VALENTA, Vlk, dr.; MISIGA, Stanislav, prom.biol.; MUSIL, Milos, prom.biol.

Distribution of parastolbur in Slovakia. Biologia 16 no.3:178-183 '61. (EEAI 10:9/10)

1. Virologicky ustav Ceskolovenskej akademie vied, Bratislava.

(STOLBUR)

MUSIL, M.

An attempt to lass the clover dwarf virus by serial transfers in its vector. Acta virol. (Praha)[Eng]6 no.1:93 Ja '62.

1. Institute of Virology, Czechoslovak Academy of Sciences, Bratislava.

(VIRUSES)

HAVRANEK; MILOVA, A.; MUSIL, M.; ZAHRADKOVA, L.

Hygiene of communities. Cesk. hyg. 7 no.6:337-340 Jl '62.
(PUBLIC HEALTH)

MUSIL, Milos

Transfer of parastolbur viruses by Euscelis plebejus (Fallen).
Biologia 17 no.5:332-339 '62.

1. Virologicky ustav Ceskoslovenske akademie ved v Bratislave.
(VIRUSES) (INSECTS virol)

MUSIL, M

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CSSR

MUSIL, M.

District hygienic-epidemiological station (Okresni hygienicko-epidemiologicka stanice), Hlansko

Prague, Ceskoslovenska hygiena, No 3, 1963, pp 174-178

"Unusual Pollution of Drinking Water by Cyanides"

MUSIL, Milos

Some findings on the course of infection caused by yellows-type viruses in Trifolium repens L. plants. Biologia plantarum 5 no.1:53-58 '63.

1. Institute of Virology, Czechoslovak Academy of Sciences, Bratislava.

MUSIL, M.

Unusual contamination of drinking water with cyanide. Cesk. hyg. 8 no.3:174-178 Ap '63.

1. Okresni hygienicko-epidemiologicka stanice, Blansko.
(WATER POLLUTION) (CYANIDES)

CZECHOSLOVAKIA

MUSIL, Milos, Virology Institute of the Czechoslovak Academy of Sciences (Virologicky ustav Ceskoslovenske akademie ved,) Bratislava.

"Finding of Some Cicadae in Slovakia (Hom. Auchenorhyncha.)"

Bratislava, Biologia, Vol 18, No 9, 1963; pp 693-697.

Abstract [German summary modified]: Description of several species previously not reported, or only rarely reported, in Slovakia: Trigonocranus, 4 species of Edwardsiana and 4 of Alebra, Arocephalus, Limotettix, Adarus and Hardyopsis. Sketches of sexual organs. Four Western and 5 Czech references.

1/1

MUSIL, M.

Persistence of infectivity of yellows-type viruses in frozen viruliferous leafhoppers. Acta virol (Praha) [Engl] 8 no.1: [illegible] '64.

1. Institute of Virology, Czechoslovak Academy of Sciences, Bratislava.

*

MUSIL, M.

Multiplication of yellows-type plant viruses in Euscelis plebejus (Fallen) leafhoppers. Acta virol. (Praha) [Eng.] 8 no.3:230-238 My'64

Persistence of infectivity of yellows-type plant viruses in extracts from viruliferous Euscelis plebejus (Fallen) leafhoppers. Ibid.:239-242

1. Institute of Virology, Czechoslovak Academy of Sciences, Bratislava.

MUSIL, M.

Ventilation of flats in typical houses. Cesk. hyg. 10 : no.10:
603-614 D '65.

1. Ustav hygieny, Praha.

L 34535-66 T JK

ACC NR: AP6024720 SOURCE CODE: CZ/0049/66/000/002/0133/0138

AUTHOR: Musil, Milos (Bratislava)

ORG: Institute of Virology, CSAV, Bratislava (Virologicky ustav CSAV)

TITLE: Occurrence of the leaf rolling virus on peas in Slovakia

SOURCE: Biologia, no. 2, 1966, 133-138

TOPIC TAGS: virus, plant disease, virology

ABSTRACT: In the gardens of the Virological Institute at Bratislava a virus was isolated in 1964. This virus caused leaf rolling in experimentally infected pea plants. Pathogenic nature of the virus was found for some kinds of peas and for the bean Faba vulgaris. The virus is transmitted by seeds, mechanically, and by Myzus persicae. The limiting concentration of the leaf liquid that was still transmitting the virus was a dilution of 1:100 - 1:500; temperature inactivation is reached at 50 - 55°C. The virus has not been described previously. The author thanks Miss Augustinova and Mrs. Grad.-Biologist J. Matisova for assistance in the carrying out of the research. For valuable advice and assistance the author thanks Dr. B. A. Kvicala and Dr. V. Valenta as well as for their interest. Orig. art. has: 2 figures. [Orig. art. in German] [JPRS: 35,814]

SUB CODE: 06 / SUBM DATE: 11Oct65 / OTH REF: 004

Card 1/1 dlj

8913 2544

CZECHOSLOVAKIA

VALENTA, Vlk; MUSIL, Milos; Virological Institute, Czechoslovak Academy of Sciences (Virologicky Ustav Ceskoslovenskej Akademie Vied), Bratislava.

"Serological Relationships Between Vectors of Yellow-Type Viruses and Some Other Leafhoppers."

Bratislava, Biologia, Vol 21, No 6, 1966, pp 453 - 456

Abstract [Authors' English summary modified]: Antisera prepared by immunizing rabbits with homogenates from viruliferous Euscelis Plebeius leafhoppers reacted in agar double diffusion test not only to homologous antigen but also to antigens from Aphrodes bicinctus, Macrosteles levis, and 5 other leafhopper species. The number of precipitation lines differed according to the quality of the serum and the kind of antigen used. No specific reactions to viruses of clover dwarf and clover phyllody were obtained. 1 Figure, 3 Western, 2 Czech, 1 Russian reference. (Manuscript received 3 Feb 66).
1/1

MUSIN, M.A.

Laboratory chief. Transp. stroi. 15 no.3:33-34 Mr '65.
(MIRA 18:11)

[illegible], V.

Geologic conditions at the paleolithic site in Kozdrojovice near Brno. p. 4. Brno. Moravske muzeum. [illegible]. Vol. 4[illegible], 1955.

SOURCE: East European Accessions List, Vol. 5, no. [illegible], September 1956

MUSIL, R.

Discovery of Elephantidae in the Brickyard Na Hvoze in Brno. p. 3?.
Brno. Moravske muzeum. ACTA. Vol. 4?, 1955.

SOURCE: East European Accessions List, Vol. 5, no. 9, September 1956

MUSIL, R.; VALOCH, K.

Loess in the Vyskov depression. p. 269.
(PRACE, Vol. 28, No. 6, 1956, Brno, Czechoslovakia)

SO: Monthly List of East European Accessions (EEAL) LC, Vol. 6, No. 12, Dec 1957. Uncl.

MUSIL, R.

"Preliminary report on the find of a whale in the Zidlochovice Miocene."

p.57 (Vol. 42, 1957, Brno, Czechoslavakia)

Monthly Index of East European Accession (FEAI) LC, Vol. 7, No. 8, August 1958

[redacted], Rudolf
SURNAME, Given Names

Country: Czechoslovakia

Academic Degrees: /notgiven/

Affiliation: /not given/

Source: Prague, Casopis pro Mineralogii a Geologii, Vol VI, No 3, 1961, pp 381.

Data: "Symposium on the Problems of Pleistocene."

GPO 981643

DVORAK, Jaroslav; MUSIL, Rudolf; SEKANINA, Josef; ZUREK, Vladimir; TRACHTULEC, Jan; VODA, Oldrich; CHLUPAC, Ivo; HOMOLA, Vladimir; PESEK, Jiri; ZAK, Lubor; GASPARIK, Jan

Activities of the branches of the Czechoslovak Society for Mineralogy and Geology in Brno, Most, Olomouc, Ostrava, Praha and Zilina. Cas min geol 7 no.3:385-392 '62.

MUSIL, V.; BRUNOVA, B.; NEMECEK, O.

New 1,2,-diphenyl-3,5-dioxopyrazolidine derivatives. Coll Cz chem 29 no.7:1669-1674 Jl '64.

1. Forschungsinstitut fur Pharmazie und Biochemie, Prague.

BUDESINSKY, Z.; MUSIL, V.

Determination of 2-sulfanilamido-4-methyl-6-alkylpyrimidine.
Coll Cz chem 25 no.12:4022-4028 '59. (EEAI 9:6)

1. Forschungsinstitut fur Pharmazie und Biochemie, Prag.
(Sulfanilamide) (Methyl group) (Alkyl groups)
(Pyrimidine)

CZECHOSLOVAKIA

[illegible]RALOVA, Z.; [illegible]TRAKOVA, J.; KUSIL, V.; MEISCEK, O.; Research Institute of Pharmacy and Biochemistry (Vyzkumny Ustav pro Farmaci[illegible], Prague.

