

ACCESSION NR: AT4036071

S/2781/63/000/003/0283/0294

AUTHORS: Borovik, Ye. S.; Busol, F. I.; Yuferov, V. B.; Skibenko, Ye. I.

TITLE: Investigation of supersonic jet of carbon dioxide as a target for charge exchange of ions

SOURCE: Konferentsiya po fizike plazmy* i problemam upravlyayemogo termoyadernogo sinteza. 3d, Kharkov, 1962. Fizika plazmy* i problemy* upravlyayemogo termoyadernogo sinteza (Plasma physics and problems of controlled thermonuclear synthesis); doklady* konferentsii, no. 3. Kiev, Izd-vo AN UkrSSR, 1963, 283-294

TOPIC TAGS: supersonic gas flow, gas jet, charge exchange, magnetic trap, cryogenic treatment, carbon dioxide, condensation

ABSTRACT: The described investigation is one of the stages of research done by the authors to develop a hydrogen-cooled magnetic

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trap and produce intense beams of fast neutral hydrogen or deuterium atoms. On the basis of cryogenic methods developed at the author's institute, it is proposed to use as charge-exchange targets supersonic jets of gases such as CO_2 , N_2 , O_2 , Ar, and H_2 flowing in vacuum and completely condensed on a cooled surface (78K). The experiments reported were made with carbon dioxide. The main parameters of a supersonic jet of this gas are first derived, after which the experimental setup, the test procedures, and the results are described. The investigations give grounds for assuming that in spite of the fact that the gas was not fully condensed and that an inverse flux of CO_2 molecules was observed, the use of carbon dioxide as a charge-exchange medium is feasible particularly if the purity of the gas and the pumping-on rate are increased. The possibility of the maximum amounts of carbon dioxide that can be frozen on the condenser and the possibility of constructing a closed-cycle system are also discussed. Future experiments are planned at ascertaining the possible use of other gases and deeper cooling. "The authors thank

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Ya. M. Fogel', D. V. Pilipenko, and S. G. Konovalov for measuring the capture cross section and electron loss of fast protons and hydrogen atoms in CO₂." Orig. art. has: 4 figures, 7 formulas, and 1 table.

ASSOCIATION: None

SUBMITTED: 00

DATE ACQ: 21May64

ENCL: 02

SUB CODE: ME, NP

NR REF SOV: 007

OTHER: 003

Card 3/5

ACCESSION NR: AT4036071

ENCLOSURE: 01

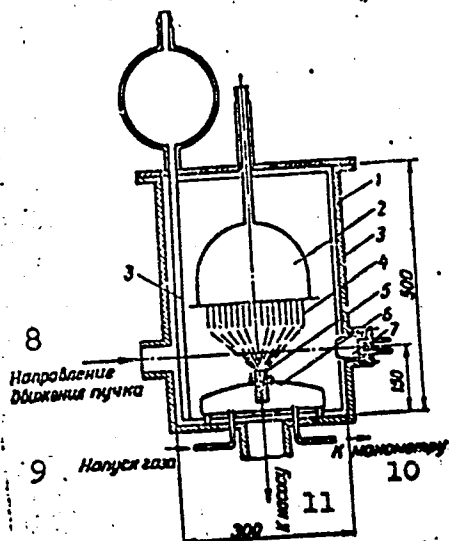


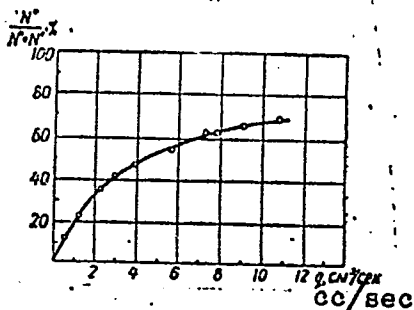
Diagram of charge-exchange chamber:

- 1 - chamber, 2 - condenser, 3 - screen,
- 4 - copper plates, 5 - outflow chamber,
- 6 - Laval nozzle, 7 - Faraday cup with calorimeter,
- 8 - direction of beam motion,
- 9 - gas inlet, 10 - to manometer, 11 - to pump

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ACCESSION NR: A4036071

ENCLOSURE: 02



Yield of neutral atoms as a function of the CO_2 flow. Mixed beam of hydrogen ions, $E = 19.5 \text{ keV}$

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ACCESSION NR: AT4036072

S/2781/63/000/003/0294/0299

AUTHORS: Borovik, Ye. S.; Busol, F. I.; Yuferov, V. B.

TITLE: Investigation of supersonic jets of nitrogen and argon

SOURCE: Konferentsiya po fizike plazmy* i problemam upravlyayemogo termoyadernogo sinteza. 3d, Kharkov, 1962. Fizika plazmy* i prob-
lemy* upravlyayemogo termoyadernogo sinteza (Plasma physics and
problems of controlled thermonuclear synthesis); doklady* konferen-
tsii, no. 3. Kiev, Izd-vo AN UkrSSR, 1963, 294-299

TOPIC TAGS: supersonic gas flow, gas jet, charge exchange, magnetic
trap, cryogenic treatment, argon, nitrogen, vacuum technique

ABSTRACT: This is a continuation of a companion paper (Accession Nr.
AT4036071), except that the gases tested were argon and nitrogen, and
the condenser was cooled to hydrogen temperature (20.4K). In addi-
tion, in the present setup it was possible to protect the working

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volume of the trap against the entry of jet molecules by an "absolutely black" channel, constituting a tube cooled to low temperature. The experiment demonstrated the feasibility of the use of hydrogen cooling for the development of supersonic gas target jets, and that no additional technical problems arise in this connection; in fact, the vacuum can be improved somewhat. The experiments have also shown that tubes which are cooled with liquid hydrogen or liquid helium are practically "absolutely black" to the molecules of all gases with sufficiently low vapor tension at the corresponding temperature. It is suggested that in conjunction with effective pumping methods this method of protection will find application in thermonuclear and other devices where large pressure drops are necessary in high or superhigh vacuum. Orig. art. has: 3 figures, 2 formulas, and 1 table.

ASSOCIATION: None

SUBMITTED: 00

DATE ACQ: 21May64

ENCL: 01

SUB CODE: ME

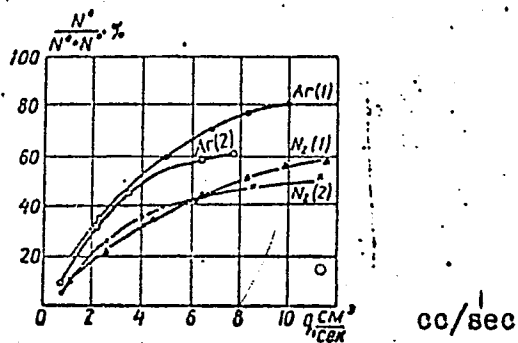
NR REF SOV: 002

OTHER: 001

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ACCESSION NR: AT4036072

ENCLOSURE: 01



Yield of neutral molecules as a function of the gas flow. E = 15 (1) and 23.5(2) keV

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1. 21817-65 EWT(1)/EMP(m)/EPR/FGS(k)/EWA(1) Pd-1/Ps-4

S/0057/64/034/012/2156/2159

ACCESSION NR: AP5000840

AUTHOR: Busol, F.I.; Yuferov, V.B.; Skibenko, Ye.I.

TITLE: Improvement of the vacuum in a charge exchange chamber in the proximity of the supersonic gas jet.

SOURCE: Zhurnal tekhnicheskoy fiziki, v.34, no.12, 1964, 2156-2159

TOPIC TAGS: vacuum device, vacuum technique, charge exchange

ABSTRACT: In earlier studies by the authors (ZhTF 33, No.8, 1963; Sb. Fizika plazmy i termonuklyarnyye sintezy (Plasma physics and problems in thermonuclear synthesis) No. 2, 1963, p. 114-115) the vacuum in a charge exchange chamber was improved by means of a jet of gas with near isotropic velocity distribution.

L 23817-65

ACCESSION NR: AP5000840

ENCLOSURE: 01

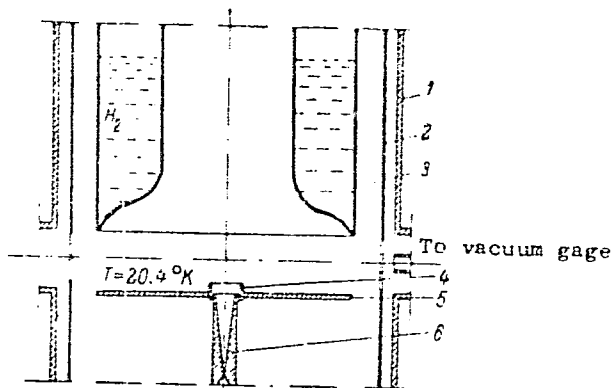


Diagram of the shielding device: 1 - chamber, 2 - nitrogen screen, 3 - condensing element, 4 - shielding tube, 5 - disk, 6 - nozzle.

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L 8198-66 EWT(1)/EWT(m)/EPF(n)₂/EWG(m)/EWA(A)/EWD(m)/EWD(t)/EWS(k)/EWP(h)/EWA(L)
ACC NR: AT5022295 IJP(c) JD, W/AI SOURCE CODE: UK/3137/64/000/053/0001/0004

44,55 44,55 44,55 44,55
AUTHOR: Yuferov, V. B.; Kovalenko, V. A.; Skibenko, Ye. I.; Busol, F. I.

