TSAGAREYSHVILI, D.Sh. GVELESIANI, G.G.

Enthalpy and heat capacity of certain rare-earth oxides. Zhur. neorg. khim. 10 no.2:319-321 F '65. (MIRA 18:11)

1. Gruzinskiy institut metallurgii Gosudarstvennogo komiteta po chernoy i tsvetnoy metallurgii pri Gosplane SSSR. Submitted April 14, 1964.

ACC NR: AP6028031 SOURCE CODE: UR/0251/66/042/001/0151/0158

AUTHORS: Gvelesiani, G. G.; Bagdavadze, D. I.

ORG: Georgian Institute of Metallurgy (Gruzinskiy institut metallurgii)

TITLE: Cerimetric reduction of samarium oxide

SOURCE: AN GruzSSR. Soobshcheniya, v. 42, no. 1, 1966, 151-158

TOPIC TAGS: cerium, chemical reaction kinetics, chemical reduction, samarium compound, vacuum furnace

ABSTRACT: Kinetics of the cerimetric reduction of Sm_2O_3 has been investigated. Effects of the ratio Ce/Sm_2O_3, of the temperature and duration of the reaction, of the size of the cerium granules, and the pelleting temperature upon the yield of samarium were studied, and the results are illustrated by corresponding graphs. The reaction was conducted in a high temperature vacuum setup fitted with an automatic recorder by which the reduction could be followed according to the method described by G. G. Gvelesiani, N. P. Mgaloblishvili, and A. A. Nadiradze (Vysokotemperaturnyye ustanovki dlya issledovaniya vakuumtermicheskikh vosstanovleniy. Trudy Gruzinskogo in-ta metallurgii, No. 14, 1965, 199). It was established that the reduction process can be described by

$$Sm_2O_{3\,solid} + 2\,Ce_{liquid} \rightarrow 2\,Sm_{gas} + Ce_2O_{3\,solid}$$

Card 1/2

Card 2/2

GVELESIANI, I. D.

Gvelesiani, I. D. - "The distribution of human protozoa among the villages of Georgia", Byulleten' (Nauch.-issled. in-t malyarii i med. parazitologii im. Virsaladze), No. 2, 1948, p. 3-22, (In Georgian, resume in Russian), - Bibliog: p. 15-22.

SO: U-4329, 19 August 53, (Letopis 'Zhurnal 'nykh Statey, No. 21, 1949).

GVELESIANI, K.

TOKHADZE, V.A.; GVELESIANI, K.

Preliminary data on the treatment of rheumatism in children with Tskhaltubo mineral waters. Pediatriia, Moskva No.1:17-19 Jan-Feb 51. (CLML 20:6)

1. Prof.V.A.Tokhadze. 2. Of the Children's Clinic of the Scientific Research Institute for the Care of Mothers and Children of the Ministry of Public Health Georgian SSR (Director of Institute--Docent G.Tsagareli; Head of Clinic--Prof.V.A.Tokhadze).

GVELESSIANI, K.G

GVELESSIANI, K.G.

Therapeutic use of open fresh air in rheumatism in children. Pediatriia no.6:41-45 N-D '54. (MIRA 8:4)

1. Iz detskoy kliniki fakul't. pediatrii Tbilisskogo med. inst. (zav. prof. V.A.Tokhadze)
(RHEUMATISM, in infant and child
ther., fresh air)
(CLIMATE, ther. use
fresh air in rheum. in child.)

[illegible], [illegible]

[illegible], [illegible] - "The course of rheumatism in children under hospital-ward and sanatorium conditions in connection with the dynamics of certain indices of nitrogen metabolism." Tbilisi, 1955. Georgian Publishing House for Medical Literature. Tbilisi State Medical Inst. (Dissertations for degree of Candidate of Medical Sciences.)

SO: Knizhnaya letopis', No 4.. 26 November 1955. Moscow.

[illegible]YAN, A. [illegible]

Wine and Wine Making

Strengthen the technical base of primary wine-making. Vin. SSSR 12 no. 5 (1952)

<u>Monthly List of Russian Accessions</u>, Library of Congress, August, 1952. UNCLASSIFIED.

GVELESIANI, K. I.

Wine and Wine Making

Maintain a high technological level during the wine-making season. Vin. SSSR. 12 no. 6, 1952.

9. Monthly List of Russian Accessions, Library of Congress, ~~September~~ 1952 ~~1953~~, Uncl.

GVELESIANI, K.I.