"The Chemistry and Pharmacology of Benzopyrazon."

Prague, Ceskoslovenska Fysiologie, Vol 15, No 5, Sep 66, p 467

Abstract: Benzopyrazon is 4-benzoyloxyl diphenyldioxopyrazolidine. Its antiinflammatory activity is comparable to that of phenylbutazone, but its LD 50 is 1 ,000 mg/kg against 540 mg/kg for phenylbutazone. Further, it does not cause retention of urine, it [illegible] resorbed, and metabolized. In clinical application it was found effective in the treatment of venous thrombosis and of progressive arthritis. 1 Czech reference. Submitted at 14 Days of Pharmacology at Smolenice, 16 Feb 66.

1/2

CZ/0053/66/015/005/0407/0407

CZECHOSLOVAKIA

AUTHOR: Horakova, Z.; Muratova, J.; Musil, V.; Nemecek, O.

ORG: Institute for Research in Pharmacology and Biochemistry, Prague (Vyzkumny ustav pro farmacii a biochemii)

TITLE: Chemical origin and pharmacological properties of benzopyrazon

SOURCE: Ceskoslovenska fyziologie, v. 15, no. 5, 1966, 407

TOPIC TAGS: pharmacology, drug, medicine

ABSTRACT: A synthetically prepared 4-benzylethyl derivative called benzpyrazon has been pharmacologically tested and the first clinical reports have been submitted. The source describes the chemical origin and the main pharmacological properties of the drug. The drug has proved effective in the treatment of venous thrombosis chiefly in the inactive stage and of progressive arthritis. [WA 50] [KP]

AM-50 L 05128-67

ACC NR: AP6032383 SOURCE CODE: CZ/0053/66/015/005/0407/0407

AUTHOR: Horakova, Z.; Muratova, J.; Musil, V.; Nemecek, O.

ORG: Institute for Research in Pharmacology and Biochemistry, Prague (Vyzkumny ustav pro farmacii a biochemii)

TITLE: Chemical origin and pharmacological properties of benzopyrazon

SOURCE: Ceskoslovenska fyziologie, v. 15, no. 5, 1966, 407

TOPIC TAGS: pharmacology, drug, medicine

ABSTRACT: A synthetically prepared 4-benzylethyl derivative called benzpyrazon has been pharmacologically testes, and the first clinical reports have been submitted. The source describes the chemical origin and the main pharmacological properties of the drug. The drug has proved effective in the treatment of venous thromboses chiefly in the inactive stage and of progressive arthritis. [WA 50] [KP]

SUB CODE: 06/ SUBM DATE: none/

Card 1/1 vmb

L 44801-66

ACC NR: AP6005487 (A) SOURCE CODE: CZ/0078/66/000/001/0011/0011

INVENTOR: Musil, Vaclav (Engineer; Brandys nad Labem); Plesinger, Boris (Engineer; Prague)

ORG: none

TITLE: [Amplifier as a power supply for electromagnets] CZ Pat. No. PV 2735-65

SOURCE: Vynalezy, no. 1, 1966, 11

TOPIC TAGS: amplifier stage, amplifier design, electromagnet, power supply

ABSTRACT: An amplifier designed to serve as a power supply for electromagnets, especially for multipole regulation and automatically controlled processes, is described which has the distinguishing feature that the terminal transistors of the amplifier are lattice connected to electromagnetic tubes in such a way that one terminal transistor which is connected to the common emitter at the level of zero voltage has the collector connected to the first electromagnetic tube which is connected by its second lug through a few to a reverse voltage. At the same time the other terminal transistor which is connected with the common collector to the reverse voltage has the emitter connected to the second electromagnetic tube which is connected by its second lug through another fuse to zero level voltage.

SUB CODE: 09/ SUBM DATE: 27Apr65

Card 1/1 blg

VEJDELEK, Z.J.; NEMECEK, O.; MUSIL, V.; SIMEK, A.

6-aminopenicillanic acid derivatives. Pt. 2. Coll Cz Chem 29 no. 3:776-794 Mr '64.

1. Research Institute of Pharmacy and Biochemistry, Prague.

CZECHOSLOVAKIA

[redacted], V.; HUDLICKY, J.; [redacted], Z.; BRUNOVA, B.; [redacted]
Institute of Pharmacy and Biochemistry (Vyzkumny Ustav pro Farmacii a Biochemii), Prague.

"Derivatives of Benzoylpyrazone."

Prague, Ceskoslovenska Farmacie, Vol 15, No 9, Nov 66, pp 363-365

Abstract [Authors' English summary modified]: 15 new 4-(halogenbenzoyl-ethyl)-1,2-diphenyl-3,5-dioxopyrazolidines were prepared using the reaction of quaternary salts of Mannich's bases, derived from the halogenated acetophenones with 1,2-diphenyl-3,5-dioxopyrazolidine. Toxicity, analgesic properties, and the effect on basal endocrine metabolism and experimental pyrexia were investigated. Substances containing Cl in the 3- or 4-position have an antiinflammatory effect; substitution of Br or I completely removes this effect, and the substitution of Br or I causes higher toxicity than benzoylpyrazone. 5 Figures, 3 Tables, 12 Western, 6 Czech references. (Manuscript received 21 Jun 66).

1/1

Frame grid electron tubes

of another advantageous property of frame grids. Their massiveness, owing to which these electron tubes are resistant to mechanical loadings (shocks and shaking) and are not subject to the microphone effect. With the development of television (which also requires wide pass-band tubes), mastering of the technology of these grids has been attained for a mass production, so that frame grid tubes, despite their high price, exert an influence on the design of TV receivers. To obtain small inductances of the inlet conductors, the distance of the electrode system from the socket has been reduced, the anode and cathode are connected each to 2 pins, and the grid to 3 pins. The connections of the electrodes are plane and very short. The interelectrode capacitances have been reduced by reducing the sizes of the individual electrodes. Owing to the use of frame grids a high transconductance has been obtained.(14 mA/V).

A. P.

[Abstracter's note: Complete translation]

MUSIL, Z., ing.

Lamellar grille roof constructions. Poz stavby 11 no.4: 226-227 '63.

Z/038/61/000/010/004/008

AUTHORS: Musílek, Fráňa; David, Lubomír; Kačena, Vladimír and Skřivánek, Jiří

TITLE: The VVR-S nuclear reactor and its application possibilities

PERIODICAL: Jaderná energie, no. 10, 1961, 343-348

TEXT: This article lists only reactor data essential for experiments and evaluates experience obtained during reactor operation. The reactor has a system of horizontal experimental channels (60 and 100 mm in diameter) and vertical irridiation channels (60, 45 and 40 mm in diameter). Adjacent to the active zone is a movable thermal column, made of graphite, which contains one horizontal and four vertical channels. Three special channels in the reactor shielding are destined for biological research. Laboratories located beneath the reactor are equipped for handling highly-active isotopes. The reactor itself is an intensive source of neutrons and gamma-radiation. The neutron, resulting

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The VV-S nuclear reactor ...

from the fission-chain reaction, can be divided into: (a) fast (fission) neutrons with energies above 10^4 ev; (b) resonance (medium) neutrons; and (c) slow (thermal) neutrons with energies less than 0.1 ev. At a maximum reactor output of 2,000 kw, the average neutron flux in the first part of the core life is approximately 10^{13} n/cm^2/sec. The gamma radiation can be divided according to its origin into: (a) prompt (fission) radiation which has a total energy of 7.827 mev and an average energy of 1.1 mev; and (b) radiation emitted by fission products. The total gamma radiation on the boundary of the active reactor zone reaches up to 10^8 tissue rads/hr. The operations performed with the aid of the reactor can be divided into (a) technical irradiation service; (b) production of radioisotopes; (c) physical experiments; and (d) experiments in the field of reactor techniques. Technical irradiations to determine the behavior of various materials or test animals are made in cooperation with other Czechoslovak research institutes. Targets are irradiated either directly in the active zone or on the periphery of the reactor. More than 50% of the time of reactor operation have so

APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R001135720012-9"

Z/038/61/000/010/004/008

The VVR-S nuclear reactor ...

far been used for producing radioisotopes. Successful clinical tests were made with Na-24, K-42 and J-131. Regular deliveries of radioisotopes were started in 1960. The institute produces Na-24 in form of NaCl, $NaHCO_3$ and Na_2CO_3 with specific activities up to 100 mc/g Na; corresponding K-42 compounds with specific activities up to 40 mc/g K; Cu-64 in form of the metal or or $CuSO_4$; P-32 with carrier (specific activity 1.2 mc/mg P), without carrier (specific activity 1.0 mc/mg P), in form of H_3PO_4, Na_2HPO_4, NaH_2PO_4, KH_2PO_4, and K_2HFO_4 solutions, and as red P; and S-35 in form of H_2SO_4, $BaSO_4$, Na_2S, and elementary S. The production of J-131 and Au-193, which is presently discontinued, will be resumed after completion of the new radiochemical building. Major areas of physical experiments performed at the Nuclear Research Institute are study of nuclear reactions with slow electrodes (radiative capture) and reactor-physical measurements. Individual papers deal with the influence of photomultiplier resolution on the total resolution of a scintillation spectrometer; the basic design of a Compton gamma-ray