44,55
ORG: Academy of Sciences UkrSSR, Physicotechnical Institute (Akademiya nauk UkrSSR, Fiziko-tehnicheskii institut)

TITLE: Supersonic hydrogen stream in a vacuum

17
SOURCE: AN UkrSSR. Fiziko-tehnicheskii institut. Doklady, no. 053/P-012, 1964. Sverkhzvukovaya struya vodoroda v vakuume, 1-4

1,55 21,44,55
TOPIC TAGS: supersonic flow, particle beam, hydrogen plasma, plasma heating

ABSTRACT: A brief discussion of the need for and means of producing supersonic hydrogen stream by means of new cryogenic techniques is presented. The apparatus and experimental conditions are described in earlier papers by the authors. The critical problem is the amount of heat transfer from the gas to the helium-cooled walls of the channel; it is one order higher than that measured in other experiments with argon and CO₂. It was found that the pressure in the flow was not determined by the flow conditions alone but also by the large temperature difference between liquid helium and the surfaces in contact with the stream. These supersonic streams can be successfully used for the charge exchange schemes used with intense ion beams needed for neutral injection techniques in the production of hot plasmas. Orig. art. has: 1 figure.

SUB CODE: 20/ SUBM DATE: 00/ ORIG REF: 005/ OTH REF: 001

Card 1/1

L 8318-66 EWT(1)/EWP(m)/EWA(d)/T/FCS(k)/EWA(m)-2/EWA(1) IJP(c) WW

ACC NR: AT5022296

SOURCE CODE: UR/3137/64/000/052/0001/0006

44,55 44,55 44,55 40,55 44,55
 AUTHOR: Borovik, Ye. S.; Busol, F. I.; Kovalenko, V. A.; Skibenko, Ye. I.; Yuferov, V. B.

44,55 84
 84
 ORG: Academy of Sciences UkrSSR, Physicotechnical Institute (Akademiya nauk UkrSSR, Fiziko-tekhnicheskiy institut)

TITLE: Ionization of fast hydrogen atoms in strong magnetic fields

SOURCE: AN UkrSSR. Fiziko-tekhnicheskiy institut. Doklady, no. 052/P-011, 1964.
 Ionizatsiya bystrykh atomov vodoroda v sil'nom magnitom pole, 1-6

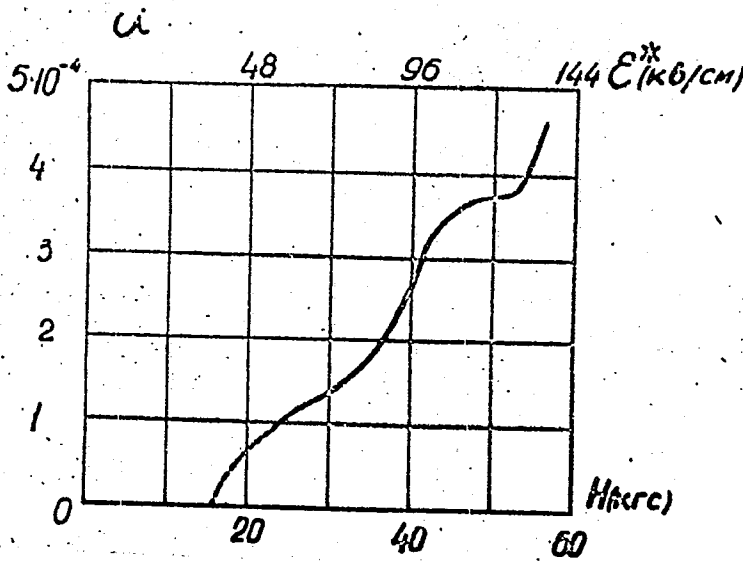
21,40,55 21,44,55
 TOPIC TAGS: supersonic flow, gas ionization, strong magnetic field, fast particle

ABSTRACT: The ionization of fast (30 kev) hydrogen atoms moving through a strong magnetic field was measured. The magnetic field, reaching a maximum of 60 kg, was produced by a multi-turn solenoid having a good field uniformity. The neutral beam was obtained through charge exchange of the ions passing through a supersonic gas flow. A schematic diagram shows the set of electrodes used in determining ions and electrons. The neutral beam current (about 10^{-4} amp) was obtained by using a sensitive calorimeter calibrated by an ion beam. Typical ion and neutral currents and magnetic field oscillograms are shown. Such data was used to obtain the graph of the fraction of ionized specie as a function of the magnetic field (figure 1). This result and other

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L 8318-66

ACC NR: AT5022296



data lead the authors to conclude that at lower magnetic fields (in the range 32-51 kg) the atoms with the principal quantum number $n = 9$ are ionized predominantly. At higher values of the magnetic field, atoms with $n = 8$ are also ionized and the fraction of ionized atoms begins to increase rapidly. This work agrees with the measurements of the fraction of the hydrogen atoms which are ionized in other reported experiments. Orig. art. has: 3 figures.

Fig. 1.

SUB CODE: 20/

SUBM DATE: 00/

ORIG REF: 004/

OTH REF: 005

Card 2/2

L 24047-66 EWT(1) IJP(c) WN/GS/AT/GN

ACC NR: AT6008842

SOURCE CODE: UR/0000/65/000/000/0040/0044

AUTHOR: Borovik, Ye. S.; Busol, F. I.; Kovalenko, V. A.; Skibenko, Ye. I.; Yuferov, V. B.

ORG: none

72
Bt1

TITLE: Ionization of fast hydrogen atoms in a strong magnetic field

SOURCE: AN UkrSSR. Magnitnyye lovushki (Magnetic traps). Kiev, Naukova dumka, 1965, 40-44

TOPIC TAGS: strong magnetic field, hydrogen plasma, gas ionization, charge exchange, plasma physics, atom, fast particle

ABSTRACT: Data are given from preliminary experiments on determining the fraction of α -hydrogen atoms with an energy of 30 kev ionized by the Lorentz force in a magnetic field with an intensity of up to 60 kev. In contrast to Sweetman's experiments (D. R. Sweetman, Nuclear Fusion Suppl. 1962, part 1, p 279) where the quantity α was evaluated from the stream of fast atoms generated during charge exchange between trapped ions, the authors of this paper measured directly the number of ions formed when a beam of neutral hydrogen atoms passes through a magnetic field. A strong magnetic field was produced by two copper solenoids with internal and external diameters of 5 and 22 cm respectively. The solenoids were cooled to low temperatures and supplied

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L 24047-66

ACC NR: AT6008842

by a battery of capacitors. The buildup time for a maximum field intensity of about 60 kilogauss in the center of the gap between the coils was 0.26 seconds. There was a 4.5% reduction in the field at a radius of 2.5 cm from the axis. The beam of neutral hydrogen atoms was produced by charge exchange between an ion beam and a supersonic jet of carbon dioxide frozen on a surface cooled by liquid hydrogen. The charge exchange target was 0.9 meters from the axis of the magnetic system. The fraction of the particles ionized in the central region of the field (with a radius of about 2.2 cm) was determined by simultaneously measuring the equivalent "current" of the neutral atoms and the ion current through the central collector (see figure) situated with respect to the beam and to the two other collectors (input and output) in such a way

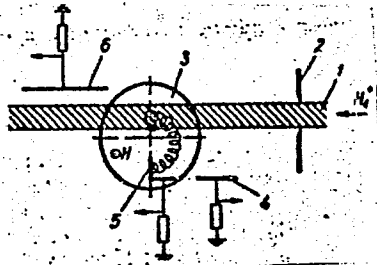


Diagram showing the location of the ion collectors in the magnetic field:
1--beam of hydrogen atoms; 2--diaphragm; 3--central region of the field; 4--input collector; 5--central collector; 6--output collector

that all ions formed in this region are incident on the central collector due to azi-

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L 24047-66

ACC NR: AT6008842

0

muthal drift in the nonhomogeneous field only for the case of fields exceeding 25 kilogauss. In the case of weaker fields, some of the ions from the central region are incident on the input and output collectors and when the fields are still weaker (below 12-15 kilogauss) not one of the particles ionized in this region of the field can reach the central collector. A curve is given showing the fraction of atoms ionized in the central region of the field as a function of field intensity. A comparison between this curve and the data in the literature on ionization thresholds and regions for individual levels of the hydrogen atom with a given principal quantum number n shows that atoms with $n = 9$ are ionized in magnetic fields ranging from approximately 32 to 51 kilogauss. Ionization of atoms with $n = 8$ takes place in still stronger fields. Even in extremely strong fields, α continues to grow rapidly with an increase in H . In some experiments the current through the output collector was much greater than could have been expected for residual gas ionization. This shows that a considerable number of hydrogen atoms may have been excited to levels which allowed them a mean free path of several centimeters in strong magnetic fields without ionization. Orig. art. has: 3 figures.