We are improving production. Vin.SSSR 15 no.3:7-9 '55.
(MLRA 8:8)

1. Direktor Moskovskogo vinzavoda No.2 Glavnogo upravleniya vinodel'cheskoy promyshlennosti (RSFSR)
(Wine and wine making)

Gvelesiani, K I

P.

4

[illegible]

GVELESIANI, K.I.; PETROVSKIY, A.Ya.

Use of silica gel as filter material in beer filtration. Spirt.prom. 29 no.5:35-36 '63. (MIRA 17:2)

1. Moskvoretskiy pivovarennyy zavod.

GVELESIANI, L. G.

FOGEL',YU. M. - Nauchn. sotr. i GVELESIANI, L. G. - Kand. tekhn. nauk St. Nauchn. Sotr.

Tbilisskiy nauchno-issledovagel'skiy institut sooruzheniy i gidroznergetiki.

Issledovaniye kozfitsiyenta sherokhovatosti tunnelei na deistvuyushchikh ges zakavkaz'ya Page 84

SO: Collection of Annotations of Scientific Research Work on Construction, completed in 1950.
Moscow, 1951

GVELESIANI, L. G.

USSR/Engineering - **Hydraulics, Power Stations** Feb 52

"Second **Transcaucasian Conference on Planning** and Construction of Hydroelectric Power Stations," L. G. Gvelesiani, S. Ya. Vartazarov, **Candidates** Tech Sci

"Gidrotekh Stroi" No 2, pp 44-46

Conference in Tbilisi Nov 51, for exchange **of information** among construction, planning, **scientific** research and operational **organizations. Briefly** describes reports, delivered at **Conference**, **and** outlines suggestions detg future **trend**

212T68

of **activity** in discussed field. **Next** conf**erence** is sch**e**duled for 1952 in Yerevan.

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GVELESIANI, L.G., VARTAZAROV, S.YA.

Hydroelectric Power Stations

Second Transcaucasian Conference on Projecting and Building of Hydro-electric Power Stations, Gidr. stroi. 21 No. 2, 1952.

Monthly List of Russian Accessions, Library of Congress, July 1952, UNCLASSIFIED

GVELESIANI, L. G.

Electrical Engineering Abstracts
June 1954
Electrical Engineering

② 621.315.65 : 621.315.668.3

2339. **Prefabricated transmission line supports of steel-reinforced concrete made by the centrifugal method.** L. G. GVELESIANI AND E. E. MIKHEL'SON. *Elekt. Stantsii*, 1953, *No.* 10, 26–9. *In Russian.*

Supports for transmission lines of 6–10 kV, 35 kV and π-shaped supports for 110 kV lines, and poles for overhead contact lines are described with dimensional sketches and some details of design, fabrication and erection methods. The steel requirement is tabulated for 6–110 kV and compared with that of steel towers. Suggestions for further reduction of weight are made such as revision of regulations, use of sliding clamps in order to reduce maximum forces and the use of drilling machines for excavations for reduction of erection cost. The use of steel towers for rigid supports and concrete for flexible supports is the most economical. F. BUSEMANN

GVELESYANI, L. G.

Hydroelectric Power Stations

Second Transcaucasian consultation on hydroelectric power plant operation.
Gidr. stroi. 22, No. 1, 1953.

Monthly List of Russian Accessions, Library of Congress, June 1953. Uncl.

1. GVELESYANI, L.G.

2. USSR (600)

4. Hydraulics

7. "Fundamentsls of hydraulics." S.V. Izbash, Reviewed by L.G. Gvelesyani, Gidr.stroi. 22 no. 3, 1953.

9. Monthly List of Russian Accessions, Library of Congress, APRIL 1953, Uncl.

GVELESIANI, L.G., kandidat tekhnicheskikh nauk; SHMAL'TSEL', N.P., inzhener.

Operating an alpine water reservoir. Gidr.stroi. 22 no.5:9-13 My '53.
(MLRA 6:6)
(Reservoirs)

GVELESIANI, L.G., kandidat tekhnicheskikh nauk; MIKHEL'SON, Ye.E., kandidat tekhnicheskikh nauk.

Demountable supports of electric transmission lines made from centrifugal reinforced concrete. Elek.sta. 24 no.10:26-29 O '53. (MLRA 6:10)
(Electric lines--Poles)

GVELESIANI, L. G.

AID P - 2117

Subject : USSR/Engineering

Card 1/1 Pub. 35 - 6/20

Author : Mikhel'son, Ye. E. and Gvelesiani, L. G.