Card 3/5

The VVR-S nuclear reactor . .

scintillation spextrometer, etc. Spectrometric investigation of radiative capture by the nuclei of various elements delivered more precise data in the low-energy part of decay schemes and revealed new gamma-transition lines. Studies of gamma-radiation double cascades (which have a total energy equal to the binding energy of neutrons) are important for precise determination of decay schemes and were conducted on compound nuclei Cl-36, Hg-200 and Co-60. Information on spin conditions in compound nuclei can be obtained from angle correlations of two-cascade connected gamma lines. An instrument for measuring such angle correlations, lately installed at the Institute, consists of two scintilaation spectrometers, a coincidence system with high time discrimination ($5 \cdot 10^{-9}$ sec), and a multichannel time analyzer. The neutron spectrometer used at the VVR-S reactor employs a mechanical separator, consisting of a steel drum, 200 mm in diamter with a system of radial slots, performing 15,000 rpms. Neutrons are registered by a series of boron counters and liquid neutron-scintillation detectors, developed by the Institute. A special gas fission detector was developed

The VVR-S nuclear reactor ...

for measuring effective fission cross-sections. Distribution of the neutron flux in rod-shaped fuel elements was investigated in the thermal column of the reactor. The irradiated fuel specimens are provided with Au, In and Dy foils, serving as activation detectors, and the flux distribution of thermal and resonance neutrons inside the fuel element is derived from the registered β and γ activity. The same method is used to determine the diffusion length in moderators containing hydrogen. There are 4 figures and 14 references: 13 Soviet-bloc and 1 non-Soviet-bloc. The reference to the English-language publication reads as follows: K. Way - E.P. Wigner: Phys.Rev.70 (1946), p. 130.

ASSOCIATION: Ústav jaderného výzkumu ČSAV (Nuclear Research Institute, Czechoslovak AS)

Card 5/5

MUSILEK, F.

The 3d International Conference on Nuclear Reactor Physics and Technology. Jaderna energie 9 no.4:142-143 Ap '63.

MUSILEK, Frana

Operation and modifications of the VVR-S reactor. Jaderna energie 9 no.6:200 Je '63.

1. Ustav jaderneho vyzkumu, Ceskoslovenska akademie ved, Rez u Prahy.

M SILEK, Frana

Czechoslovak experimental VVR-S nuclear reactor. Vestnik CSAV 73 no. 1: 64-67 '64.

MUSILEK, Frantisek

Third International Working Session on Physics and Technology of Experimental Reactors in Prague, April 22-28, 1963. Jaderna energie 9 no.7:242-244 Jl '63.

MUSILEK V

Aerobic bacteria and fungi participating in decomposition of cellulose in the soil. J. Sádlík and V. Musílek (*Stud. Rel. Cellulose.*, 1960, 11, 191—197; *Soils & Fert.*, 1961, 24, 462).—For isolation, identification, and quant. study of the activities of these organisms, Aschner's method based on the ability of *Azotobacter* spp. to form pure cellulose membranes proved far superior to Vinogradsky's silica gel method. Details of the former method are described. C. B. Noetu.

MUSILEK V.

MALIK, I.; SEVCIK, V.; REHACEK, Z.; DOLEZILOVA, L.; MUSILEK, V.; VANEK, Z.; HOVOTNY, L.

Experiences and methods in the search for new antibiotics. J. Hyg. Epidem., Praha 1 no.4:397-412 1957.

1. Institute of Biology and Institute of Chemistry, Czechoslovak Academy of Sciences, Prague.
(ANTIBIOTICS,
technic of search for new prep.)

MUSIL, V.; NEMECEK, O.; VINTIKA, J.; VEJDELEK, Z.J.

6-aminopenicillin acid derivatives. Pt.3. Coll Cz Chem 29 no.12: 3081-3088 D '64.

1. Forschungsinstitut fur Pharmazie und Biochemie, Prague.

MUSILEK, V.

Cross antibiosis in actinomycetes.

P. 183, (Ceskoslovenska Mikrobiologie) Vol.2,no.3, June 1957, Praha, Czechoslovakia

SO: Monthly Index of East European Acessions (EEAI) Vol. 6, No. 11 November 1957

MUSILEK, V.

Effect of some inhibitors in the production of vitamin B-12 by a strain of Actinomyces chromogenes. p. 266

(Institute of Biology - Czechoslovak Academy of Science) Vol. 2 No. 5, 1957

SO: Monthly Index of East European Accessions (EEAI) LC, Vol. 7, No. 5 May 1958

MUSILEK, V.: SEVCIK, V.

"Relation of the biosynthesis of erythromycin to some processes in the metabolism of pyruvic acid in Streptomyces erythreus"

Ceskoslovenska Mikrobiologie. Praha, Czechoslovakia. Vol. 3, no. 4, 1958

Monthly list of East European Accessions (EEAI), LC, Vol. 8, No. 7, July 59, Unclas

RICICOVA, Alena; PODOJIL, M.; MUSILEK, V.; SEVCIK, V.

Laboratory fermentation of gibberellic acid. Folia microbiol 5 no.3: 181-191 '60. (EEAI 9:10)

1. Department of Microbiology, Institute of Biology, Czechoslovak Academy of Sciences, Prague.
(GIBBERELLIC ACID)
(FERMENTATION)

MUSILEK, V.

Adaptation of Escherichia coli to chlortetracycline during continuous cultivation. Folia microbiol 5 no.5:343-344 '60. (EEAI 10:4)

1. Department of Microbiology, Institute of Biology, Czechoslovak Academy of Sciences, Prague.
(Escherichia coli) (Chlortetracycline)

SHEVCHIK, V. [Sevcik, V.]; MUSILEK, V.

Relation of pyruvate metabolism to erythromycin biosynthesis in the actinomycete Str.erythreus. Antibiotiki 6 no.1:9-15 Ja '61. (MIRA 14:5)

1. Institut biologii Chekhoslovatskoy akademii nauk, Praga.
(ERYTHROMYCIN) (PYRUVATES) (ACTINOMYCES)

MUSILEK, V.; SHEVCHIK, V. [Ševčík, V.]

Effect of acetate, formate and propionate on the biosynthesis of erythromycin. Antibiotiki 6 no.10:887-891 O '61. (MIRA 14:12)

1. Mikrobiologicheskoye otdeleniye Biologicheskogo instituta Chekhoslovatskoy akademii nauk, Praga.
(ERYTHROMYCIN) (ACETATES) (FORMATES)
(PROPIONIC ACID)

LEDINSKY, Q.; MRACEK, Z.; MUSIL, V.

Motorcycle accidents from the viewpoint of neurosurgery. Acta chir. orthop. traum. cech. 30 no.4:346-348 Ag '63.

1. Neurochirurgicke oddeleni I chirurgicke kliniky lekarske fakulty KU v Plzni, prednosta doc. dr. J. Spinka.
(ACCIDENTS, TRAFFIC) (NEUROSURGERY)
(BRAIN INJURY, ACUTE) (SPINAL CORD INJURIES)
(PARAPLEGIA)

MUSILKOVÁ, M.

Effect of interrupted aeration on chlortetracycline formation. V. Matelová, M. Musilková, J. Nesázek, and F. Šmejkal (Výzk. ústav antibiotik, Roztoky u Prahy, Czech.). *Prosíla* 27; 27–34(1956).—The influence of interrupted aeration in both lab. and tank fermentation was studied during the submerged fermentation of chlortetracycline (I). *Streptomyces aureofaciens* growing on the medium of Van Dyck and De Somer (*C.A.* 47, 1774c) was used. Aeration was interrupted during the first 30 hrs. (total fermentation time 120 hrs.). The ratio of the aeration time to time of interruptions is of fundamental importance in the final result; when this ratio was 1:1–11:1, the av. yield of I was only 14%, but in the reverse ratio (longer time of interruptions) the yield was 72% against the controls. The abs. time of single intermissions in the proportions mentioned was 5–120 min. When reducing the time of aeration to 1 min., no effect on production of I was observed. K. Marek

(3)

CZECHOSLOVAKIA/Microbiology. Antibiosis and Symbiosis. Antibiotics. F-2

Abs Jour : Ref Zhur - Biol., No 12, 1958, 52784

Author : Musilkova, M.
Inst : -
Title : Method of Obtaining Streptomycin in Small Volumes.

Orig Pub : Prosila, 1956, 28, No 4, 416-417.

Abstract : No abstract.

Card 1/1

MUSILKOVA, M.

The Effect of some inhibitors on streptomycin biosynthesis. p. 76.

FOLIA MICROBIOLOGICA. (Ceskoslovenska akademie ved) Praha, Czechoslovakia. Vol. 4, no. 2, 1959.