SUB CODE: 20/

SUBM DATE: 20Oct65/

ORIG REF: 004/

OTH REF: 005

Card 3/3 *dlz*

L 24051-66 EWT(d)/EWT(1)/EWP(m)/EWT(m)/EEC(k)-2/EPF(n)-2/EWA(d)/I/EWA(1)/ETC(m)-6

ACC NR: AT6008849 IJP(c) JD/WH/GS/AT/GH SOURCE CODE: UR/0000/65/000/000/0113/0115

AUTHOR: Yuferov, V. B.; Kovalenko, V. A.; Skibenko, Ye. I.; Busol, F. I.

ORG: none

TITLE: A supersonic hydrogen jet in a vacuum

SOURCE: AN UkrSSR. Magnitnyye lovushki (Magnetic traps). Kiev, Naukova dumka, 1965, 113-115

TOPIC TAGS: supersonic flow, hydrogen plasma, cryogenics, plasma jet, plasma physics, vacuum

ABSTRACT: Experiments are conducted on the use of cryogenic techniques for generating a supersonic jet of hydrogen on the basis of the successful use of similar techniques in generating supersonic gas jets of CO₂, Ar and N₂. The problem is complex from a technical standpoint since the surface on which the hydrogen condenses must be cooled by liquid helium. Preliminary experiments have shown that a hydrogen jet may be generated under conditions where the thermal load on the cooled surface is 10^{-3} - 10^{-2} w/cm². Thus even when the thermal loads are high, heat transfer between the liquid helium and the wall is sufficient for hydrogen evacuation. It was established that the optimum target thickness for a hydrogen ion energy of 25 kev is reached at a hydrogen flow rate of 45-50 cm³/sec. A curve is given showing the pressure in the charge exchange chamber as a function of the hydrogen flow rate. The pressure for a

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L 24051-66

ACC NR: AT6008849

hydrogen jet is more than an order of magnitude higher than in the case of carbon dioxide and argon jets. Special measurements showed that the reason for this is the considerable temperature drop between the liquid helium and the surface of the condenser. The experimental data show that a supersonic hydrogen jet may be used for charge exchange of intense ion⁺ beams in installations where a hot plasma is generated by injection of fast neutral hydrogen or deuterium atoms. Orig. art. has: 1 figure.

SUB CODE: 20/

SUBM DATE: 20Oct65/

ORIG REF: 005/

OTH REF: 001

Card 2/2 dda

L 18838-66 EWT(1) IJP(c) WW/GS

ACC NR: AT5028591

SOURCE CODE: UR/0000/65/000/000/0421/0431

AUTHOR: Borovik, Ye. S.; Busol, F. I.; Kovalenko, V. A.; Yuferov, V. B.; Skibenko, Ye. I. ⁸¹₅₊

ORG: none

TITLE: ^{21,44,55} Magnetic trap with a strong magnetic field ^{21,44,55}

SOURCE: Konferentsiya po fizike plazmy i problemam upravlyayemogo termoyadernogo sinteza. 4th, Kharkov, 1963. Fizika plazmy i problemy upravlyayemogo termoyadernogo sinteza (Physics of plasma and problems of controllable thermonuclear synthesis); doklady konferentsii, no. 4. Kiev, Naukova dumka, 1965, 421-431

TOPIC TAGS: strong magnetic field, magnetic trap, plasma injection, liquid nitrogen, liquid hydrogen, magnetic mirror, charge exchange, vacuum pump

ABSTRACT: The design of the magnetic mirror with a very strong magnetic field described in this work is similar to that of other machines which generate hot plasmas by injection of neutral hydrogen atoms. The features of a neutral beam injector, charge exchange cell and beam trap are described. The method of achieving strong magnetic fields necessary in such machines depends on a newly developed technique

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ACC NR: AT5028591

which is described in this work. Magnetic fields in the magnetic trap of 10 tesla were attained by cooling multiturn (4280 turns) coils with an inner diameter of 5 cm. Two-stage cooling with liquid nitrogen followed by liquid hydrogen to 20.4°K made it possible to energize the coil twice an hour. The coils and cooling system construction are described in detail. The inductance and resistance of such coils was determined to be 0.8 h and 0.21 ohms at low temperature. Two coil sections with variable separation along their axis can be used to provide a suitable magnetic field configuration normally forming a working volume of $3.35 \cdot 10^{-4} \text{ m}^{-3}$ with a very uniform field. The entire assembly was placed in a vacuum jar in which the neutral injection experiment is performed. Very high capacity pumps (70 m³/sec) provide the necessary vacuum conditions. Orig. art. has: .6 figures.

SUB CODE: 20/

SUBM DATE: 20May65/

ORIG REF: 014/

OTH REF: 006

Card 2/2

vmb

L 18837-66 EWT(1) IJP(c) GS

ACC NR: AT5028592

SOURCE CODE: UR/0000/65/000/000/0431/0441

AUTHOR: Borovik, Ye. S.; Busol, F. I.; Sinel'nikov, K. D. (Academician AN UkrSSR)

ORG: none

TITLE: Computation of filling a GVL-2 magnetic trap with plasma

SOURCE: Konferentsiya po fizike plazmy i problemam upravlyayemogo termoyadernogo sinteza. 4th, Kharkov, 1963. Fizika plazmy i problemy upravlyayemogo termoyadernogo sinteza (Physics of plasma and problems of controllable thermonuclear synthesis); doklady konferentsii, no. 4. Kiev, Naukova dumka, 1965, 431-441

TOPIC TAGS: fluted magnetic field, magnetic trap, Coulomb collision, strong magnetic field, plasma density, magnetic mirror, ion density

ABSTRACT: The process of filling a magnetic mirror configuration of small volume, formed by very strong magnetic field, is studied. The system considered is a magnetic trap of the GVL-2 device described in Borovik, Ye. S., Busol, F. I., Kovalenko, V. A., Yuferov, V. B. and Skibenko, Ye. I., p. 421, *Konferentsiya*. The system has a mirror ratio which can be varied from 1.5 to 4. To predict the ion den-

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ACC NR: AT5028592

sity attainable in this system, rate equations are given for the ionization of neutrals by magnetic fields and by collisions, recombinations, and end losses. Computations are carried out for two values of the neutral capture coefficients. It is shown that when Coulomb collisions are not important, initial plasma density of about $7 \cdot 10^{12}$ particles per m^3 can be obtained in 1 sec for $5 \cdot 10^{12}$ particles per m^3 in 2 sec for a capture coefficient of $5 \cdot 10^{-3}$ and $1 \cdot 10^{-3}$, respectively. It is estimated that densities of 10^{12} particles per m^3 can be obtained if Coulomb collisions are accounted for and instabilities can be suppressed. The estimate of plasma behavior indicates that the most prevalent flute instability may not be very effective since a relatively small portion of reflected particles have an unsuitable drift velocity. Additionally, the magnetic field increasing in time should have a stabilizing effect. It is posited that reduced charge recombination and increased ionization can result from the use of magnetic screens as well as from multiple excitation. Orig. art. has: 2 figures, 12 formulas.

SUB CODE: 20/

SUBM DATE: 20May65/

ORIG REF: 009/

OTH REF: 008

Card 2/2

vmb

L 2487-66 EWT(1)/EWP(m)/EWT(m)/EPF(c)/EWA(d)/EPA(w)-2/EWP(j)/EWP(t)/FCS(k)/EWP(b)/
ETC(m)/EWA(l) IJP(o) JD/WW/JW/RM UR/0057/65/035/008/1522/1523

ACCESSION NR: AP5020744

AUTHOR: Yuferov, V. B.; Kovalenko, V. A.; Skibenko, Ye. I.; Busol, F. I.

80
78
B

Title: Supersonic hydrogen jet in a vacuum

SOURCE: Zhurnal tekhnicheskoy fiziki, v. 35, no. 8, 1965, 1522-1523

TOPIC TAGS: gas jet, supersonic flow, hydrogen, vacuum, particle accelerator target, charge exchange

ABSTRACT: The authors have produced and investigated supersonic hydrogen jets in vacuum, using the same apparatus and techniques that they and collaborators have previously employed to produce and investigate CO₂, Ar, and N₂ jets (ZhTF, 33, No. 8, 1963; Sb "Fizika plazmy i problemy upravlyayemogo term. sinteza", vol. 3, p. 294. Izd. AN USSR, Kiyev, 1963; ZhTF, 34, No. 12, 1964; ZhTF, 33, 100, 1963). The experiments were undertaken because of the usefulness of hydrogen jets as charge exchange targets for producing high energy neutral atom beams for injection into thermonuclear devices. Difficulties arise from the low heat of vaporization of the liquid helium that must be used to remove the hydrogen. With a hydrogen flux of 50 cm³/sec, the pressure in the charge exchange chamber was approximately 7 x 10⁻⁵ mm Hg. It is believed that by improving the thermal insulation of the condenser it

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ACCESSION NR: AP5020744

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will be possible to reach lower pressures with the same fluxes and that the vacuum hydrogen jet can be so developed as to provide a useful charge exchange target. The conclusions derived from the present experiments concerning heat transfer between liquid helium and the walls of its container at different heat fluxes will be discussed in a future paper. "In conclusion, the authors express their gratitude to Professor Ye. S. Borovik for valuable advice and discussions."