Title : Transmission and communication line towers made of centrifugally-spun concrete pipes

Periodical: Gidr. stroi., no.3, 19-21, 1955

Abstract : The article describes the research and work done by the Tbilisi Scientific Research Institute of Construction and Hydro-Power Engineering on the assembling of towers for communication and for the 6 - 10, 35, 110 kv lines which differ considerably from the design used abroad. Details of construction of various types of towers and their erection are explained with diagrams and tables. The savings achieved by using centrifugally-spun concrete pipes are stressed. Two diagrams.

Institution: None

Submitted : No date

GEGELIYA, T.G., kand.tekhn.nauk; GVELESIANI, L.G., red.; DZOTSENIDZE, Sh., tekhred.

[Submerged intakes and buttress dams] Donnye i bychkovye vodozabornye plotiny. Tbilisi, Gos.izd-vo "Sabchota Sakartvelo," 1959. 125 p. (MIRA 13:7)
(Dams) (Hydraulic engineering)

GVELESIANI, L.G., kand.tekhn.nauk

Conference of water-power engineers in Ladzhanur. Gidr.stroi.31 no.2:62 F '61. (MIRA 14:3)

1. Predsedatel' gidroenergeticheskoy sektsii Grusinskogo Pravleniya Nauchno-tekhnicheskogo obshchestva energeticheskoy promyshlennosti i zamestitel' direktora Tbilisskogo nauchno-issledovatel'skogo instituta sooruzheniy i gidroenergetiki po nuachnoy chasti.
(Ladzhanur Hydroelectric Power Station)

KARTSIVADZE, G.N., kand.tekhn.nauk; KVITSARIDZE, O.I., kand.tekhn.
nauk; SAGATELOVA, Ye.S., kand.tekhn.nauk; GVELESIANI, L.O.,
kand.tekhn.nauk

Effect of temperature and moisture conditions on the increase of deflections in bent reinforced concrete construction elements subjected to long-time loads. Bet.i zhel.-bet. no.1: 27-31 Ja '60. (MIRA 13:5)
(Strains and stresses)

KVITSARIDZE, O.I., kand.tekhn.nauk; GVELESIANI, L.C., inzh.

Relaxation of stresses in wire strands in relaxation to varying methods of tightening the reinforcement. Bet. i zhel.-bet. no.1: 29-32 Ja '62. (MIRA 15:4)

(Concrete reinforcement)

KVITSARIDZE, O.I.; SAGATELOVA, Ye.S.; GVELESIANI, L.O.

Long-time deflections of bendable reinforced concrete elements in a dry climate. Trudy Inst. stroi.mekh. i seism. AN Gruz. SSR 9:189-196 '63.
(MIRA 17:12)

ACC NR: AP7009579 SOURCE CODE: UR/0251/66/044/003/0557/0561

AUTHOR: Mirianashvili, M. M. (Corresponding Member of the Academy of Sciences Georgian SSR); Kakushadze, T. I.; Gvelesiani, L. P.
ORG: Tbilisi State University (Tbilisskiy gosudarstvennyy universitet)

TITLE: Mixed cadmium ferrites of spinel structure

SOURCE: AN GruzSSR. Soobshcheniya, v. 44, no. 3, 1966, 557-561
TOPIC TAGS: ferrite, crystal lattice structure, saturation magnetization
SUB CODE: 20

ABSTRACT: The article considers mixed cadmium ferrites, which are solid solutions of magnetic ferrites $Me Fe_2 O_4$ (Me = Co, Ni, Cu, Mn, etc.) with a cadmium ferrite ($Cd Fe_2 O_4$). The electron configurations of zinc and cadmium ions are identical, as is also the structure of the lattice in which the Zn^{2+} and Cd^{2+} ions crystallize. The radius of the Cd^{2+} ion is 30% greater than that of the Zn^{2+} ion, so that for the conversion of the Cd^{2+} ion in a mixed cadmium ferrite into an extremely magnetic ion with $\mu = 8\ \mu_B$ there should be present in the second coordination sphere a greater number of divalent magnetic Me^{2+} ions with vacancies in the outer 3d shells than in the case of the zinc ion. A table is given of experimental data for the saturation magnetization of the mixed cadmium $Me_{1-\delta}\ Cd_\delta\ Fe_2\ O_4$ in Bohr magnetons, extrapolated for 0°K. The article also presents curves expressing the theoretical dependence of the saturation magnetization of cadmium ferrites on the concentration δ of cadmium. Orig. art. has: 4 figures, 3 formulas and 1 table. [JPRS: 40,100]

Card 1/1

0930 1/10

DOLABERIDZE, L.D.; POLITOVA, Yu.V.; GVELESIANI, L.T.; DZHALIASHVILI, A.G.