Monthly list of East European Accessions (EEAI), LC, Vol. 8, no. 12, December 1959, Uncl.

MUSILKOVA, Marie

Biosynthesis of Vitamin B_{12} and fungicidin by Streptomyces noursei. Folia microbiol 6 no.3:175-178 '61. (EEAI 10:8)

1. Research Institute of Antibiotics, Roztoky u Prahy.
(VITAMIN B_{12}) (NYSTATIN) (STREPTOMYCES NOURSEI)

MUSILKOVA, Marie; FENCL, Z.

Biosynthesis of methionine in an ethionine-resistant strain of Candida utilis. Folia microbiol. (Praha) 9 no.6:374-379 N '64.

1. Department of Technical Microbiology, Institute of Microbiology, Czechoslovak Academy of Sciences, Prague 4.

MUSILKOVA, Marie; FENCL, Z.

Assay of lysine by means of a mutant of Escherichia coli. Folia microbiol. (Praha) 10 no.3:182-185 My'65.

1. Institute of Microbiology, Czechoslovak Academy of Sciences, Prague 4.

CZECHOSLOVAKIA

MUSILOVA, H.; ALBRECHT, I.; JELINEK, J.; Institute of Physiology, Czechoslovak Academy of Sciences (Fysiologicky ustav CSAV), Prague.

"Hypertensinogenic Effect of DOCA as Function of Age and Sex of Rats."

Prague, Ceskoslovenska Fysiologie, Vol 14, No 5, Oct 1965; p 359.

Abstract: The sensitivity of young (25 day old) rats to DOCA was much higher as regards hypertension, but there was little difference among the two sexes. Adult rats(80 days) were less sensitive and body weight and survival were not affected. Graph, 3 Western, 1 Czech reference. Paper presented at the 15th Physiology Days, Olomouc, 28 May 65.

1/1

MUSIN, A.Ch.; CHABDAROVA, Yu.I.; VASIL'YEV, A.N.

Methods of determining the span of chamber-like workings.
Trudy Inst. gor. dela AN Kazakh.SSR 12:61-72 '63.
(MIRA 17:8)

MUSIN, Alikhan Chuzhebayevich

1964

DECEASED

(1908-1963)

Rock Pressure

Mining

20-3-12/59

AUTHORS: Arshinov, A. A. , Musin, A. K.

TITLE: Thermoemission of Electrons From Carbon Particles (Termoemissiya elektronov s uglerodnykh chastits)

PERIODICAL: Doklady AN SSSR, 1958, Vol. 118, Nr 3, pp. 461 - 463 (USSR)

ABSTRACT: First a reference on previous works, dealing with the same subjects is made. The work investigates this thermoemission with regard to the inverse process. For the velocity of the change of the concentration of electrons, which is conditioned by the processes of emission and recombination a formula is given and specialized for similar and equally justified particles. From this formula an equation for the equilibrium results. This equation is very much simplified if the charge of the particle does not increase essentially the initial work function. For the equilibrium concentration of electrons which corresponds with that case, a formula is given. At constant temperature this equilibrium concentration of electrons (with regard to the correction factor for the work function) is a function of the ratio (charge of the

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Thermoemission of Electrons From Carbon Particles

particle/radius of the particle). At T = 3300 to 3100°K the work function for the carbon particles is ~ 6,8 eV, thus it is by 2,45 eV higher than the initial work function φ_o = = 4,35 eV. With this value corresponds the ratio $m_o/r = 1,7 \cdot 10^7$ cm^{-1}. Another table contains the following: The values of the charge m_o of the particles for different r, the concentration n of the carbon particles, the total number of carbon atoms, which are condensed on these particles. The particles with $r < 10^{-6}$ cm obviously do not yet form crystal structure with the work function 4,35 eV and therefore can - not effectively take part in the emission. The particles with $r > 10^{-5}$ effectively cannot guarantee the observed concentration of electrons. Thus, particles with an order of magnitude of 10^{-6} cm are assumed to essentially contribute to the concentration of the electrons, which correspond to a charge of some dozens of electrons. Finally the authors shortly investigated the time, which is necessary to reach the emission equilibrium. For the charge of the particles as a function of time a formula is given. At T = 3285°K for $r = 10^{-6}$ cm the value $\tau = 4.10^{-6}$ sec holds, i.e. the equilibrium can be reached in a flame. There are 2 tables, and

20-3-12/59

Thermoemission of Electrons From Carbon Particles

5 references, 1 of which is Slavic.

PRESENTED: June 10, 1957, by V. N. Kondrat'yev, Academician

SUBMITTED: June 3, 1957

AVAILABLE: Library of Congress

Card 3/3

AUTHORS: Arshinov, A. A., Musin, A. K. SOV/20-120-4-[illegible]

TITLE: The Equilibrium Ionization of Particles (Ravnovesnaya ionizatsiya chastits)

PERIODICAL: Doklady Akademii nauk SSSR, 1958, Vol. 120, Nr 4, pp. [illegible] (USSR)

ABSTRACT: The general solution of the problem of the equilibrium ionization of particles, which is derived in the course of the present paper, comprises all cases from the multiple ionization of atoms to the ionization of macroscopical particles. The system under investigation consists of electrons and homogeneous particles P, which may have different positive or negative solutions. The ionization equilibrium in such a system is fully determined by the law of mass action for gases and by the law of mass action and by the laws of conservation of charge/mass: $\alpha_m = K_{m+1} \alpha_e / N_m$; $N_e = \sum m \alpha_m$; $N = \sum N_m$; $-\infty < m \leqslant M$. Here K_m denotes the constant of the equilibrium for the process $P_m \rightleftarrows P_{m+1} + e$, N_m - the concentration of the particles with the charge m; N_e - the concentration of the electrons;

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N - the total concentration of the particles and m - the charge of a particle in units of the electron charge e. From the expression for K_m there results a recurrence formula, with the aid of which it is possible to write down an expression for the degree of ionization N_e/N. Next, an expression for K_m is written down for a perfect gas, and the law of the distribution of charges over particles is derived. This law agrees with the density of the distribution of probabilities according to the normal Gaussian law. The influence exercised by statistical weights disturbs (in the case of approximation to total ionization) the symmetry of certain functions in the expression for N_e/N. The exact expression for N_e/N becomes more simple in the following two limiting cases - in the case of a high degree of dispersion (i.e. flat distribution of charges over particles) and in the case of a very discrete distribution of charges. Both cases are discussed. In conclusion, the authors thank Yu. S. Sayasov for his valuable discussions of this paper. There are 5 references, 2 of which are Soviet.

1. Particles--Ionization 2. Electrons—Ionzing effects

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SOV/76-33-10-20/45

5 (4)
AUTHORS: Arshinov, A. A. (Deceased), Musin, A. K.

TITLE: Particles as Stabilizers of Electron Concentration

PERIODICAL: Zhurnal fizicheskoy khimii, 1959, Vol 33, Nr 10, pp 2241 - 2244 (USSR)

ABSTRACT: In a previous article (Ref 1), equation (1) was deduced for the ionization equilibrium of particles when investigating the ionization equilibrium in quasineutral medium (composed of electrons and similar particles of different charge). The formation of various negative and positive charges on the particles was assumed, and it was shown that the distribution of charges among the particles was in agreement with the distribution density of probabilities according to the normal Gauss law (2). The authors derive the condition of electron density stabilization for a system which is composed of submicroscopic particles S (as stabilizers), electrons and atoms, or molecules A_i (as electron sources) and B_j (capable of forming negative ions) and represent it in the form of equation (11). When the conditions of (11) are satisfied, electron density does not depend on A_i and B_j. It is

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determined only by the temperature and ionization potential of the stabilizing particles and cannot be reduced by the addition of deionizing substances. The production of a saturated electron gas at the surface of the stabilizing particles is considered the physical cause of the stabilizing effect. The mechanism of stabilization is ascribed to a variation in the mean charge of the stabilizing particles, which compensates for the concentration change of the electrons by the atoms A_i and B_j. In conclusion, the authors thank Academician V. K. Kondrat'yev and Yu. S. Sayasov. There are 3 references, 2 of which are Soviet.

SUBMITTED: April 2, 1958

26.2331 also 2118
24.2120 (1049, 1502, 1482, 1532)

S/109/006/005/010/027
D201/D303

AUTHOR: Musin, A.K.