ASSOCIATION: none

SUBMITTED: 26Oct64

ENCL: 00

SUB CODE: ME

NR REF SOV: 005

OTHER: 001


Card 2/2

L 47037-66 EWT(1)/EWT(m)/EWP(t)/ETI IJP(c) AT/JD

ACC NR: AP6029801

SOURCE CODE: UR/0089/66/021/002/0130/0131

AUTHOR: Borovik, Ye. S. (deceased); Busol, F. I.; Glasov, B. V.; Kovalenko, V. A.; Skibenko, Ye. I.; Yuferov, V. B.

ORG: none

TITLE: VGL-2 cryogenic magnetic trap

SOURCE: Atomnaya energiya, v. 21, no. 2, 1966, 130-131

TOPIC TAGS: ^{MAGNETIC TRAP DEVICE,} magnetic trap, hydrogen plasma, deuterium, plasma heating, plasma injection, cryogenic liquid cooling/VGL-2 magnetic trap ^{DEVICE}

ABSTRACT: Since one of the means of producing a hot plasma is to inject intense beams of fast neutral hydrogen or deuterium atoms into a magnetic field, where they can be ionized, the authors describe the processes accompanying the filling of a small magnetic trap in which a strong magnetic field is produced. (Fig. 1) The trap differs from earlier designs in that the strong magnetic field up to (105 kG) is produced by a copper coil cooled with liquid nitrogen, which is also used to cool the outside of the vacuum chamber and thus permits a vacuum as low as $\sim 5 \times 10^{-10}$ Torr to be maintained in it. An Ardenne type source is used for the hydrogen-ion beam, the charge exchange being in a supersonic CO₂ stream condensed on a surface cooled to 20.4K. The fraction of the neutral beam ionized in the wording region of the chamber

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B

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ACC NR: AP6029801

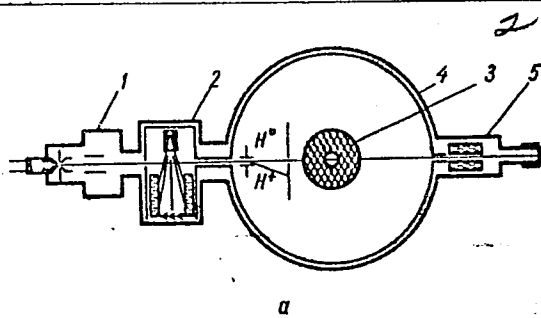
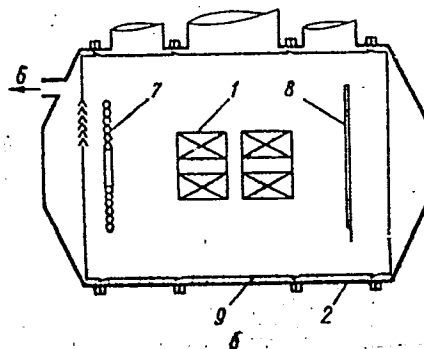


Fig. 1. Diagram of VGL-2 trap. a- section along beam axis, b - along field axis; 1 - ion source, 2 - charge exchange chamber, 3 - magnetic system, 4 - vacuum jacket, 5 - beam inlet, 6 - to pump, 7 - helium condensation pump, 8 - hydrogen pump, 9 - nitrogen screen



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L 47037-66

ACC NR: AP6029801

was of the order of 5×10^{-5} . The plasma density was determined from the intensity of flux of fast atoms leaving the plasma as a result of charge exchange between the ions and the residual gas, and also from the value of the injected current in the trap. The values obtained were $\sim (3-4) \times 10^7$ and $\sim 3 \times 10^8 \text{ cm}^{-3}$, respectively, the difference being due to a small redistribution or the ion velocities in the plasma. [02]

Orig. art. has: 2 figures and 2 formulas

SUB CODE: 20/ SUBM DATE: 01Apr66/ ORIG REF: 003/ OTH REF: 003 / ATD PRESS: 5089

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Card 3/3

L 21755-66 EWT(m)/T/EWP(t) IJP(c) JD/WW/JW/DJ
ACC NR: AP6004894 SOURCE CODE: UR/0057/66/036/001/0174/0177

AUTHOR: Busol, F.I.; Yufarov, V.B. 4/5

ORG: Physicotechnical Institute, AN UkrSSR, Khar'kov (Fiziko-tehnicheskiy institut AN UkrSSR) B

TITLE: A new method for pumping out hydrogen 117 27

SOURCE: Zhurnal tekhnicheskoy fiziki, v. 36, no. 1, 1966, 174-177

TOPIC TAGS: vacuum pump, hydrogen, carbon dioxide, absorption pump, gas absorption

ABSTRACT: It has been found that a layer of carbon dioxide at temperatures between 14 and 20.4°K efficiently absorbs hydrogen and can be employed as a sorption pump¹¹⁷ for this gas. In the present paper there are reported measurements of the pumping speed and the ultimate vacuum. A 22.5 cm diameter spherical vessel of copper was employed. After the chamber had been pumped down and cooled to 20.4°K in liquid hydrogen the pressure dropped to about 2×10^{-7} mm Hg. A measured quantity of CO₂ was then admitted followed by successive measured quantities of H₂, and the variations of pressure with time were followed. The equilibrium pressure was found to depend only on the concentration of hydrogen in the condensed carbon dioxide and not on the thickness of the layer. When the concentration of H₂ in the CO₂ (in terms of volumes in the gaseous phase) was 1% the equilibrium pressure at 20.4°K was 10^{-6} mm Hg; when the concentration

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L 21755-66

ACC NR: AP6004894

was 4.5% the equilibrium pressure was 1.2×10^{-4} mm Hg. The equilibrium pressure decreased rapidly with decreasing temperature, and for a hydrogen concentration of 4.5% and a temperature of 14°K it was 5×10^{-8} mm Hg. The pumping speed per cm^2 of condensed CO_2 surface was about 20 liter/sec at low pressures and 4 liter/sec at 10^{-4} mm Hg. Diffusion of the absorbed hydrogen in the condensed carbon dioxide was rather rapid; when the CO_2 layer was 6-8 microns thick equilibrium was reached within 3-4 minutes. Condensed layers of alcohol, benzene, and acetone were found also to pump hydrogen, but less efficiently than carbon dioxide, condensed layers of water and nitrogen evinced little pumping action. Orig. art. has: 3 figures.

SUB CODE: 20/

SUBM DATE: 15Mar65/

ORIG REF: 005/

OTH REF: 002

Cord 2/2

FV

ACC NR: AP6036036 SOURCE CODE: UR/0057/66/036/011/2042/2050

AUTHOR: Yuferov, V.B.; Busol, F.I.

ORG: none

TITLE: Investigation of the sorption of hydrogen and neon on solidified gases

SOURCE: Zhurnal tekhnicheskoy fiziki, v. 36, no. 11, 1966, 2042-2050

TOPIC TAGS: sorption, hydrogen, neon, solid state, gas, carbon dioxide, alcohol, benzene, water, nitrogen, argon, high vacuum pump, absorption pump

ABSTRACT: This paper is devoted mainly to an experimental investigation of the sorption of hydrogen on solid carbon dioxide at temperatures from 14 to 20° K. The sorption of hydrogen and neon on carbon dioxide, alcohol, benzene, water, nitrogen, and argon was also investigated. The sorbent was condensed on the surface of a 22.5 cm diameter copper sphere cooled with liquid hydrogen and mounted within a 100 liter vacuum chamber. In some of the experiments the working volume of the chamber was shielded from the walls by a surface cooled to 78° K. When the shield was employed a limiting vacuum of 2×10^{-9} torr could sometimes be achieved. The sorbent was admitted in gaseous form and condensed on the cold sphere before the shield was cooled. Measured quantities of the sorbate were subsequently admitted and the consequent pressure changes were observed with Pirani and ionization gages. The quantity of sorbed hydrogen at a given temperature and pressure was found to be proportional to

Card 1/2

UDC: 537.525; 541.183

ACC NR: AP6036036

the quantity of carbon dioxide sorbent. Sorption isotherms were recorded and sorption isotherms were calculated from them. The isotherms were similar in shape to Langmuir isotherms for monomolecular adsorption but correspond to large areas of the sorbent. It is concluded that at saturation (not reached in the experiments) there is one molecule of hydrogen for every two or three molecules of carbon dioxide. The heat of sorption of hydrogen on condensed carbon dioxide was 1400 cal/mole at a sorbed hydrogen concentration of 0.4 mole percent and decreased to 700 cal/mole at a concentration of 11.5 mole percent. The heat of sorption of neon on carbon dioxide was somewhat lower than that of hydrogen. Of the other sorbents investigated, those with complex polyatomic molecules were also efficient sorbents, and nitrogen and argon were not. Pumping speeds and sticking probabilities were obtained from the observed rates of pressure decrease. The maximum sticking probability of hydrogen on carbon dioxide at 14° K was 0.45, and the sticking probability decreased very slowly with increasing concentration of sorbed hydrogen. On carbon dioxide at 20.4° K the maximum sticking probability was 0.42 hydrogen and 0.1 for neon. It is concluded that the investigated sorption process is physical in nature and that the hydrogen and neon are sorbed on the same centers, the difference between their sorption isotherms being due only to the difference between their heats of sorption. The authors will discuss in another paper the application of the investigated sorption process to pumping of hydrogen and neon in ultrahigh vacuum systems. The authors thank Ye.S. Borovik for discussions and for advice concerning the preparation of the paper. Orig.art. has: 7 formulas and 7 figures.