Colorimetric determination of aluminum in geologic rocks. Zav.lab. 30 no.12:1439-1441 '64. (MIRA 18:1)

1. Kavkazskiy institut mineral'nogo syr'ya.

DOLABERIDZE, L.D.; POLITOVA Yu.V.; GVELESIANI, L.T.; DZHALIASHVILI, A.G.

Determination of aluminum in silicates and carbonates, and in iron, titanomagnetite, and manganese ores. Trudy KIMS no.5:81-94 '63.
(MIRA 18:10)

GVELESIANI, P.I.

Protecting buffers of air-borne meteorographs against icing.
Meteor. i gidrol. no.6:39 Je '56. (MIRA 9:9)
(Meteorological instruments)

GVELESIANI, Sh. G.

"Influence of 'Makhobel' on the Quality of Bread." Cand Tech Sci, Tbilisi State U. imeni I. V. Stalin, Tbilisi, 1954. (KL, No 3, Jan 55)

Survey of Scientific and Technical Dissertations Defended at USSR Higher Educational Institutions (13)
SO: Sum. No. 598, 29 Jul 55

Gvelesiani, V. P.

✓Clarification of wine by askangel. A. K. Rodopulo, F. P. Kitadze, and V. P. Gvelesiani (Transcaucasian Branch, Inst. "Magarach"). *Vinodelie i Vinogradarstvo S.S.S.R.* 10, No. 4, 34-6(1950).—Small pieces of true bentonite, askangel (I) (particles sized from 0.01 to 0.0001 m.), were kept in water (in the ratio of 1:5) for several days. The swollen mass was dild. with a wine to a bentonite concn. of 5%; at this concn. the nonsol. particles were pptd. and removed. The alky. of I (100 g. of dry I required 28 ml. of 0.1*N* H_2SO_4) was neutralized by the wine. Before use the suspension was boiled under reflux condenser for 30 min. For the prepn. of champagne wines 0.4-0.5, and for other wines 0.5-0.8 to 1 g. of dry I/l., was used. After 7 days the treated wines were transparent; the products were freed from the ppt. after 15 days. A champagne wine (grape variety Cicka) showed the following chem. characteristics before and after the I treatment: pH 3.2, 3.2, titratable acidity 7.0, 7.0, volatile acids 0.97, 0.07 g./l., alc. 10.6, 10.6 vol. %, oenotannin 133, 112, iron 8.8, 7.1, and proteinaceous materials 64, 35 mg./l., resp. The wines treated with I were superior in their organoleptic qualities to the wines clarified either by fish glue or $K_4Fe(CN)_6$ (which decreases the titratable acidity of the products).

E. Wierbicki

Gvelesiani, V. P.

Comparative investigation of bentonites as clarifying agents for wine. A. K. Rodopulo, V. P. Gvelesiani, and F. P. Kiladze. *Vinodelie i Vinogradarstvo* 11, No. 4, 13-16(1951); *Chem. Zentr.* 1951, II. 2264; cf. *C.A.* 48, 14100*f*.—Expts. are reported on the clarification of Cicka champagnes, white European (Chinuri), red Kakhetian, and ordinary (Zolikauri) wines with bentonites (I), subbentonites (II), askangel (III) and askan glue, Aksamarov white (IV) and green, and various green glues. The best swelling was obtained with III and IV. The suspensions were prepd. by diln. with 10 parts water (5 parts in the case of the subbentonites). From 40 to 200 g. I and 200-800 g. II were used per hectoliter, with the suspension first being shaken 15 min. with an equal vol. of wine and then for 20 min. with the total vol. being treated, after which it was allowed to settle. The champagnes were clarified in 8-10 days; 15-18 days were required for clarification with fish glue. The addn. of 2 g. I and 0.05 g. fish glue per l. clarified the wine within 1 hr. III was most effective in clarifying the red wine. I reduced titratable acid by 0.06-0.28%, increased Ca content by 10-14 mg./l. and the ash and ext. contents by 0.02-0.03 g./l., and sharply reduced the high Fe contents (from 27 to 2-7 mg./l. for ordinary wines). III was especially effective in this respect. The I reduced protein N by 6-13 mg./l. At high values for titratable acid (7.5-9.0%), clarification with I gave better results. III clarified champagnes in 18 days (35 days for fish glue). I, therefore, was found to be a very satisfactory clarifying agent and was more effective than fish glue and gelatin.

M. G. Moore

CH

②

GVELESIANI, V. P.