TITLE: The motion of plasma in crossed electric and magnetic fields

PERIODICAL: Radiotekhnika i elektronika, v. 6, no. 5, 1961, 770 - 778

TEXT: Some of the results of this work were given at the 2-aya vsesoyuznaya konferentsiya po teoreticheskoy i prikladnoy magnitnoy gidrodinamike (Second All-Union Conference on Theoretical and Applied Magnetic Hydrodynamics) held in Riga, June, 1960. The problem of plasma motion in external fields has been much investigated over the last few years in conjunction with various problems of theoretical and applied physics (Ref. 1: Trudy 2-y mezhdunarodnoy konferentsii po mirnomu ispol'zovaniyu atomnoy energii (Proceedings of the 2nd International Congress on the Peaceful Uses of Atomic Energy)(Geneva, 1958) Moscow, 1959; Trudy 2-y vsesoyuznoy konferen-

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tsii, po teoreticheskoy i prikladnoy magnitnoy gidrodinamike (Riga, 1960), Riga 1961). In particular the possibility of applying "cold" ($T \simeq 10^{0}K$) moving plasma for its use in thermo-electronic energy transformers, magneto hydrodynamic generators and micro-wave devices has been much discussed (Ref. 2: Zarubezhnaya radioelektronika (Radioelectronics Abroad) 1960, 3, 4 (Materially Sessii Instituta radioinzhenerov (Boston, USA, 1959); J.L. Neuringer, J. Fluid Mechanics, 1960, 7, 287). In the present article the author considers the motion of a viscous conducting medium inside a magnetic field in the presence of a flat current stratum, created by an external electric field and explains certain peculiarities of its motion in a stationary and a non-stationary case. He assumes at the same time that the physical properties of the medium in motion remain unchanged for the whole of motion time and that the equations of magnetic hydrodynamics can be applied. The pulse and magnetic induction equations are taken in the form of

$$\vec{u}_t + w_\alpha \vec{u}_{x_\alpha} + \vec{e}_\alpha \Phi_{x_\alpha} = (a\vec{u} + b\vec{w})_{x_\alpha x_\alpha}, \qquad (1)$$

$$\vec{w}_t + u_\alpha \vec{w}_{x_\alpha} + \vec{e}_\alpha \Phi_{x_\alpha} = (a\vec{w} + b\vec{u})_{x_\alpha x_\alpha},$$

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where the following notations

$$\vec{u} = \vec{v} + \frac{\vec{H}}{\sqrt{4\pi\rho}}; \qquad \Phi = \frac{p}{\rho} + (\vec{u} - \vec{w})^2/8; \tag{2}$$

$$\vec{w} = \vec{v} - \frac{\vec{H}}{\sqrt{4\pi\rho}}; \qquad 2a = \nu + \nu_m; \qquad 2b = \nu - \nu_m;$$

have been introduced according to W.M. Elsasser (Ref. 3: Phys. Rev. 1950, 79, 183); $\vec{e}_\alpha$ - unit vector along x_α axis; $\alpha = 1, 2, 3$; the rest of the symbols in Eqs. (1) and (2) - as normally used. The steady state motion in the presence of a transverse current layer is considered first. The viscous conducting gas is supposed to move in the x_1 direction between two non-conducting planes $x_3 = \pm R$; the external homogeneous magnetic field is directed along the x_3 axis; the direction of the external electric field coincides with the x_2 axis, so that a constant current in the current layer flows in the x_2 direction with the linear density of the current $\vec{j}_0$.

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Then conditions of

$$u_2 = w_2 = 0, \quad u_3 = -w_3 = H_3/\sqrt{4\pi\rho}, \quad u_1 = u_1(x_3), \quad w_1 = w_1(x_3),$$

$$w_3 = w_3(x_3), \quad u_3 = u_3(x_3), \quad \Phi_{x_1} = \Phi_{x_1}(x_1) \qquad (3)$$

and $$\rho = \text{const}, \quad \Phi_{x_1} = \text{const}, \quad u_3 = \text{const}, \quad w_3 = \text{const} \qquad (4)$$

must be satisfied. From Eq. (1) and conditions (3) for the given problem

$$u_{1x_3x_3} + H_3 u_{1x_3} = \Phi_{x_1}\beta, \quad \alpha w_{1x_3x_3} - H_3 w_{1x_3} = \Phi_{x_1}3 \qquad (5)$$

is obtained and finally

$$r_1(x_3) = \sqrt{\frac{4\pi\nu_m}{\rho\nu}}\left(\frac{J_0}{c_0} - \frac{2Hp_{x_1}}{H_3}\right)\frac{\operatorname{sh} L(R+x_3)\operatorname{sh} L(R-x_3)}{\operatorname{sh} L_1}, \qquad (6)$$

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$$H_1(x_3) = \frac{2i_0\pi}{c_0}\left(1 - \frac{\operatorname{sh} L(R-x_3)\operatorname{ch} L(R+x_3)}{\operatorname{sh} L_1}\right) - \qquad (8)$$
$$- \frac{4\pi p'_{x_1}}{H_3}\left(1 - \frac{\operatorname{sh} L(R-x_3)\operatorname{ch} L(R+x_3)}{\operatorname{sh} L_1} - \frac{x_3}{R}\right).$$

where $L = H_3/4\sqrt{\pi\nu_m\rho}$; $L_1 = H_3R/2\sqrt{\pi\nu_m\rho\nu}$.

Two cases are analyzed: (p) - the external electric field $\vec{E}_2 = 0$, and $p'_{x_1} \neq 0$; (m) - the gas pressure is constant everywhere, i.e. $p'_{x_1} = 0$ but $\vec{E}_2 \neq 0$. For case (p) the full current into the x_2 axis direction is zero and initial terms of Eq. (8) vanish and the expression for velocity $v_1^{(p)}(X_3)$ and for the magnetic field $H_1^{(p)}(X_3)$ become the solution to the problem in J. Hartmann (Ref. 4:

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Def. Kgl. Danske Vidensk. Selskass, 1937, 15, 6). Ir case (m) the full pressure is constant

$$p^* = p + (H_3^2 + H_1^2)/8\pi = \text{const},$$

the last terms of Eq. (8) vanish and

$$v_1^{(m)}(x_3) = \sqrt{\frac{\pi\nu_m}{\rho\nu}}\frac{j_0}{c_0 \operatorname{sh} L_1}\left(\operatorname{ch} L_1 - \operatorname{ch} L_1 \frac{x_3}{R}\right), \qquad (9)$$

$$H_1^{(m)}(x_3) = \frac{2\pi j_0}{c_0}\left(1 - \frac{\operatorname{sh} L(R-x_3)\operatorname{ch} L(R+x_3)}{\operatorname{sh} L_1}\right).$$

is obtained, or

$$v_{10}^{(m)} = \sqrt{\frac{\pi\nu_m}{\rho\nu}}\frac{j_0}{c_0}\operatorname{th}\frac{L_1}{2}, \quad \bar{v}_1^{(m)} = \frac{2\pi\nu_m j_0}{c_0 H_3 R}(L_1 \operatorname{cth} L_1 - 1). \qquad (10)$$

the measure of influence of the external field on the gas motion is seen to be the number $L_1 = H_3 R/\sqrt{4\pi\nu_m\rho\nu}$. For $L_1 \ll 1$ the motion velocities for case (m) and (p) respectively become

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$$v_1^{(m)} \simeq \frac{H_3 j_0 R}{4\nu\rho c_0}\left(1-\frac{x_3^2}{R^2}\right),\quad \bar{v}_1^{(m)} \simeq \frac{j_0 H_3 R}{6\rho\nu c_0} = \frac{3}{2}v_{10}^{(m)}, \tag{11}$$

$$v_1^{(p)} \simeq \frac{R^2 p_{x_1}^{\cdot}}{2\rho\nu}\left(\frac{x_3^2}{R^2}-1\right),\quad \bar{v}_1^{(p)} \simeq -\frac{R^2 p_{x_1}^{\cdot}}{3\rho\nu} = \frac{3}{2}v_{10}^{(p)}.$$

while for $L_1 \gg 1$ we have

$$v_1^{(m)} \simeq j_0\sqrt{\frac{\pi\nu_m}{\rho\nu c_0^2}}\left\{1-\exp\left[L_1\left(\frac{|x_3|}{R}-1\right)\right]\right\},\quad \bar{v}_1^{(m)} \simeq \frac{2\pi\nu_m j_0(L_1-1)}{c_0 R H_3} \simeq v_{10}^{(m)}, \tag{12}$$

$$v_1^{(p)} \simeq -\frac{R p_{x_1}^{\cdot}}{H_3}\sqrt{\frac{4\pi\nu_m}{\rho\nu}}\left\{1-\exp\left[L_1\left(\frac{|x_3|}{R}-1\right)\right]\right\},\quad \bar{v}_1^{(p)} \simeq -\frac{4\pi\nu_m p_{x_1}^{\cdot}(L_1-1)}{H_3^2} \simeq v_{10}^{(p)}.$$

In other words, for large magnetic fields and light strongly ionized gases $v_1^{(p)}$ decreases with the increase of the external magnetic field $\vec{H}_3$ and $v_1^{(m)}$ becomes independent of it and becomes satu-

