of m and n from 1 to 6. The largest value of m + n was 11. The cross sections of all these collision processes showed a series of maxima as functions of the inelastic energy loss. When the ionization energy was subtracted from the inelastic energy loss and the cross section was [illegible]

L 15057-65

ACCESSION NR: AP4045273

less inelastic energy loss over that ...

has: 13 formulas, 5 figures and 1 table.

2/2

MNDZHOYAN, A.L.; AFRIKYAN, V.G.; KHORENYAN, G.A.; ALEKSANYAN, R.A.; STEPANYAN, N.O.

Derivatives of p-alkoxybenzoic acids. Part 23: Synthesis of aminoesters of 3-methoxy-4-alkoxybenzoic acids. Izv. AN Arm.SSR. Khim. nauki 18 no.2:193-199 '65. (MIRA 18:11)

1. Institut tonkoy organicheskoy khimii AN ArmSSR. Submitted April 18, 1964.

MNDZHOYAN, A.L.; AFRIKYAN, V.G.; KAZARYAN, L.Z.; GEVORKYAN, S.Kh.; AKOPYAN, N.Ye.; KHECHUMYAN, L.Kh.

Synthesis of benzodioxan derivatives. Part 1. Some amino esters of 1,4-benzodioxan-2-carboxylic acid. Izv. AN Arm. SSR. Khim. nauki 18 no.3:297-303 '65. (MIRA 18:11)

1. Institut tonkoy organicheskoy khimii AN Armyanskoy SSR.
Submitted May 14, 1964.

Name: AFROSIMOV, V. V.

Dissertation: Ionization of atoms of inert gases by single-charge positive ions with an energy of 3-180 kev

Degree: Cand Phys-Math Sci

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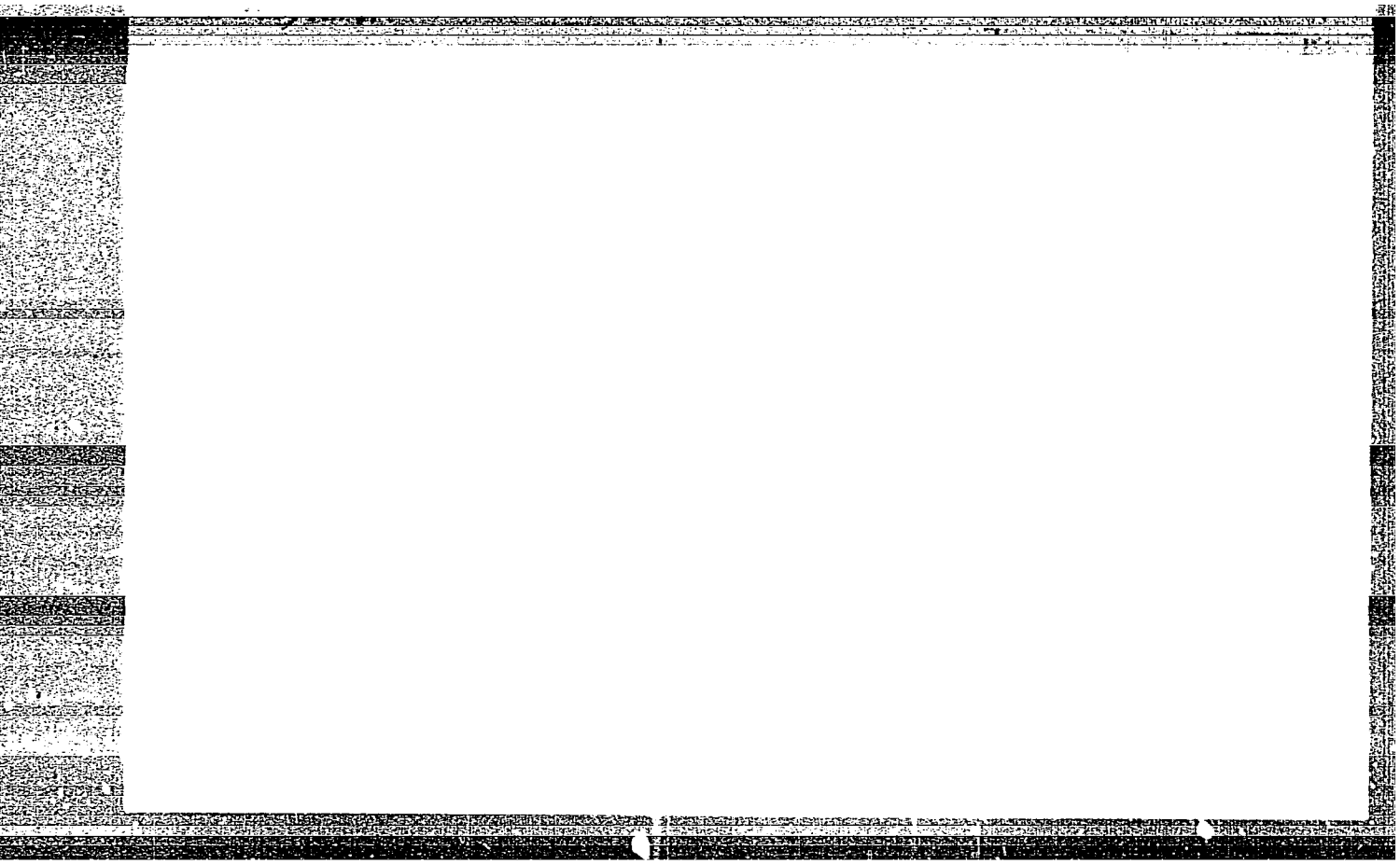
~~Defense Date~~, Place: 1956, Leningrad