Application of sodium alginate on industrial scale. V. P. Gvelesiani. *Vinodelie i Vinogradarstvo S.S.S.R.* 11, No. 11, 24-5(1951).—In neutralized wine the concn. of Na alginate (I) may be as high as 1%. In normal wine its concn. is 0.5%; before the application the concn. is lowered to 0.25% I by the addn. of wine. Depending on the type of wine the amt. of I used for the clarification varies from 0.03 to 0.08 g./l. Wines treated with I show no change in pH, volatile acids, alc., sugar, and tannins; the amt. of titratable acidity decreases slightly and that of protein N significantly. Thus, I is dissocd. in wine (acidic medium) into Na^+ and alginic acid which in turn coagulates with the proteins and, on pptn., is carried with other substances suspended in the wine. The clarifying effect of I decreases in the presence of large quantities of tannins; ordinary red wines are not efficiently clarified by I (in this case gelatin and fish glue are superior). I is highly efficient in clarifying champagne and white wines.

B. Wierbicki

GVELESIANI, V. P.

Chemical Abst.
Vol. 48
Apr. 10, 1954
The Fermentation Industries

①

Mechanism of clarification of wine with sodium alginate. V. P. Gvelesiani. *Vinodelie i Vinogradarstvo S.S.S.R.* 13, No. 9, 18-19(1953).—The turbidity of wines contg. relatively high amts. of acid and insignificant amts. of tannic and coloring materials was removed with sodium alginate (I). The mechanism of the clarification is due to the hydrolysis of I into Na^+ and alginic acid which is insol. in wine. The use of I for the clarification of berry wine, champagne, and highly acidic wines low in tannic and coloring materials is recommended. Emmanuel Merdinger

GVELESIANI, V.P., Cand Tech Sci -- (diss) "Comparative study of ~~concrete~~ bentonite clays and sodium alginate for the clarifying of wine." Tbilisi, Pub House of Agr Inst, 1959, 24 pp (Min of Agr Georgian SSR. Georgian Order of Labor Red Banner Agr Inst) 100 copies (KL, 34-59, 113)

GVELESIANI, Vladimir Pavlovich; AGABAL'YANTS, G.G., spets. red.;
CHERKASOVA, M.P., red.

[Use of bentonite for the clarification of wine] Osvetlenie vina bentonitovymi glinami. Moskva, Izd-vo "Pishchevaia promyshlennost'," 1964. 19 p. (MIRA 17:9)

CHIKHELIDZE, S.S.; TAVADZE, F.N., akademik, otv. red; AGLADZE, R.I., red.; ARCHVADZE, Sh.R., red.; VACHNADZE, N.D., red.; GVELISIANI, G.G., red.; GUDZHEDZHIANI, B.I., red.; DZHANELIDZE, A.I., red.; DZOTSENIDZE, G.S., red.; DURMISHIDZE, S.V., red.; KETSKHOVELI, N.N., red.; MIKELADZE, I.S., red.; RUBINSHTEYN, M.M., red.; TVALCHRELIDZE, A.A., red.[deceased]; TSITSISHVILI, G.V., red.; SHENGELIYA, P.G., red.; FEDOT'YEV, K.M., red.izd-va; DOROKHINA, I.N., tekhn. red.

[Natural resources of the Georgian S.S.R.] Prirodnye resursy Gruzinskoi SSR. Moskva, Izd-vo Akad.nauk SSSR. Vol.3. [Mineral water] Mineral'nye vody. 1961. 438 p. (MIRA 14:12)

1. Akademiya nauk Gruzinskoy SSR, Tiflis. Sovet po izucheniyu proizvoditel'nykh sil. 2. Akademiya nauk Gruzinskoy SSR (for Tavadze). (Georgia—Mineral water)

GVELUKASHVILI, I. A.

"Isomerization of Disaccharides. I. Isomerization of Glucosido-β-Glucose."
by I. A. Gvelukashvili. and A. M. Gakhokidze (p. 143)

SO: Journal of General Chemistry (Zhurnal Obshchei Khimii), 1952, Volume 22
no. 1