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rated. The graphs of $\vec{v}_1 (X_3)$ and of $\vec{H}_1 (X_3)$ for cases (m) and (p) respectively are given. In the case of a non-stationary motion with a varying current layer, it is assumed that a varying electric field $\vec{E}(t)$ is acting into the X_2 axis direction, so that in the given space a varying current in the current layer is flowing, having a density per unit length in the X_1 direction

$$\vec{j}(t) = \vec{j}_0 \exp i(\omega t + \varphi). \tag{13}$$

By projecting Eq. (1) on the X_1 - axis, the basic parabolic system of the non-stationary problem is obtained

$$u_{1t} + w_3 u_{1x_3} + \bar{\Phi}_{x_1} = a u_{1x_3x_3} + b w_{1x_3x_3},\ w_{1t} + u_3 w_{1x_3} + \bar{\Phi}_{x_1} = a w_{1x_3x_3} + b u_{1x_3x_3} \tag{14}$$

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The stationary solution of system given by Eq. (17) is represented by

$$u_1(t, x_3)|_{t=0} = \tilde{u}_1(x_3),\ w_1(t, x_3)|_{t=0} = \tilde{w}_1(x_3). \qquad (15)$$

in the absence of the current layer and are obtained from expressions (8) assuming $j_0 = C$. The boundary conditions are taken as

$$u_1(t, x_3)|_{x_1=R} = -u_1(t, x_3)|_{x_1=-R} = -w_1(t, x_3)|_{x_1=R} = \qquad (16)$$
$$= w_1(t, x_3)|_{x_1=-R} = \frac{h_0(t)}{\sqrt{4\pi\rho}},$$

where $h_0(t) = (2\pi/c_0)\, j_0 \exp i(\omega t + \varphi)$.

Using the operator equation as given by Ya. Mikusinskiy (Ref. 5: Operatornoye ischisleniye (Operator Calculus) IL. 1956)

$$s^n u - (u^{(n)}(\lambda)) = \sum_{m=1} s^{m-1} (u^{(n-m)}(0)); \quad m = 1, \ldots, n, \qquad (17)$$

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is obtained where S is the differentiating operator with respect to the variable λ. Eq. (17) can be reduced to an algebraic system of

$$\begin{aligned} u(k + w_3 s - as^2) + wbs^2 &= \Phi_1(s, k), \\ ubs^2 + w(k + u_3 s - as^2) &= \Phi_2(s, k), \end{aligned} \tag{18}$$

$$\Phi_1(s, k) = -\frac{\Phi_{x_1}}{sk} + u_0 + u^0(w_3 - as) - au^0_{x_3} - w^0 bs - bw^0_{x_3},$$

$$\Phi_2(s, k) = -\frac{\Phi_{x_1}}{sk} + w_0 + w^0(u_3 - as) - aw^0_{x_3} - bsu^0 - bu^0_{x_3}.$$

The solution of system (18) can be resolved into simple fractions (Ref. 5: Op.cit.) in the form of

$$\frac{s - p^*}{(s - p)^2 - b^2} = \{e^{px_3} \operatorname{ch} bx_3\}, \quad \frac{1}{s - p} = \{e^{px_3}\} \tag{21}$$

so that the solution of system (14) is eventually represented by function operators. Applying conditions

$$u(x_3)|_{x_3 = R} = -u(x_3)|_{x_3 = -R} = -w(x_3)|_{x_3 = R} = w(x_3)|_{x_3 = -R} = \frac{h(k)}{\sqrt{4\pi\rho}}, \tag{19}$$

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$$(u_{x_0} + w_{x_1})|_{x_0=0} = (\overline{u} - \overline{w})|_{x_0=0} = 0. \qquad (20)$$

and

and after simple transformation the function operators $v(X_3, k)$ and $H(X_3, k)$ are finally given by

$$\begin{aligned} v(x_3, k) &= M_3 + M_1 \operatorname{ch} 2Lx_3 + (p_1 G_3 \operatorname{ch} p_1 x_3 - p_3 G_1 \operatorname{ch} p_3 x_3)/A p_1 p_3 B(k), \\ H(x_3, k) &= \{[(k - \nu p_1^2) G_3 \operatorname{sh} p_1 x_3 - (k - \nu p_3^2) G_1 \operatorname{sh} p_3 x_3]/A^2 p_1 p_3 B(k)\} + \\ &+ (v_A^2/\lambda \sqrt{4\pi\rho}) \left[M_3 + M_1 \left(k - \frac{v_A^2}{\nu_m} \right) \right] \operatorname{sh} 2Lx_3 + (M_4 + kM_2)(x_3/A). \end{aligned} \qquad (22)$$

where the notations of

$$G_i(k) = A p_i (b_0 + h(k)) \operatorname{ch} R p_i + (k - \nu p_i^2)(M_2 + M_1 \operatorname{ch} L_1) \operatorname{sh} R p_i; \; i = 1, 3;$$

$$p_{1,3}(k) = (\sqrt{2ak + v_A^2 + 2|k|\lambda} \pm \sqrt{2ak + v_A^2 - 2|k|\lambda})/\lambda;$$

$$b_0(k) = (v_A^2/\lambda \sqrt{4\pi\rho}) \left[M_3 + M_1 \left(k - \frac{v_A^2}{\nu_m} \right) \right] \operatorname{sh} L_1 - [R(M_4 + kM_2)/A];$$

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$$B(k) = [(k - \nu p_1^2)\,\mathrm{sh}\,Rp_1\,\mathrm{ch}\,Rp_3/Ap_1] - (k - \nu p_3^2)\,\mathrm{sh}\,Rp_3\,\mathrm{ch}\,Rp_1/Ap_3;$$

$$M_1 = p^*_{x_1}\left[(L/\lambda^2\rho) + \alpha_2\left(k - \frac{v_A^2}{\nu_m}\right)/\lambda^2\right]/[(2L)^4 + \alpha_1(2L)^2 + \alpha_2];$$

$$M_2 = (-p^*_{x_1}\alpha_3\,\mathrm{ch}\,L_1)/\alpha_2;\ M_3 = -p^*_{x_1}\alpha_3;\ M_4 = (p^*_{x_1 0}/\rho k) + p^*_{x_1}\alpha_3\,\mathrm{ch}\,L_1;$$

$$\alpha_1 = -(2ak^2 + v_A^2)/\lambda^2;\ \alpha_2 = (k/\lambda)^2;\ \alpha_3 = 2R\sqrt{\pi\nu_m}/H_3\sqrt{\rho\nu}\,\mathrm{sh}\,L_1;$$

$$A = H_3/4\pi\rho;\ \lambda^2 = \nu\nu_m;\ v_A^2 = H_3^2/4\pi\rho;\ 2a = \nu + \nu_m.$$

have been introduced. Two kinds of plasma motion are considered: a) The external electric field is zero, there is no current layer, and b) The gradient of the full pressure is equal to zero and in Eq. (19) $\varphi = \pi/2$. The author concludes: 1) In the absence of the external electric field the velocity of motion of plasma increases with the decrease of the external magnetic field /$\bar{H}$/ and reaches a maximum for $\bar{H} = 0$; 2) In the presence of the current layer formed by an external electric field, the velocity of plasma increases with the increase of the external magnetic field and tends assym-

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totically to a certain limiting value, determined by the linear density j of the current in the current layer, by the conductivity σ and by the dynamic viscosity v of the plasma (the phenomenon of inductive saturation); 3) With slow changes of the external electric field the limiting value of velocity is independent of plasma density ρ. However, the greater the density, the greater must be the magnetic field to reach it; 4) Most of the gas mass can reach the limit velocity, provided the magnetic field is strong enough. Basic theoretical results have been confirmed experimentally. In conclusion the author expresses his appreciation for the help and guidance of V.L. Granovskiy. There are 3 figures and 9 references: 8 Soviet-bloc and 3 non-Soviet-bloc. The references to the English-language publications read as follows: J.L. Neuringe, J. Fluid Mechanics, 1960, 7, 287; W.M. Elsasser, Phys. Rev., 1950, 79, 183. [Abstractor's note: Part of the 1st and 2nd listed references are translations into Russian: 1. Proceedings of the 2nd International Conference on Peaceful use of Atomic Energy, Geneva, 1958; 2. Materials from the meeting of IRE, Boston, USA, 1958].

SUBMITTED: August 15, 1960

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L 15718-63 EPR/EPA(b)/EWT(1)/EPF(n)-2/EWG(k)/BDS/T-2/EEC(b)-2 AFFTC/ASD/
ESD-3/AFWL/IJP(C)/SSD Ps-4/Pd-4/Pu-4/Pz-4/Pi-4/Po-4 WW/AT
ACCESSION NR: AR3002657 B/0124/63/000/005/B012/B012

SOURCE: Rzh. Mekhanika, Abs. 5B54

93

AUTHOR: Musin, A.K.; Granovskiy, V. L.