Source: Knizhnaya Letopis', No 4, 1957



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USSR/Electronics - Gas Discharge and Gas Discharge Instruments H-7

Abs Jour : Referat Zhur - Fizika, No 5, 1957, 12343

Author : Fedorenko, N.V., Afrosimov, V.V., Kaminker, D.M.

Inst : Leningrad Physical-Technical Institute, Leningrad.

Title : Capture of Electrons and Ionization Upon Interaction of Single-Charged Positive Ions with Gas Atoms.

Orig Pub : Zh. tekhn. fiziki, 1956, 26, No 9, 1929-1940

Abstract : A measurement was made of the effective cross sections for the capture of electrons by fast ions (σ_0), for the formation of free electrons (σ_-), and for the formation of slow ions (σ_+) in the case of interaction between ions He^+, Ne^+, Ar^+, with atoms of He, Ne, Ar, and Kr. The ions had an energy $T_0 = 3$ -- 180 kev. The experimental accuracy was $\pm$ 10%. The dependence $\sigma_0(T_0)$ has maxima for Ar^+—Kr, He^+—Ne, Ar, Kr. For the pairs He^+—He, and Ar -Ar,

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Category : USSR/Nuclear Physics - Origin of Charged and Neutral Particles through Matter C-6

Abs Jour : Ref Zhur - Fiziki, No 1, 1957, No 584

respectively. The cross section for He is on the order of 10^{-21} cm^2. Since the He^- ion in the ground state $(1s^2 2s)^2 s$ is unstable, it is possible that we deal here with a metastable He^- ion in a $(1s2s2p)^4 P_{5/2}$ state, the lifetime of which should be on the order of 10^{-3} sec. (The time of flight of the He ions in the instrument was approximately 4×10^{-7} sec at an energy of 60 kev).

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Afrosimov, V. V.

AUTHORS: Afrosimov, V. V., Fedorenko, N. V. 57-11-18/33

TITLE: Investigation of the Energy of Multi-Charge Ions Formed at the Ionization of Gas Atoms by Positive Ions (Issledovaniye energii mnogozaryadnykh ionov, obrazuyushchikhsya pri ionizatsii atomov gaza polozhitel'nymi ionami).

PERIODICAL: Zhurnal Tekhn. Fiz., 1957, Vol. 27, Nr 11, pp. 2557-2572 (USSR)

ABSTRACT: The results of measurements of the magnitude of the kinetic energy of secondary argon-ions with a charge of from 1 - 6 at various angles of flight are given. By means of these results the magntude of the whole inelastic energy-loss at the ion-atom collision are classified. The analysis of the experimental data was carried out according to the classical conception on the dispersion of atomic particles. The following was carried out in detail: an Ar^+ or Ne^+ -ion beam with an energy of $T_0 = 75$ keV passed through a chamber filled with argon. The kinetic energy of the secondary ions Ar^+, Ar^{2+}, Ar^{3+}, Ar^{4+}, Ar^{5+}, Ar^{6+}, which were found in consequence of the ionization of the atoms at single collisions, were determined. The secondary ions outgoing in the direction of the primary ion beam under the angles $77^0 < \varphi < 90^0$ were investigated. The authors show that the range of critical energies possessed by secondary ions is very wide: secondary ions with kinetic energy of from fractions of to some thousand elect-