Isomerization of disaccharides. I. Isomerization of glucosido-3-glucose. A. M. Gakhokidze and I. A. Gvelukashvili (Tbilisi Pedagog. Inst.). *Zhur. Obshchei Khim.* (J. Gen. Chem.) 22, 143-7(1952).—Shaking acetylated glucosido-3-glucose with askarite in $CHCl_3$ 10 days in the cold yields *glucosido-3-mannose octaacetate*, m. 142-3°, $[\alpha]_D^{20}$ 35.6°. Hydrolysis yields the *free disaccharide*, m. 165°, $[\alpha]_D^{20}$ 27.9°. This, oxidized with Br water 5 days in sunlight, gave 81% *glucosido-3-mannonic acid*, isolated as the *Ca salt* (from H_2O); *free acid*, sirup, which, boiled with 5% H_2SO_4, gave *mannonic acid*, isolated as the *Ca salt* (from H_2O), and glucose, isolated as the phenylglucosazone, m. 204-6°. Oxidation of glucosido-3-mannonic acid with H_2O_2 in the presence of Fe^{+++} gave *glucoside-2-D-arabinose*, 50%, m. 149-50°, $[\alpha]_D^{20}$ 29.5°; *phenylhydrazone*, m. 177-81°. Acetylation of this disaccharide gave the *heptaacetate*, m. 138-40°, $[\alpha]_D^{20}$ 46.6°. Boiling glucosido-3-mannonic acid with dil. H_2SO_4 gave glucose and *mannonic acid*, isolated as the *Ca salt*, which on acidification yielded the *lactone*, m. 149-50°, $[\alpha]_D^{20}$ 30.8°; *phenylhydrazide*, m. 213-14°, $[\alpha]_D^{20}$ 15.8°. *Tetraacetate of the lactone*, m. 119-20°, $[\alpha]_D^{20}$ 51.4°. Refluxing 20 g. *glucoside-3-glucose* with 10 g. NaOAc and 150 g. Ac_2O 3 hrs. and treatment with cold H_2O gave 78% *octaacetate*, m. 149-50°. **II. Isomerization of galactosido-3-glucose.** A. M. Gakhokidze and E. G. Kobiashvili. *Ibid.* 244-7.—Shaking 25.8 g. galactosido-3-glucose octaacetate in 350 ml. dry $CHCl_3$ with 100 g. dry Ascarite 10 days in the cold, warming to 70°, evapg., and chromatographing on Al_2O_3, gave *3-galactosidomannose*, m. 159°, $[\alpha]_D^{20}$ 34.8°, after hydrolysis of the corresponding *octaacetate*, m. 151-2°, $[\alpha]_D^{20}$ 41.2°. Oxidation of the new disaccharide with Br water 5 days in the light gave 78% Ca *3-galactosidomannonate* (I). The free sirupy acid, heated with 5% H_2SO_4 and neutralized with $CaCO_3$, yields Ca *mannonate*, which with $(CO_2H)_2$ gives the *lactone of mannonic acid*, m. 149-50°, $[\alpha]_D^{20}$ 30.8°; *phenylhydrazide*, m. 213-14°, $[\alpha]_D^{20}$ −15.8°. The mother liquor after evapn. of the lactone, contains galactose, as shown by its reaction with $PhNHNH_2$ to yield the osazone, m. 194-6°. Oxidation of 5.1 g. I in 100 ml. H_2O with 1.2 g. ferric sulfate, 1.8 g. $Ba(OAc)_2$, and 40 ml. 30% H_2O_2 gave 53% *galactoside-2-D-arabinose* (II), m. 143-4°, $[\alpha]_D^{20}$ 34.4°, which with $PhNHNH_2$ gave the *hydrazone*, m. 184-6° (from EtOH). Acetylation of II gave the *heptaacetate*, m. 139-42°, $[\alpha]_D^{20}$ 40.6°. Thus, the O bridge does not change location. G. M. K.

GVENETADZE, V.Ye.

New data on the oil potential in the surroundings of Satskhenisi (eastern Georgia). Izv.Goel.ob-va Gruz. 2 no.1:43-48 '62.
(MIRA 17:3)

MEGRELISHVILI, L.K.; GVENTSADZE, V.I.

Remodeled filter box for determining the dust content of blast-furnace gas. Koks i khim. no.7:32-33 Jl '61. (MIRA 14:9)

1. Zakavkazskiy metallurgicheskiy zavod.
(Coke industry--Equipment and supplies)

MIKADZE, Sh.; GVERDTSITELI, I.

Synthesis and catalytic hydration of methylethylbutyndiol and diazopropylfurylbutyndiol [in Georgian with summary in Russian]. Trudy Tbil. GU no.62:167-176 '57. (MIRA 11:7)

1. Tbilisskiy gosudarstvennyy universitet imeni Stalina, kafedra organicheskoy khimii.
(Butyndiol) (Hydration)

GVERDTSITELI, I.G.