TITLE: Study of the motion of a conducting gas accelerated by crossed electrical and magnetic fields

CITED SOURCE: Sb. Vopr. magnitn. gidrodinamiki i dinamiki plazmy. v. 2. Riga, AN LatvSSR, 1962, 411-417

TOPIC TAGS: plasma, viscosity, electric field, magnetic field, saturation, gas magnetohydrodynamics

TRANSLATION: A study is made of the motion of small viscosity (much less than the magnetic viscosity) plasma, with small conductivity, in crossed electrical and magnetic fields under a condition of constant total pressure along the 3rd axis. By solving the magnetohydrodynamic equations, the drift velocity, which is proportional to the electrical field and which has the form of a curve with its saturation depending on the magnetic field was found. The saturation is caused

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ACCESSION NR: AR3002657

by the fact that for $H > H_{cr}$ the additional accelerating action of the magnetic field is completely balanced by the magnetic viscosity. Curves for the drift velocity for $\sigma \approx 10^{13}$ sec^{-1}, H, varying from 400 to 5000 oersteds and gas pressure from 10 to 1000 microns of mercury are drawn. Under these conditions the limiting drift velocity proves to be of the order of $2.4 \cdot 10^{1}$ cm/sec.
V.I. Vladimirov

DATE ACQ: 14Jun63 SUB CODE: PH ENCL: 00

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S/109/62/007/003/024/029
D256/D302

26.2371

AUTHOR: Musin, A.K.

TITLE: Motion of a plasma bundle along guiding electrodes

PERIODICAL: Radiotekhnika i elektronika, v. 7, no. 3, 1962, 547 - 556

TEXT: The motion of a quasineutral plasma bundle is considered for critical conditions of a strong external magnetic field and rapidly changing inductance of the accelerating system. The problem is approached by setting up Lagrange equations including the Joule dissipation for the plasma bundle, the direction of the constant and uniform external magnetic field being perpendicular to the direction of the motion. A simplification of these equations is obtained by assuming that the pulsations of the plasma do not affect the forward motion. A solution of the equations is presented for the case of a strong external magnetic field; for rapidly changing inductance, a qualitative discussion is presented. For the latter case an asymptotic method is developed similar to the method of

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Motion of a plasma bundle along ... S/109/62/007/003/024/029
D250/D302

strong external magnetic field. There are 11 references: 6 Soviet-bloc and 5 non-Soviet-bloc. The 4 most recent references to the English-language publications read as follows: R.M. Patrick, Vistas in astronautics, II, Second Annual Astronautics Symposium, 1959, 119; IRE Trans. on military electronics, Guest Editorial, 1959, MIL3, 2, 42; T. Korneff, Conference on extremely high temperatures, Boston, 1958, 197; W. Bostic, ibid, 169.

SUBMITTED: July 17, 1961

Card 3/3

S/109/62/007/005/016/021
D230/D308

AUTHORS: Arshinov, A.A., and Musin, A.K.

TITLE: Equilibrium ionization in dispersion systems

PERIODICAL: Radiotekhnika i elektronika, v. 7, no. 5, 1962, 890 - 899

TEXT: A fundamental ionization equation is deduced; the only condition of its applicability is that the particles must be identical. Using a number of ionization expressions a law of charge distribution is obtained which is similar to the probability density distribution law. The results indicate that, in terms of the probability theory and for certain assumptions, the particle concentrations with various charges follow a normal Gaussian law. The physical meaning of the magnitude of dispersion and mean charge is explained. Asymptotic approximations of the fundamental equation are given for the cases of large and small dispersions; large and small dispersions indicate smooth and discrete charge distribution of particles, respectively; their properties are explained. It is shown that certain already existing formulas follow from the generalized equation

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as its special cases; thus, Saha's equation for single ionization of atoms; Einbinder's formula for multiple ionization and submicroscopic solid formations of carbon-type particles in a flame; authors' own formula deduced previously for a high degree of ionization in a system consisting of identical particles and same charge. Two examples of application of these formulas are given. In conclusion it is shown that, for small ionizations, the electron concentration depends substantially on the magnitude of the charge dispersion. There is 1 table. The most important English-language references are: M. N. Saha, Phil. Mag., v. 40, 1920, 472; H. Einbinder, J. Chem. Phys., v. 26, 1957, 948.

SUBMITTED: October 3, 1960

MUSIN, A.K.

Plasma clot with variable mass in an external magnetic field. Radiotekh. i elektron. 7 no.10:1799-1808 O '62. (MIRA 15:10)
(Plasma (Ionized gases)) (Magnetic fields)

MUSIN, A. K.

"Formation of Space Charge Sheaths and Flow of an Electric Current in a Plasma Stream."

report submitted for the Intl Symp on Magnetohydrodynamics Electrical Power Generation, Paris, 6-11 Jul 64.

All-Union Electrical Inst im V. I. Lenin, Moscow.

ACCESSION NR: AP4038428 S/0294/64/002/002/0142/0155

AUTHOR: Musin, A. K.

TITLE: Establishment of the electric current in an ionized gas

SOURCE: Teplofizika vy*sokikh temperatur, v. 2, no. 2, 1964, 142-155

TOPIC TAGS: plasma current, plasma conductivity, particle concentration, ion mobility, relaxation time

ABSTRACT: In view of various objections which have been raised against the assumptions used in earlier work, the authors present a non-contradictory approximate analysis of the establishment of the electric current and the near-electrode space-charge sheaths in a non-self-maintaining discharge plasma, and determine the main transient time constants. The original theory of J. J. Thomson (Conduction of Electricity through Gases, Cambridge, 1928) is obtained from the present results as a particular limiting case. The transients arising when plasma flows into the space between the discharge electrodes are divided into three distinct stages: 1) an initial period, in which the electric field is established in the plasma gap and the current density remains approximately proportional to the electric field intensity, 2) an intermediate period, in which the electrode-potential drop and space-charge

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ACCESSION NR: AP4017598 S/0109/64/009/002/0283/0292

AUTHOR: Baranov, V. Yu.; Musin, A. K.

TITLE: Role of diffusion and viscous friction in the process of plasma acceleration

SOURCE: Radiotekhnika i elektronika, v. 9, no. 2, 1964, 283-292

TOPIC TAGS: plasma, plasma physics, plasma acceleration, plasma diffusive dissipation, plasma viscous friction, plasma cluster, plasma cluster motion

ABSTRACT: A simplified analysis of the motion of a plasma cluster in a plasma accelerator is offered; an allowance is made for both the diffusive dissipation of neutral particles present in the plasma and the continuous influx of new particles formed in the process of guiding-electrode erosion. It is assumed that the ionization $\alpha = (1 + (n_0/n_i))^{-1}$ is small and that the seeping of charged particles across the magnetic field can be neglected. Equations describing the motion of a plasma cluster are set up; in want of their general solution, an approximation covering a simple particular case is offered. Curves of the plasma-cluster mass and velocity plotted against the distance from the origin of acceleration are given.

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ACCESSION NR: AP4017598

The principal conclusions drawn are: (1) Optimum lengths of a plasma accelerator exist at which a maximum velocity and a maximum momentum of the plasma cluster are attained or a max coefficient of the conversion of electric energy stored in the accelerating circuit into kinetic plasma energy is realized; (2) The optimum length increases with the initial voltage and capacitance of the accelerating circuit; (3) The plasma-cluster mass may considerably exceed that of the gas admitted to the accelerator; (4) The velocity maximum corresponds to the condition when the electrodynamic forces and the friction forces affecting the cluster are equal; (5) The maximum of momentum arrives when the process of cluster acceleration and its mass diffusive dissipation are at equilibrium. "The authors thank V. L. Granovskiy, O. A. Malkin, G. G. Timofeyeva, and M. F. Shirokov for their attention and interesting discussions." Orig. art. has: 4 figures and 30 formulas.

ASSOCIATION: none

SUBMITTED: 10May63 DATE ACQ: 18Mar64 ENCL: 00

SUB CODE: GE NO REF SOV: 010 OTHER: 006

Card 2/2

L 65145-65 EWT(1)/EPF(n)-2/EWG(m)/EPA(w)-2 IJP(c) AT

ACCESSION NR: AP5020550 UR/0294/65/003/004/0501/0509 53

533.915 44

AUTHOR: Musin, A. K.; Tyulina, M. A. 44,55 B

TITLE: Disappearance of the charge carriers in a plasma moving in an electric field

SOURCE: Teplofizika vysokikh temperatur, v. 3, no. 4, 1965, 501-509

TOPIC TAGS: plasma physics, electric field, electrode, plasma diffusion, ionized plasma, plasma charged particle

ABSTRACT: The article considers the formation and the disintegration of space charges during the passage of an electrical current through a stream of ionized gas moving in a transverse electric field. In a quasineutral plasma in an electric field, the charge carriers can disappear by recombination within the volume and on the walls, and also during the passage of an electric current through the plasma. If the electrodes are sufficiently long, the charged component of the plasma finally disappears, since the electrons in the plasma move to the anode, and the positive ions to the cathode. Experimental determinations were made of the volt ampere

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ACCESSION NR: AP5020550

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characteristics of a non self-sustaining current in a disintegrating plasma, and a formula is derived for the rate of disappearance of the charge carriers. This formula is valid only under conditions of mobility and in the absence of disappearance of the charged particles resulting from ambipolar diffusion and of recombination within the volume. These conditions are only met in a sufficiently weakly ionized plasma. "In conclusion, the authors wish to thank G. G. Timofeyev for interesting discussions, and also N. Ya. Shcherbakov for his active participation in carrying out the experiments." Orig. art. has: 22 formulas, 6 figures and 1 table.