SUB CODE: 20/

SUBM DATE: 15Nov65/

ORIG. REF: 005/ OTH REF: 002

Card 2/2

ACC NR: AP 7001300

SOURCE CODE: UR/0057/66/036/012/2154/2160

AUTHOR: Busol, F.I.; Skibenko, Ye.I.; Yuferov, V.B.

ORG: none

TITLE: Influence of nozzle configuration on supersonic flow of gas into vacuum

SOURCE: Zhurnal tekhnicheskoy fiziki, v. 36, no. 12, 1966, 2154-2160

TOPIC TAGS: Laval nozzle, supersonic nozzle, gas jet, carbon dioxide, vacuum

ABSTRACT: The authors have investigated the spread of supersonic jets of CO₂ issuing from different Laval nozzles into vacuum. The investigations were undertaken in connection with design of gaseous charge exchange targets. The investigated nozzles had throat diameters T from 0.3 to 3.0 mm, mouth diameters M up to 15 mm, lengths L (from throat to mouth) from 0 to 81 mm, and values of L/M from 0 to nearly 6. The pressure was measured at a point 15 cm from the axis of the jet, and the increase of this pressure in the presence of the jet was taken as a measure of the spread. In addition to the nozzle dimensions, there was investigated the effect of metal shielding tubes of different lengths surrounding the initial portion of the jet and cooled to 20.4° K. Most of the measurements were made at a standard flow rate of 11 cm/sec. The experimental technique has been described in more detail elsewhere by the authors and collaborators (ZhTF, 34, No.12, 1964; 35, No.8, 1965). Small

Card 1/2

UDC: 533.17

ACC NR: AP 7001309

values of T (requiring high pressures behind the nozzle to achieve the standard flow rate) were found to favor sharpness of the jet, and the optimum value of L/M was in the neighborhood of unity, depending somewhat on T. The cold shielding tubes considerably improved the jet sharpness. For an approximately optimal nozzle with T = 0.3 mm and L/M = 1 the pressure at 15 cm from the axis (presumably with the standard flow rate of 11 cm³/sec) was approximately 2×10^{-5} , 7×10^{-7} , and 1×10^{-7} mm Hg when the length of the shielding tube was 0, 1.3, and 8 mm, respectively. Experiments at different flow rates showed that for nozzles with T = 1.5 mm and L/M between 0.5 and 5.0 the pressure at 15 cm from the axis was practically independent of the flow rate for rates from 10 to 95 cm³/sec. The authors thank Ye.S.Borovik for advice and discussions, and M.M. Nikulin for fabricating the nozzles. Orig. art. has: 5 figures and 1 table.

SUB CODE: 20

SUBM DATE: 20Dec65

ORIG. REF: 007

Card 2/2

BUSORGIN, N.G.; SHEL'PATSKIY, V.F.

Fulfillment of the plan is the basis of success. Gidroliz. i
lesokhim.prom. 17 no.2:19-20 '64. (MIRA 17:4)

1. Biryusinskiy gidroliznyy zavod.

KOVALEV, Maksim Antonovich; BELOVA, Aleksandra Vasil'yevna; MARKEVICH, Natal'ya Mikhaylovna; LANDMAN, Vera Gennadiyevna; GINZBURG, I.P., prof., red.; BUSORGINA, N.I., red.; ZHUKOVA, Ye.G., tekhn.red.

[Manual for laboratory work on aerogas dynamics] Rukovodstvo k laboratornym rabotam po aerogazodinamike. Pod red. I.P. Ginzburga. Leningrad, Izd-vo Leningr.univ., 1959. 175 p.
(MIRA 13:1)

(Aerohydrodynamics--Handbooks, manuals, etc.)

BARABANOV, V.F., otv.red.; SOLODOVNIKOVA, L.L., otv.red.; BUSORGINA,
N.I., red.; VODOLAGINA, S.D., tekhn.red.

[Mineralogy of postmagmatic processes] K mineralogii post-
magmaticheskikh protsessov. Leningrad, 1959. 232 p.
(MIRA 12:9)

1. Leningrad, Universitet.
(Mineralogy)

YELISEYEV, Nikolay Aleksandrovich, prof.; BUSORGINA, N.I.. red.;
VODOLAGINA, S.D., tekhn.red.

[Metamorphism] Metamorfizm. Leningrad, Izd-vo Leningr.univ.,
1959. 414 p. (MIRA 13:8)

1. Chlen-korrespondent AN SSSR (for Yeliseyev).
(Metamorphism (Geology))

ISACHENKO, Anatoliy Grigor'yevich; BUSORGINA, N.I., red.; ZHUKOVA, Ye.G.,
tekhn.red.

[Physicogeographical mapping] Fiziko-geograficheskoe kartiro-
vanie. Leningrad, Izd-vo Leningr.univ. Pt.2. 1960. 230 p.
(MIRA 13:2)

(Physical geography--Maps)

ALEYNIKOV, Anton Afanas'yevich; BUSORGINA, N.I., red.; ZHUKOVA, Ye.G.,
tekhn.red.

[Basic problems relative to the study of quaternary sediments in
the northwestern U.S.S.R.] Ob osnovnykh voprosakh izucheniia
chetvertichnykh (antropogenovykh) otlozhenii Severo-Zapada SSSR.
Leningrad, Izd-vo Leningr.univ., 1960. 64 p. (MIRA 13:4)
(Russia, Northwestern--Glacial epoch)

KRYMGOL'TS, G.Ya.; BUSORGINA, N.I., red.; ZHUKOVA, Ye.G., tekhn.red.

[Method of identifying Mesozoic cephalopods (ammonites and belemnites); manual for stratigraphers] Metodika opredelenia mezozoiskikh golovonogikh (ammonity i belemnity; v pomoshch' geologu-stratigrafu. Leningrad, Izd-vo Leningr.univ., 1960. 88 p. (MIRA 13:4)

(Ammonoidea)

(Belemnites)

RUKHINA, Yevgeniya Valerianovna; BUSORGINA, N.I., red.; ZHUKOVA, Ye.G.,
tekhn.red.

[Lithology of moraines] Litologiya morennykh otlozhenii.
Leningrad, Izd-vo Leningr.univ., 1960. 140 p. (MIRA 13:4)
(East European Plain--Moraines)

PANOV, Boris Pavlovich; BUSORGINA, N.I., red.; VODOLAGINA, S.D., tekhn.red.

[Winter regims of rivers in the U.S.S.R.] Zimnii rezhim rek SSSR.
Leningrad, Izd-vo Leningr.univ., 1960. 238 p. (MIRA 13:4)
(Ice on rivers, lakes, etc.) (Rivers)

VVEDENSKIY, Nikolay Yevgen'yevich; TEREKHOV, P.G.; VINOGRADOV, M.I.,
prof., otv. red. toma; BUBORGINA, N.I., red.

[Complete collected works] Polnoe sobranie sochinenii.
Leningra, Izd-vo Leningr. univ. Vol.7. [Obituaries, ar-
ticles, essays, abstracts of reports and communications,
addresses at sessions of scientific societies, reviews of
scientific papers; 1879-1920] Nekrologi, stat'i, ocherki,
referaty dokladov i soobshchenii, vystupleniia na zaseda-
niakh nauchnykh obshchestv, otzyvy o nauchnykh rabotakh;
1879-1920 gg. 1963. 192 p. (MIRA 17:7)

FRANK-KAMENETSKIY, Viktor Al'bertovich; BUBORGINA, N.I., red.

[Nature of structural impurities and inclusions in
minerals] Priroda strukturnykh primesei i vklucheni v
mineralakh. Leningrad, Izd-vo Leningr. univ., 1964. 238 p.
(MIRA 17:9)

ZUBKOV, A.I., dots., otv. red.; BUSORGINA, N.I., red.

[Problems of paleogeography] Problemy paleogeografii.
Leningrad, Izd-vo Leningr. univ., 1965. 274 p.

(MIRA 18:12)

1. Leningrad. Universitet. Laboratoriya paleogeografii.

GRUNKIN, M.N., otv. red.; METEL'KOVA, A.G., otv. red.; BUSORGINA,
N.I., red.

[Organization and planning of industrial enterprises]
Organizatsiia i planirovanie promyshlennykh predpriatii;
sbornik prakticheskikh uprazhnenii. Leningrad, Izd-vo
Leningr. univ., 1964. 116 p. (MIRA 17:6)

1. Leningrad. Finansovo-ekonomicheskii institut. 2. Prepo-
davately kafedry ekonomiki promyshlennosti Leningradskogo
finansovo-ekonomicheskogo instituta (for Grunkin, Metel'kova).

ALEKPEROV, K.A.; BUSOV, A.R.

Utilization of petroleum refining wastes as raw material
in the rubber industry. Izv. vys. uchet. zav. Khim. i khim. tekhn.
3 no. 4:659-662 '65. (MIRA 13:11)

L. Leningradskiy tekhnologicheskii institut imeni Leningra,
kafedra tekhnologii reziny.

BUSOV, L.S.