PHASE I BOOK EXPLOITATION SOV/1297

Vsesoyuznaya nauchno-tekhnicheskaya konferentsiya po primeneniyu radioaktivnykh i stabil'nykh izotopov i izlucheniy v narodnom khozyaystve i nauke, Moscow, 1957

Polucheniye izotopov. Moshchnyye gamma-ustanovki. Radiometriya i dozimetriya; trudy konferentsii... (Isotope Production. High-energy Gamma-Radiation Facilities. Radiometry and Dosimetry; Transactions of the All-Union Conference on the Use of Radioactive and Stable Isotopes and Radiation in the National Economy and Science) Moscow, Izd-vo AN SSSR, 1958. 293 p. 5,000 copies printed.

Sponsoring Agency: Akademiya nauk SSSR; Glavnoye upravleniye po ispol'zovaniyu atomnoy energii SSSR.

Editorial Board: Frolov, Yu.S. (Resp. Ed.), Zhavoronkov, N.M. (Deputy Resp. Ed.), Aglintsev, K.K., Alekseyev, B.A., Bochkarev, V.V., Leshchinskiy, N.I., Malkov, T.P., Sinitsyn, V.I., and Popova, G.L. (Secretary); Tech. Ed.: Novichkov, N.D.

PURPOSE: This collection is published for scientists, technologists, persons engaged in medicine or medical research, and others concerned with the production and/or use of radioactive and stable isotopes and radiation.

COVERAGE: Thirty-eight reports are included in this collection under three main subject divisions: 1) production of isotopes 2) high-energy gamma-radiation facilities, and 3) radiometry and dosimetry.

TABLE OF CONTENTS:

PART I. PRODUCTION OF ISOTOPES

Frolov, Yu.S., V.V. Bochkarev, and Ye.Ye. Kulish. Development of Isotope Production in the Soviet Union 5

This report is a general survey of production methods, apparatus, raw materials, applications, investigations and future prospects for radio isotopes in the Soviet Union.

Card 2/12

Alekseyevskiy, N.Ye., A.V. Dubrovin, G.I. Kosourov, G.P. Prudkovskiy, S.I. Filimonov, V.I. Chekin, V.N. Shelyapin (deceased), and T.K. Shuvalova. Utilization of Mass Spectrometers with a Nonhomogeneous Field for Analyzing Isotopes of Light Elements 73

Ordzhonikidze, K.G., and G.N. Zubarev. Relative Propagatability of Palladium and Germanium Isotopes 78

Rezen, A.M. Some Problems on the Theory of Isotope Separation 86

Gverdtsiteli, I.G., and V.K. Tskhakaya. Separation of Isotopes of Light Elements by Diffusion in Vapors 113

Barvikh, G.F., and R.Ya. Kucherov. A Diffusion Column for Separating Isotopes 122

Card 5/12

GVERDTS~~Z~~ITELI, I. G., KUCHEROV, R. Y. and SHCHAKAYA, V. K.

"Isotope Separation by Diffusion in a Steam Stream."

paper to be presented at 2nd UN Intl. Conf. on the peaceful uses of Atomic Energy, Geneva, 1 - 13 Sept 1958.

GVERDTSITELI, I.G.

(4) PHASE I BOOK EXPLOITATION SOV/2713

International Conference on the Peaceful Uses of Atomic Energy. 2nd, Geneva, 1958

Doklady sovetskikh uchenykh; polucheniye i primeneniye izotopov (Reports of Soviet Scientists; Production and Application of Isotopes) Moscow, Atomizdat, 1959. 388 p. (Series: Its: Trudy, vol. 6) 8,000 copies printed.

Eds. (Title page): G.V. Kurdyumov, Academician, and I.I. Novikov, Corresponding Member, USSR Academy of Sciences; Ed. (Inside book): Z.D. Andreyenko; Tech. Ed.: Z.D. Andreyenko.

PURPOSE: This book is intended for scientists, engineers, physicians, and biologists engaged in the production and application of atomic energy to peaceful uses; for professors and graduate and nongraduate students of higher technical schools where nuclear science is taught; and for the general public interested in atomic science and technology.

COVERAGE: This is volume 6 of a 6-volume set of reports delivered by Soviet scientists at the Second International Conference on the Peaceful Uses of Atomic Energy held in Geneva from September 1 to 13, 1958. Volume 6 contains 32 reports on: 1) modern methods for the production of stable radioactive isotopes and their labeled compounds, 2) research results obtained with the aid of isotopes in the field of chemistry, metallurgy, machine building, and agriculture, and 3) dosimetry of ionizing radiation. Volume 6 was edited by: S.V. Levinskiy, Candidate of Medical Sciences; V.I. Prusakov, Candidate of Chemical Sciences; and V.V. [illegible], Candidate of Medical Sciences. See SOV/2081 for titles of volumes of the set. References appear at the end of the articles.