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Investigation of theEnergy of Multi-Charge Ions Formed at the Ionization of Gas Atoms by Positive Ions. 57-11-18/33

ron Volt were discovered. At angles of flight of $\varphi < 85^{\circ}$ in a number of cases a clear separation of the secondary ions into two energetic components: a soft and a hard one, were observed. The authors show that the possibility of the existence of both components results from the analysis of the consequencies from the energy-as well as from the momentum conservation theorem. The dependence of the mean kinetic energy of secondary ions in the case of the hard component on the angle of flight was measured. The mean quantity of inelastic energy loss $\bar{R}$ at the ion-atom collision was classified. The authors show thatthe magnitude $\bar{R}$ can be manifold greater than the sum of the atom-ionization potentials for all electrons becoming free at the formation of the secondary ion with multiple charge. The authors assume that this is connected with the transfer of a considerable kinetic energy by means of the electrons which are removed from the shells of the ion and the atom in consequence of inelastic collision. They conclude that, with given relative velocity of motion the magnitude $\bar{R}$ is determined by the minimal distance to which the nuclei of colliding atom particles approach. The most probable number of electrons which are removed from the shells of two colliding particles corresponds to the given magnitude $\bar{R}$,; there are

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Investigation of the Energy of Multi-Charge Ions Formed at the Ionization of Gas Atoms by Positive Ions. 57-11-18/33

1o figures and 5 Slavic references.

ASSOCIATION: Leningrad Physical-Technical Institute AN USSR (Leningradskiy Fiziko-tekhnicheskiy institut AN SSSR)

SUBMITTED: April 23, 1957

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netic energy of primary ions. In the case of a decrease of the charge of secondary ions the mean kinetic energy of ions increases. From the experimental results the authors conclude that the probability of ionization increases with the removal of a great number of electrons in the case of a greater approach of the nuclei of colliding particles. By means of a comparison of the investigations of the present work with that of Kaminker,D.M. and N.V. Fedorenko in Zhurnal Tekhn.Fiz., 1955,Vol. 25, pp.2239 the presence of a relation between the angular distribution in the case of inelastic dispersion of the stricking as well as of the target atom particle is stated. There are 6 figures, 1 table and 5 Slavic references.

ASSOCIATION: Leningrad Physical-Technical Institute AN USSR (Leningradskiy fiziko-tekhnicheskiy institut AN USSR)

SUBMITTED: April 23, 1957

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AFROSIMOV, V. N., IL'IN, R. N., and FEDORENKO, N. V.

"Ionization of Molecular Hydrogen by Protons,"

paper presented by Fedorenko at Conf. on Physics of Electronic & Atomic Collisions, New York University, 27-28 Jan 1958

B - 3,102,929

24(7)

AUTHORS: Afrosimov, V.V., Il'in, R.N., Fedorenko, N.V.

SOV/57-28-10-27/40

TITLE: Ionization of Argon by Hydrogen Ions (Ionizatsiya argona ionami vodoroda)

PERIODICAL: Zhurnal tekhnicheskoy fiziki, Vol 28, Nr 10, pp 2266-2274 (USSR), 1958

ABSTRACT: This work was intended to furnish information on the charge composition of the secondary ions and on the total cross section, which can be ascribed to the production of free electrons and of secondary ions in the collision of hydrogen ions with the argon atoms. Argon was used as a gas target for the reason that it yields the most detailed data on the ionization by electrons and ions. The experimental method has already been described accurately in the papers cited by references 1 and 2. The experimental set-up as a whole has been described in the paper cited by reference 9. In this paper only a short description of the experimental conditions is included. The charge composition of the secondary ions of argon which are produced by a single collision of the H^+, H_2^+, and H_3^+ ions with the argon atoms was the object of study in this work. The energy interval of the primary ions extended from

5 - 180 keV. The following quantities were determined: The total cross section of electron capture by hydrogen ions (σ_0) and the total cross section of free electron production (σ_-) and of Ar^+, Ar^{2+}, Ar^{3+}, and Ar^{4+} secondary ion production, which are denoted by σ_{01}, σ_{02}, σ_{03}, and σ_{04}, respectively. It was found that σ_0 in all cases decreases continuously with an increase in the velocity of the primary ions, whereas the curves $\sigma_-(v)$ exhibit a maximum. This maximum is located near velocities which are about the value $e^2/\hbar$ (according to Bohr (Bor) the velocity of the electron in the hydrogen atom equals $2{,}2.10^8$ cm/sec). The curves $\sigma_{02}(v)$, $\sigma_{03}(v)$ and $\sigma_{04}(v)$ exhibit a maximum in the same velocity region. The maximum values of the corresponding cross sections for an electron impact are, according to data provided by W. Bleakney (Blikni) (Ref 3) by many times smaller. The cross sections of the production of secondary argon ions by ions H^+, H_2^+, and H_3^+ are