USSR/ Engineering - Fixtures

Card 1/1 Pub. 128 - 11/23

Authors : Ablyaskin, I. N.; Figlovskiy, V. F.; and Busov, L.S.

Title : A fixture used in preparing pipes for nickel plating

Periodical : Vest. mash. 2, 50 - 51, Feb 1955

Abstract : A new type of fixture used on screw-cutting lathes for the preparation of pipes for nickel plating is described. Drawings depicting the structure and installation of the above mentioned fixture are presented, together with technical specifications. Drawings.

Institution:

Submitted:

BUSOVA, B.

(1)

SURNAME (in caps); Given Names

Country: Czechoslovakia

Academic Degrees: /not given/

Affiliation: /not given/

Source: Bratislava, Lekarsky Obzor, Vol X, No 7, 1961, pp 411-416

Date: "The Clinical Importance of Anti-thrombocyte Antibodies."

Authors:

BUSOVA, B
HRUBISKO, M

122

BUSOVA, B

SURNAME (in caps); Given Names

Country: Czechoslovakia

Academic Degrees: /not given/

Affiliation: Faculty Transfusion Station (Fakultna transfuzna stanica),
Bratislava; Chief (Prednosta): MUDr M Hrubisko

Source: Bratislava, Lekarsky Obzor, Vol X, No 7, 1961, pp 417-420

Data: "On Group-Specific Antigenic Properties of
Thrombocytes."

L 39902-66 EWF(k)/EWF(t)/ETI IJP(c) JD/HW

ACC NR: AP6023653

SOURCE CODE: CZ/0031/66/014/007/0488/0491

AUTHOR: Busova, E. (Engineer)

36
B

ORG: Research Institute of the Metallurgical Planning Office, Brno (SU, Kovoprojecta)

TITLE: Effectiveness of explosive forming /v

SOURCE: Strojirenska vyroba, v. 14, no. 7, 1966, 488-491

TOPIC TAGS: explosive forming, metal forming, ~~explosive forming effectiveness~~, economic effectiveness, *COST ESTIMATE*

ABSTRACT: The economic effectiveness of explosive forming in the manufacture of variously shaped articles, as compared to conventional methods, was analyzed. The analysis showed that production costs for explosively formed articles are 21-85.5% lower than those of conventionally formed articles, depending on their shape, size, and weight. In some cases the economic advantages are not apparent from a comparison of production costs alone. For instance, the production costs of a die for a screw-making press formed by shooting a projectile were equal to those of a die formed by conventional methods; however, the life of the latter was 30,000 screws, and that of the former was 250,000 screws. On the whole explosive forming, in addition to improving surface quality and eliminating manual work, reduces production costs significantly. Orig. art. has: 3 figures and 1 table.

SUB CODE: 13/ SUBM DATE: none/ ORIG REF: 001/ ATD PRESS: 5049

[WW]

Card 1/1 *ms*

BUSOVA, H.; HRUBISKO, M.

Anti-H phyto-agglutinin from Laburnum watereri seeds. Cas.lek.
cesk. 99 no.42:1351-1352 14 0 '60.

1. Fakultna transfuzna stanica v Bratislave, prednosta MUDr.
M. Hrubisko.

(ANTIBODIES)
(PLANTS)

BUSCOVER, F. Ya.

USSR / Cultivated Plants. Potatoes; Vegetables. Melons. M

Abs Jour : Ref Zhur - Biol., No 8, 1958, No 34682

Author : Busover, F. Ya.

Inst : Agricultural Institute of Kharkov.

Title : Effects of Mineral Fertilization in Combination with Varying Soil Humidity Degrees on the Accumulation of Starch in Potato Tubers.

Orig Pub : Cultivation experiments with potatoes revealed that an increase of humidity in the soil from 75 to 90% decreased the content of dry matter in tubers by 0.5 to 1.5%, and that of starch by 1 to 4%. Fertilizing with Na, P₂O₅ and potassium nitrate increased the yield of tubers threecfold as compared with control plants, and by 10% (of dry matter) the amount of starch content. The starch content was increased by another 10% when fed P₂O₅ additive on a fertilizing basis of NPK; simultaneously the yield increased almost by 1½ times. -- V. V. Prokoshev.

Card 1/1

TIMOFEYEVA, L.A.; ZHOVTIY, I.F.; NEKIPLOV, N.V.; BUSOYEKOVA, N.M.;
GOLOVACHEVA, V.Ya.; DUBOVIK, I.M.; DUBOVIK, V.I.; ZHIVOLYAPINA, R.R.;
LENT'YEV, A.N.; PEFUKHOVA, O.S.; TIMOFEYEVA, A.A.; SHVED'KO, L.P.

Results of examining rodents in Transbaikalian steppes for pathogenic
microflora. Tez.i dokl.konf.Irk.gos.nauch.-issl.protivochum.inst.
no.1:38-39 '55. (MIRA 11:3)
(TRANSBAIKALIA-RODENTIA) (MICROORGANISMS, PATHOGENIC)

Busoyedova, N.M.

BUSOYEDOVA, N.M.

~~Sensitivity of plague cultures to streptomycin. Tez. 1 dokl.konf.
Irk.gos.nauch.-issl.protivochum.inst. no.2:8-9 '57. (MIRA 11:3)
(PASTEURILLA PESTS) (STREPTOMYCIN)~~

TIMOFEYEVA, L.A.; ZHOVTYY, I.F.; NEKIPELOV, N.V.; BUSOYEDOYA, N.M.;
GOLOVACHEVA, V.Ya.; DUBOVIK, I.M.; DUBOVIK, V.I.; ZHIVOLYAPINA,
R.R.; LEONT'YEV, A.N.; PETUKHOVA, O.I.; TIMOFEYKVA, A.A.; SHVEDKO, L.P.

Search for plague and other epizootic diseases in Transbaikalian
plague focus. Report No.2. Izv.Irk.gos.nauch.--issl.protivochnu.
inst. 15:3-17 '57. (MIRA 13:?)
(TRANSBAIKALIA--RODENTIA--DISEASES AND PESTS)

LIPAYEV, V.M. ; DUBOVIK, I.M.; DUBOVIK, V.I.; BUSOYEDOVA, N.M.

Rodents of the Argun River (Transbaikalia) flood lands. Izv.
Irk.gos.nauch.-issl.protivochum.inst. 16:39-55 '57.

(MIRA 13:7)

(ARGUN RIVER (TRANSBAIKALIA)--RODENTIA)

~~BUSOYKOVA, N.M.~~; DUBOVIK, V.I.; DUBOVIK, I.M.; ZHOVTYY, I.F.;
LIPAYEV, V.M.

Fleas of rodents in the flood-lands of the Argun River (Trans-
baikalia). Izv.Irk.gos.nauch.-issl.protivochnm.inst. 17:39-
46 '58. (MIRA 13:7)

(ARGUN RIVER (TRANSBAIKALIA)--FLEAS)
(PARASITES--RODENTIA)

BUSOYEDOVA, N.M.

Sensitivity of plague cultures to streptomycin. Izv.Irk.gos.
nauch.-issl.protivoohum.inst. 20:125-132 '59. (MIRA 13:7)
(PASTEURELLA PESTIS) (STREPTOMYCIN)

BUSS, B.

How automaton are developed. p. 66.
PADOMJU LATVIJAS KOMUNISTS, Riga. Vol. 11, no. 3, Mar. 1956.

SOURCE:

East European Accession List (EEAL) Library of Congress
Vol. 5, no. 8, August 1956.

BUSSE, Fedor Fedorovich.

BUSSE, Fedor Fedorovich. Ukazatel' literatury ob Amurskom Kraie. Izd. 2.
S.-Peterburg, 1882. 1 p. l., iv, (5)- 80 p.

"Iz toma XVIII Izvestii Imp. Rus. Geogr. Obshchestva"

DLC: Z3407.A6B9

1882

So: LC, Soviet Geography, Part II, 1951/Unclassified.

BUSSE, P.

Floating islands and birds.

p. 6 (Turysta) No. 11, June 1957, Warszawa, Poland

SO: MONTHLY INDEX OF EAST EUROPEAN ACCESSIONS (EEAI) LC, VOL. 7, NO. 1, JAN. 1958

44141-00 (M)/1/EWP(t)/ETI... IJP(c) DS/JD/WW/GD/JG

ACC NR: AT6022484

(N)

SOURCE CODE: UR/0000/65/000/000/0338/0341

AUTHOR: Zaretskiy, S. A.; Suchkov, V. N.; Busse-Machukas, V. B.; Kisel'gof, Yu. S.; Yakimenko, L. M.; Alabyshev, A. F.

none

18
B+1

TITLE: On the preparation of chlorine, caustic soda, and alkali metals by electrolysis of fused media with a liquid lead cathode

21

SOURCE: Vsesoyuznoye soveshchaniye po fizicheskoy khimii rasplavlennykh soley. 2d, Kiev, 1963. Fizicheskaya khimiya rasplavlennykh soley (Physical chemistry of fused salts); trudy soveshchaniya. Moscow, Izd-vo Metallurgiya, 1965, 338-341

TOPIC TAGS: electrolysis, alkali metal, lead, liquid metal, chlorine, sodium hydroxide, CATHODE

ABSTRACT: In recent years, a new method of producing alkali metals has been in use in the Soviet Union: the metals are distilled out of a lead-alkali alloy prepared by electrolysis on a liquid lead cathode. However, the process is characterized by a recurring decrease of current efficiencies, particularly at high cathodic current densities. The article reviews studies made for the purpose of improving this method. It is shown that the electrolysis of alkali metal chlorides in molten salts with a circulating liquid lead cathode and distillation of the metal has many advantages over the electrolysis of aqueous solutions, namely: (a) pure sodium metal can be obtained at high current efficiencies, and pure caustic soda is thus produced without the necessity of using expensive mercury; (b) it is no longer necessary to build evaporation units and

Card 1/2

L 42141-66

ACC NR: AT6022484

units for melting caustic soda; (c) the process is carried out at current densities that are 30-35 times higher than in diaphragm electrolysis, and 6-7 times higher than in mercury electrolysis. Orig. art. has: 5 figures.