ASSOCIATION: Vsesoyuznyy elektrotekhnicheskiy institut im. V. I. Lenina (All-Union Electrotechnical Institute)

SUBMITTED: 30Jul64 ENCL: 00 SUB CODE: ME, EM

NR REF SOV: 003 OTHER: 001

Card 2/2

L 31518-66 EWT(1)/ETC(f) IJP(c) AT

ACC NR: AP6008822 SOURCE CODE: UR/0294/66/004/001/0012/0019

AUTHOR: Konenko, O. R.; Musin, A. K.

ORG: All-Union Electrotechnical Institute im. V. I. Lenin (Vsesoyuznyy elektrotekhnicheskiy institut)

TITLE: Charged particle concentration waves in a moving plasma

SOURCE: Teplofizika vysokikh temperatur, v. 4, no. 1, 1966, 12-19

TOPIC TAGS: moving plasma, plasma charged particle, plasma concentration, plasma diagnostics, ionized gas

ABSTRACT: The authors investigate the flow of a quasineutral ionized gas, moving along magnetic force lines, with induced perturbation of the concentration of charged particles. It is assumed that the perturbation is due to the modulation of the concentration in some initial plane with a steady-state normal diffusion distribution of the concentration along the cross section. The charged particles are recombined on the walls of the channel as a result of ambipolar diffusion. The electron temperature decreases along the flow, as a result of which the coefficient of ambipolar diffusion decreases. Boundary conditions of the third type exist on the walls which confine the flow. Plane and cylindrical geometries of the channel are considered. A general expression is derived for parameters which characterize the mechanism of concentration wave propagation, and basic limiting cases are analyzed. A general

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L 31518-66

ACC NR: AP6008822 O

solution is found for the problem of the propagation of rectangular concentration perturbations of charged particles, and some characteristics are studied. The mechanisms investigated may be used as a means for the physical diagnostics of plasma parameters, such as flow velocity, the coefficient of effective recombination, and the coefficient of ambipolar diffusion. Orig. art. has: 35 formulas.

SUB CODE: 20 / SUBM DATE: 25May64 / ORIG REF: 012/ OTH REF: 002

Card 2/2 mc

L 43035-66 EWT(1)/T IJP(c) AT
ACC NR: AP6029771 SOURCE CODE: UR/0294/66/004/004/0480/0490

AUTHOR: Musin, A. K.

75

ORG: All-Union Electrotechnical Institute im V. I. Lenin (Vsesoyuznyy elektrotekhnicheskiy institut)

TITLE: Determination of the electric current in moving plasma under conditions of thermionic emission 2/

SOURCE: Teplofizika vysokikh temperatur, v. 4, no. 4, 1966, 480-490

TOPIC TAGS: plasma physics, plasma conductivity, moving plasma, thermionic emission, cathode, electrode

ABSTRACT: An investigation was made of processes of the formation of space-charge layers during the passage of an electric current in a plasma moving in an electric field in the presence of electron thermal emission from the cathode. Volt-ampere characteristics of semi-self-contained currents were obtained for the cases of weak and strong electron emission. It was established that the shape of the volt-ampere characteristics is markedly influenced by the charge redistribution and the formation of the space-charge layers at the electrodes, which occurs when a plasma flows through the interelectrode space in the presence of an external electric field. If the electron emission is weak, the electrons emitted from the cathode partly compensate the positive space charge rising at the cathode, thus facilitating the passage of

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ACC NR: AP6029771

the electric current through the plasma. The total current is proportional to the square root of the emission current. When, with increasing emission temperature, the equilibrium electron concentration equals the electron concentration in the plasma interval, the near-electrode layer disappears, and the electric current passing through the plasma becomes proportional to the applied voltage. With further increase of the emission, the formation of a negative space-charge layer begins at the cathode, the value of the electric field in the plasma interval increases, and the electric current shows a quadratic dependence on the external voltage. At sufficiently high pressure, the electric current becomes more sensitive to the changes in the external voltage than in the case of low pressures. The author notes that from the volt-ampere characteristics of the semi-self-contained current, information can be obtained on the plasma parameters and on the emission properties of the electrodes. Orig. art. has: 5 figures and 29 formulas. [ZL]

SUB CODE: 20/ SUBM DATE: 20Dec64/ ORIG REF: 011/ OTH REF: 008/ ATD PRESS: 5065

Card 2/2

L 45979-66 EWT(1) IJP(c) AT

ACC NR: AP6028611 SOURCE CODE: UR/0057/66/036/008/1387/1393

56
B

AUTHOR: Baranov, V.Yu.; Musin, A.K.; Timofeyeva, G.G.

ORG: All-Union Electrotechnical Institute im. V.I.Lenin, Moscow (Vsesoyuznyy elektrotekhnicheskiy institut)

TITLE: Diffusive spread of a plasma condensation and the optimum length of a plasma accelerator

SOURCE: Zhurnal tekhnicheskoy fiziki, v. 36, no. 8, 1966, 1387-1393

TOPIC TAGS: plasma acceleration, plasma gun, plasma electron temperature, plasma velocity

ABSTRACT: Two of the authors have previously given a theory of the acceleration of plasmas in a rail accelerator, in which the effects of electrode erosion and diffusive scattering of the plasma particles were taken into account and from which it was concluded that there are optimal lengths of the plasma gun for maximum energy of the plasma, maximum momentum of the plasma, and maximum efficiency (V.Yu.Baranov and A.K. Musin, Radiotekhnika i elektronika, 9, No.2, 283, 1964). This theory has been confirmed in part by experiments of A.D.Timofeyev, V.G.Marginin, B.A.Shevchuk, and A.A.Kalmykov (ZhTF, 35, No.5, 858, 1965). The present paper reports experiments undertaken during 1960 and 1961 in order further to test this theory and to investigate factors that were not included in the theory. Plasmas were produced and accelerated by the 0.5 to 7 kV

Card 1/2 UDC: 533.9

L 11417-67 EWT(1) IJP(c)

ACC NR: AP6031265 SOURCE CODE: UR/0057/66/036/009/1626/1635

AUTHOR: Musin, A.K.

ORG: Electrotechnical Institute im. V.I.Lenin, Moscow (Elektrotekhnicheskiy institut)

TITLE: Characteristics of several types of plasma accelerators

SOURCE: Zhurnal tekhnicheskoy fiziki, v. 36, no. 9, 1966, 1626-1635

TOPIC TAGS: plasma acceleration, plasma accelerator, plasma gun, plasma velocity

ABSTRACT: Equations describing the acceleration of plasma in a rail type accelerator, in which the effects of circuit losses and the variation of the mass of the accelerated plasma are taken into account, were solved with an analog computer for a number of values of the relevant parameters, and the results are tabulated. The tables give the electrical characteristics of the circuit (the capacitance and initial charge of the capacitor bank, the maximum current, the circuit inductance, and the rate of change of inductance with position of the accelerating plasma) and the length of the accelerator required to produce plasma bursts of different velocities, masses, momenta, and energies with different energy utilization efficiencies. The tabulated data show that the production with efficiencies exceeding 50% of plasmas with velocities higher than 10^7 cm/sec imposes very rigid requirements on the electric and geometric characteristics of the accelerator, which cannot always be met with presently available techniques. Approximate analytic design formulas are presented, which do not deviate from the com-

Card 1/2 UDC: 533.9

ACC NR: AP7000054 SOUCE CODE: UR/0207/66/000/005/0107/0112

AUTHOR: Baranov, V. Yu. (Moscow); Musin, A. K. (Moscow); Timofeyeva, G. G. (Moscow)

ORG: none

TITLE: Kinematics of the current-carrying layer in a plasma accelerator

SOURCE: Zhurnal prikladnoy mekhaniki i tekhnicheskoy fiziki, no. 5, 1966, 107-112

TOPIC TAGS: plasma, plasma acceleration, plasma ~~bunch~~ accelerator, charged particle, plasma flow

ABSTRACT: The results of analytical and experimental investigations of the dependence of kinematic characteristics of quasi-neutral bunches of charged particles in "rail-type" accelerators on the electrical and geometric parameters of the accelerating circuit are compared. Proceeding from previous findings by one of the authors (A. K. Musin, Radiotekhnika i elektronika, v. 7, no. 10, 1962), the movement of a plasma bunch along the electrodes as a function of their erosion is described by an equation which can be approximately solved by an asymptotic method applicable to nonlinear oscillations with strong attenuation. The magnitudes characterizing the process of acceleration (current in the plasma, velocity of the current-carrying layer, momentum and mass of the bunch,

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