compared to those of the production by He^+ and Ne^+ ions travelling with the same velocity, the pertaining data being provided by reference 2. It appears that the cross sections of the production of Ar^{2+}, Ar^{3+} and Ar^{4+} ions increase with the nuclear charge of the ionizing particles. If the ionizing particles are multiatomic molecules the corresponding cross sections increase with the increase in the number of the nuclei contained in the primary ion. Professor V.M. Dukel'skiy and O.B. Firsov discussed the work with the author. There are 8 figures, 1 table, and 14 references, 8 of which are Soviet.

SUBMITTED: January 17, 1958

AUTHORS: ~~Afrosimov, V. V.~~, Il'in, R. N., Fedorenko, N. V. SOV/56-34-6-5/51

TITLE: The Ionization of Molecular Hydrogen by the Ions H^+, H_2^+ and H_3^+ (Ionizatsiya molekulyarnogo vodoroda ionami H^+, H_2^+ and H_3^+)

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1958, Vol 34, Nr 6, pp 1398 - 1405 (USSR)

ABSTRACT: This paper investigates the ionization of hydrogen by the ions H^+, H_2^+ and H_3^+ and the distribution of the secondary ions with respect to e/m in the energy interval from 5 - 180 keV. The experimental device and the method of the investigation were described in a previous paper of the authors (Refs 14,15). The beam of the primary ions (which is homogeneous with respect to the energy and composition) entered a collision chamber. The low pressure (from 1.10^{-4} to $1,5.10^{-4}$ torr) implied the homogeneousness of the collisions of the primary ions with the gas molecules. For the analysis of the secondary ions with respect to e/m a magnetic mass spectrometer (with sectors) was

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connected with the collision chamber. The ion currents in the analysator amounted to 2.10^{-10} - 2.10^{-13}A. Three diagrams show the total cross sections of the capture of the ions H^+, H_2^+ and H_3^+; these cross sections are plotted against the velocity of the primary ions. The first diagram gives also the theoretical dependence for the charge-exchange of protons in atomar hydrogen. The pair H_2^+ - H_2 is not a resonance pair. It seems that the electron is captured to an excited level of the molecule H_2. The capture of an electron by the ion H_3^+ is a complex process as the stable state of the molecule H_3 is not known. This capture probably causes the dissociation of H_3^+ into a molecule H_2 and a hydrogen atom. The cross section $\sigma_{H_2^+}$ of the production of the secondary ions H_2^+ is the sum of the cross sections of the ordinary charge exchange and of the ionization with the removal of one electron. In the region of the velocities of the primary

ions $v < e^2/\hbar$ the cross section of the ordinary charge exchange forms the main portion of the cross section $\sigma_{H_2^+}$. But in the region $v > e^2/\hbar$ the principal part of $\sigma_{H_2^+}$ is formed by the cross section of the ionization. In the region $v > e^2/\hbar$ the cross section $\sigma_{H_2^+}$ is the greater the more nuclei make up the primary ion. In the same region $\sigma_{H_2^+}$ decreases continuously when the velocity of the primary ions increases, and it is greater than the corresponding cross section of the electronic impact. The following part of this paper deals with the production of secondary protons. The cross section of this production is smaller than the cross section of the production of the molecular ions H_2^+. The secondary protons are produced mainly by the dissociation of H_2^+ ions. The last part of this paper deals with the productions of free electrons. The authors thank V.M.Dukel'skiy, Professor, and O.B.Firsov for the discussion of this paper and for useful critical remarks.

The Ionization of Molecular Hydrogen by the Ions H^+, H_2^+ and H_3^+ SOV/56-34-6-5/51

There are 7 figures, 1 table, and 16 references, 4 of which are Soviet.

ASSOCIATION: Leningradskiy fiziko-tekhnicheskiy institut Akademii nauk SSSR (Leningrad Physical-Technical Institute AS USSR)

SUBMITTED: January 8, 1958

FEDORENKO, N.V.; AFROSIMOV, V.V.; IL'IN, R.N.; SOLOVYEV, E.S.

"Ionization of Inert Gases by Protons."

report presented at the 4th Intl Conference on Ioniation Phenomena in Gases, Uppsala, 17-21 August 1959.