SUB CODE: 07/ SUBM DATE: 23Aug65/ ORIG REF: 007

Card 2/2 10221

15104
S/264/63/000/001/004/004
A004/A126

26.2191
AUTHOR: Busse, Max

TITLE: Automatic cutting-off device for controlling the filling up of aircraft fuel tanks

PERIODICAL: Referativnyy zhurnal, Vozdushnyy Transport, no. 1, 1963, 23, abstract 1A141 (GDR Patent, class 42e, 21, no. 22387, December 8, 1961)

TEXT: An automatic cut-off device is patented intended for the filling up of aircraft fuel tanks, which makes it possible to stop refueling at any necessary filling level of the tank. The device consists of a light source and photocell mounted on opposite sides of the tank, while a float with a disk is located between them. In the beginning of the refueling operation, a beam from the light source irradiates the photocell and the originating electric current, via an amplifier, enters a relay which opens the electric refueling cock. While the tank is filled, the float is rising and, reaching the given level, the disk interrupts the light beam. This causes the electric circuit to be broken, a sig- 4

Card 1/2

BUSSE, Ye.L., mashinist; PRIYALOV, V.V., dotsent, kand.tekhn.nauk

What causes the wearing out of safety devices at high traffic speed
on an electric section? *Elek. i tepl. tiaga* 4 no.2:41-42 F '60.
(MIRA 13:6)

1. Elektrosektsiya depo Bezymyanka, Kuybyshevskoy dorogi (for Busse).
(Electric contactors)

83255

S/063/60/005/003/003/003
A003/A001

5.2100

AUTHORS: Zaretskiy, S.A., Busse-Machukas, V.B.

TITLE: A New Method for the Production of Potassium

PERIODICAL: Zhurnal vsesoyuznogo khimicheskogo obshchestva im. D.I. Mendeleeva, 1960, Vol. 3, No. 3, pp. 357 - 358

TEXT: A method was developed based on the electrolytic separation of potassium on a liquid cathode with the formation of alloys and subsequent distillation. Lead can be used as liquid cathode (Ref 2). The following mixtures were used as electrolytes: KCl-K₂CO₃ (50% K₂CO₃); KCl-KF (40% KF) and molten KCl. Current yields of 80-85% were obtained from the KCl-K₂CO₃ electrolyte at 700°C and a cathode current density of 0.8 amp/cm², with a potassium content of 7% in the alloy. An increase in the content to 10-12% decreases the current yield to 70-75%. Current yields of 85-90% were obtained from KCl-KF at 680°C and a cathode density of 0.8 amp/cm², with a potassium content of 7% in the alloy. Molten KCl shows a current yield of 75-80% at 820°C. The optimum cathode density is 0.4-0.8 amp/cm². The melting point of KCl can be decreased by adding sodium salts. In this case sodium is separated on the liquid cathode together with potassium and must be distilled

Card 1/2

83255

A New Method for the Production of Potassium

S/063/60/005/003/003/003
A003/A001

off. A sodium-potassium alloy with a potassium content above 40% is the optimum material as regards energy consumption in distillation. The effect of F⁺ and CO₂ ions on the content of potassium in the alloy was investigated. It was shown that a content of 16.7% NaF yields an optimum ratio of Na:K in the alloy. Distillation of K from the lead alloys was carried out at a residual pressure of 0.5 mm Hg. The temperature was 500-600°C. The rate of potassium distillation was 0.5 g/cm² hour. Based on the laboratory investigations industrial tests were made. There are 2 figures and 6 Soviet references. X

SUBMITTED: November 28, 1959

Card 2/2

ZARETSKIY, S. A., BUSSE-MACHUKAS, V. B.

Composition of anodic gases in the production of alkali metals
by the electrolysis of fused salt mixtures. Zhur.prikl.khim
33 no.5:1219-1221 My '60. (MIRA 13:7)
(Alkali metals) (Electrolysis) (Chlorine)

27124

S/080/60/033/008/017/022/XX
D213/D305

5. 2100 1037

AUTHORS: Zaretskiy, S.A., and Busse-Machukas, V.B.

TITLE: A method of producing potassium from electrolytically prepared lead-potassium alloy

PERIODICAL: Zhurnal prikladnoy khimii, v. 33, no. 8, 1960,
1828 - 1833

TEXT: Experiments are described which show that from an electrolyte containing 40 % KCl and 60 % K_2CO_3 electrolyzed at a temperature of 675-730°C, with a cathode current density of 0.5-0.6 A/cm², an alloy containing 11.8 - 14.6 % K can be prepared with current efficiencies of 70 - 77 %. K is produced from the alloy by distillation in vacuo. The construction of the electrolytic cell is shown in Fig. 1. There are 4 figures, 2 tables and 13 references: 6 Soviet-bloc and 7 non-Soviet-bloc. The reference to the English-language publication reads as follows: H. Davy, Phil. Mag., 32, 4, 1808. X

SUBMITTED: October 21, 1959
Card 1/2

A method of producing ...

27124
S/080/60/033/008/017/022/XX
D213/D305

Fig. 1. Electrolytic cell construction.

Legend: 1 - steel crucible; 2 - porcelain bucket; 3 - thermocouple; 4 - current supply to molten lead; 5 - porcelain bucket for molten cathode; 6 - anode.

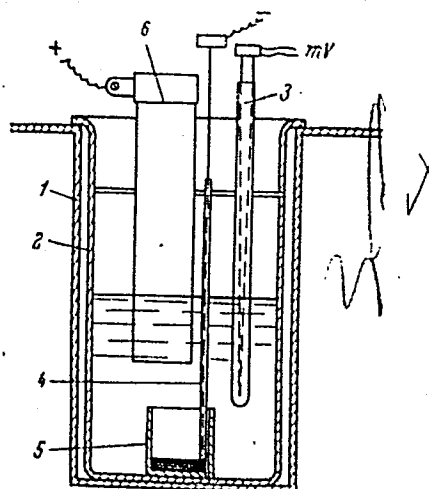


Рис. 1. Конструкция электролизера.
1 - стальной тигель, 2 - фарфоровый стакан, 3 - термопара, 4 - токоподвод и расплавленному свинцу, 5 - фарфоровый стакан для жидкого катода, 6 - анод.

Card 2/2

ZARETSKIY, S.A.; BUSSE-MACHUKAS, V.B.; KARAKHANOY, A.A.

Anodic critical current densities in electrolytes: NaCl, KCl,
NaCl - CaCl₂ and NaCl - BaCl₂ - CaCl₂. Zhur.prikl.khim. 34
no.11:2478-2482 N '61. (MIRA 15:1)
(Electrolytes) (Electric charge and distribution)

ZARETSKIY, S.A.; YURKOVA, L.S.; BUSSE-MACHUKAS, V.B.

Density of melts of the system $\text{NaCl} - \text{CaCl}_2 - \text{BaCl}_2$. Zhur.prikl.khim.
36 no.3:506-512 My '63. (MIRA 16:5)

(Alkaline earth chlorides)

(Fuses salts--Density)

BUSSEL', L.G., assistant

Sensitivity of upper respiratory microflora to antibiotics. Med.
zhur. Uzb. no. 1:43-46 Ja '60. (MIRA 13:8)

1. Iz kliniki bolezney ukha, gorla i nosa (zav. - prof.
I.Yu. Laskov) i kafedry mikrobiologii (zav. - prof. P.F. Samsonov)
Tashkentskogo gosudarstvennogo meditsinskogo instituta.
(RESPIRATORY ORGANS—BACTERIOLOGY) (ANTIBIOTICS)

LASKOV, I.Yu., prof.; BUSSEL', L.G., assistent; MIL'MAN, M.Sh.

Use of some antibiotics and sulfanilamide preparations in
practical otorhinolaryngology. Med. zhur. Uzb. no. 9:53-59
S '60. (MIRA 13:10)

1. Iz kliniki bolezney ukha, gorla i nosa Tashkentskogo
gosudarstvennogo meditsinskogo instituta.

(ANTIBIOTICS) (SULFONAMIDES) (OTOLARYNGOLOGY)
(BACTERIA, EFFECT OF DRUGS ON)

BUSSEL', L. G., CAND MED SCI, "CHARACTERISTICS OF STREP-
TOCOCCI OF PALATINE TONSILS OF PATIENTS WITH CHRONIC OR ACUTE
TONSILLITIS." ALMA-ATA, 1961. (KAZAKH STATE MED INST).
(KL, 2-61, 217).

-244-

BUSSEL', I.G.; YULDASHEVA, S.N.

Hemocultures of streptococci in cases of rheumatic fever in
children. *Pediatrics* 39 no.1:55-60 '61. (MIRA 14:1)

1. Iz kafedry mikrobiologii (zav. - prof. P.F. Samsonov), kafedry
bolezney ukha, gorla i nosa (zav. - prof. N.Yu. Laskov) i gospi-
tal'-noy pediatricheskoy kliniki (zav. - prof. R.S. Gershenovich)
Tashkentskogo meditsinskogo instituta.
(RHEUMATIC FEVER) (STREPTOCOCCUS)

BUSSEL', L.G.; FEYGIN, G.A.; KARTUSHINA, L.I.; DAMKAS, Kh.M.

Diphtheria carrier with chronic tonsillitis. Vest. otorin.
no.1:60-64 '63. (MIRA 16:9)

1. Iz kafedry bolezney ukha, nosa i gorla (zav. - prof. I.Yu. Laskov) i kafedry mikrobiologii (zav. - prof. P.F. Samsaonov) Yashkentskogo meditsinskogo instituta.
(TONSILS—DISEASES) (DIPHTHERIA—MICROBIOLOGY)

BUSSEL, O.

BUSSEL', O., inzhener.

Modern covering of cargo hatchways. Mor.flot 17 no.5:28-30
My '57. (MIRA 10:7)

1. Tallinskiy politekhnicheskiy institut.
(Hulls (Naval architecture))

BUSSEL, Oleg; KRUUS, Einar; LEVALD, Heino; OLTERS, H., retsenzent;
RUUSALEP, L., retsenzent; KORBA, A., red.; LIIVAND, T.,
tekhn. red.

[Shipbuilding] Laevade üldehitus. Tallinn, Eesti Riiklik
Kirjastus, 1963. 281 p. (MIRA 17:1)
(Shipbuilding)

FYARNAPUU, A. [Parnapuu, A.], kand. tekhn. nauk, ispol. obyazan. dots.;
BUSSEL', O. [Bussel, O.], ispol. obyazan. dots.

[Laboratory work on physical metallurgy] Laboratornye raboty
po metallovedeniiu. Tallinn, Tallinskii politekhn. in-t,
1964. 35 p. (MIRA 17:5)

HUSSEN, I. V.

Crystals of magnesium metahypophosphate and magnesium pyrohypophosphate. I. V. Husen and V. V. Soboleva. *Uchenye Zapiski Leningrad. Gosudarst. Univ.* 1939, No. 7 (No. 34), 10-17; *Khim. Referat. Zhur.* 1940, No. 1, 28; cf. Osipov, *C. A.* 31, 6217. — $Mg_2P_2O_7 \cdot 12H_2O$ produces fine, colorless, transparent trigonal crystals surrounded by a combination of a rhombohedron and pinacoid (in rare cases prismatic facets were observed). Thick-plate crystals were obtained from concd. solns. of the salt and very thin plates from the more dil. solns. The angle of polarization of the rhombohedron is $63^\circ 22'$. The ratio of the axes is $a:c = 0.9171$. The crystals are optically uniaxial and pos. $Mg_2H_2P_2O_7 \cdot 11H_2O$ also produces trigonal crystals surrounded by a combination of 2 rhombohedra with a pinacoid. The crystals possess a thin-plate habitus. The angle of polarization of the rhombohedron is $65^\circ 10'$. The ratio of the axes is $a:c = 0.9212$. The crystals are optically uniaxial and pos. The differences between the crystals of the two compds. are within the limits of exper. measurements. They differ only by the presence of facets of the hexagonal prism on the crystals of $Mg_2P_2O_7 \cdot 12H_2O$ and by the presence of a 2nd rhombohedron on the crystals of $Mg_2H_2P_2O_7 \cdot 11H_2O$.

W. R. Hean

ASB-SLA METALLURGICAL LITERATURE CLASSIFICATION

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BUSSEN, I.V.; SAKHAROV, A.S.

State of matter during the formation of the Lovozero alkaline
massif. Izv.Kar.i Kol.fil.AN SSSR no.5:19-22 '58.
(MIRA 12:9)

1. Geologicheskij institut Kol'skogo filiala AN SSSR.
(Kola Peninsula--Urtite)

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BUSSEN, I.V.; SMIRNOVA, S.I.

Sinter formations from crosscuts of Karnasurt Mountain in the
Lovozero Tundras. Mat.po min.Kol'.poluost. 1:116-120 '59.
(MIRA 15:2)

(Lovozero Tundras--Sediments (Geology))

BUSSEN, I.V.; SAKHAROV, A.S.

Structural analysis applied to the Lovozero alkaline massif. Izv. Kar.
i Kol'.fil. AN SSSR no.2:25-28 '59. (MIRA 12:11)

1. Geologicheskij institut Kol'skogo filiala AN SSSR,
(Lovozero region--Rocks, Igneous)

BUSSEN, I.V.

Intrusion of murmanite porphyraceous lujaurites in the Lovozero
alkaline massif. Izv.kar.i kol'.fil.AN SSSR no.3:28-37 '59.
(MIRA 13:4)

1. Geologicheskiy institut Kol'skogo filiala AN SSSR.
(Lovozero region--Lujaurites)

BUSSEN, I.V.

Elatolite from Malyy Punkaruayv Mountain in the Lovozero tundra.
Izv.Kar.i Kol'.fil.AN SSSR no.3:141-142 '59. (MIRA 13:4)

1. Geologicheskii institut Kol'skogo filiala AN SSSR.
(Lovozero region--Elatolite)

BUSSEN, I.V.

Tectonic structure of the Lovozero sedimentary-volcanogenic series on Kola Peninsula. Izv.Kar.i Kol .fil.AN SSSR no.4: 15-19 '59. (MIRA 13:5)

1. Geologicheskii institut Kol'skogo filiala AN SSSR.
(Kola Peninsula--Geology, Structural)

DORFMAN, M.D.; BUSSEN, I.V.; DUDEIN, O.B.

Selective dissolving of minerals. Trudy Min.muz. no.9:167-171
'59. (MIRA 12:6)
(Mineralogy)

BUSSEN, I.V.; DORFMAN, M.D.; DUDKIN, O.B.

Application of the mineralogical quantitative rational analysis
to perovskite ores. Vop. geol. i min. Kol'. poluos. no.2:154-170
'60. (MIRA 13:10)

(Perovskite)

BUSSEN, I.V.; SAKHAROV, A.S.

Structural details of, and relationship between the two main
complex-plutons in the Lovozero alkaline massif. Vop. geol. i
min. Kol'. poluos. no.2:188-208 '60. (MIRA 13:10)
(Lovozero Tundras--Rocks, Igneous)

BUSSEN, I.V.; SAKHAROV, A.S.

Primary foliation in the Lovozero alkaline massif. Vop.
geol. i min. Kol'. voluos. no.3:139-149 '60. (MIRA 13:9)
(Lovozero Tundras--Geology, Stratigraphic)

BUSSEN, I.V.; POMBRANTSEVA, N.G.; ZITFA, Ye.F.

Dike of alkaline lamprophyre from Karnasurt Mountain (Lovozero
Tundras). Vop. geol. i min. Kol'. poluos. no.3:234-240 '60.
(MIRA 13:9)

(Lovozero Tundras--Lamprophyre)

BUSSEN, I.V.

Occurrence of villiaumite in the Lovozero alkaline massif. Vop.
geol. i min. Kol'. poluos. no.2:209-211 '60. (MIRA 13:10)
(Lovozero Tundras--Villiaumite)

BUSSEN, I.V.

Comments on the gravitational and kinetic theory of magma differentiation. Zap. Yses. min. ob-va 89 no.5:606 '60. (MIRA 13:10)
(Magma)

BUSSEN, I.V.

Murmanite porphyrylike lujauvrites of the Lovozero alkali
tundras. Mat. po min. Kol'. poluost. 2:61-73 '62.

(MIRA 16:4)

(Lovozero tundras--Lujauvrite)

BUSSEM, I.V.; DUDKIN, O.B.

New data on enigmatite from the Khibiny and Lovozero alkali
massifs. Mat. po min. Kol'. polnost. 2:96-106 '62.

(MIRA 16:4)

(Khibiny Mountains—Enigmatite)
(Lovozero tundras—Enigmatite)

BUSSEN, I.V.; SAKHAROV, A.S.

Concerning T.I.Ivanova and A.V.Galakhov's review of the book
"Lovozero alkaline massif" by K.A.Vlasov, M.V.Kuz'menko, E. M.
Es'kova. Izv. AN SSSR. Ser.geol. 27 no.1:113-115 Ja '62. (MIRA 15:1)
(Lovozero tundras--Rocks, Igneous) (Ivanova, T.I.)
(Galakhov, A.V.) (Vlasov, K.A.) (Kuz'menko, M.V.) (Es'kova, E.M.)

BUSSEN, I.V.

Mineralogy of the Luyavrurt Mountains. Mat. po min. Kol'.
poluost. 3:162-167 '62. (MIRA 17:3)