3. Yakovlev, G.N., and V.B. Dedov. Means of Developing Remote Control Methods in the Radiochemical Laboratories of the AN SSSR (Report No. 2026) 44
4. Malkov, M.P., A.G. Zel'dovich, A.B. Fradkov, and I.B. Danilov. Commercial Production of Deuterium by the Low-temperature Distillation Method (Report No. 2523) 54
5. Gverdtsiteli, I.G., R.Ya. Kucherov, and V.K. Tskhakaya. Separation of Isotopes by Diffusion in a Steam Flow (Report No. 2026) 69
6. Zolotarev, V.S., A.I. Il'in, and Ye.G. Komar. Separation of Isotopes on Electromagnetic Units in the Soviet Union (Report No. 2305) 87
7. Alekseyev, B.A., S.F. Bulygin, V.S. Zolotarev, B.V. Panin, Yu.S. Chernorotov, and G.Ya. Shchepkin. Separation of Isotopes of Rare-earth Elements by the Electromagnetic Method (Report No. 2217) 102
8. Morozov, P.M., B.N. Makov, M.S. Ioffe, B.G. Brezhnev, and G.M. Fradkin. Ion Source for the Separation of Stable Isotopes (Report No. 2303) 111
9. Bezlin, M.V., and P.M. Morozov. Electric Field Effect in Ion Beams on Stable Isotope Separation by the Electromagnetic Method (Report No. 2304) 117
10. Bogdanova, N.G., P.L. Gruzin, G.I. Yermolayev, and I.D. Nikulinskiy. Use of Radioactive Isotopes in Metallurgical Research (Report No. 2218) 124
11. Shumilovskiy, N.N., V.A. Yanushkovskiy, and I.M. Taksar. The Theory and Practice of Relay-type Instruments Based on Radioactive Isotopes (Report No. 2232) 135
12. Zaslavskiy, Yu.S., G.I. Shor, and E.N. Shneyerova. Studying the Mechanism of Protection of Rubbing Surfaces Against Wear Due to Corrosion (Report No. 2198) 143
13. Rumyantsev, S.V., and L.N. Matsyuk. The Tm^{170}, Eu^{155}, and Ce^{144} as Sources of Radiation for Checking Thin-walled Products (Report No. 2235) 160
14. Bruk, B.I., A.S. Zav'yalov, and G.I. Kapyrin. Studying the Redistribution of Elements in Metal Alloys and Weld Compounds by Autoradiographic and Radiometric Methods (Report No. 2236) 172
15. Gruzin, P.L., A.I. Yevstyukhin, V.S. Yemel'yanov, G.G. Ryabova, G.B. Fedorov. Studying the Diffusion and Distribution of Elements in Alloys of Zirconium and Titanium Base by the Radioactive Isotope Method (Report No. 2526) 189

GVERDTSITELI I G

89-3-14/30

AUTHORS: Gverdtsiteli, I. G., Gagua, T. A., Nikolayev, Yu. V.

TITLE: The Enrichment Factors for Chlorine and Sulfur Isotopes in Liquid-Vapor Equilibria for Cl_2, HCl, CH_3Cl, H_2S, SO_2
(Koeffitsiyenty obogashcheniya izotopov khlora i sery pri ravnovesii zhidkost' - par dlya Cl_2, HCl, CH_3Cl, H_2S, SO_2)

PERIODICAL: Atomnaya Energiya, 1958, Vol. 4, Nr 3, pp. 294 - 296 (USSR)

ABSTRACT: First the rectifying column is shortly described. The separation of chlorine isotopes was carried out by means of a column with a length of 1,5 m. The rectification of HCl took place at -88°C. The maximum separation factor Φ to be obtained was 1,08 ± 0,01. It was calculated from the equation:

$$\Phi = \frac{N}{1-N} : \frac{N_o}{1-N_o}$$

where N and N_o denote the normal shares of light isotopes at the end of the column and in the initial mixture. Cl_2 was rectified at -36°C. At the maximum a value of 1,05 ± 0,01

Card 1/2

89-3-14/30

The Enrichment Factors for Chlorine and Sulfur Isotopes in Liquid-Vapor Equilibria for Cl_2, HCl, CH_3Cl, H_2S, SO_2

can be reached for ϕ.
The rectification of H_2S and SO_2 was carried out by means of a column with a length of 1 m.
H_2S was rectified at -60°C and a maximum separation coefficient of 1,1 was reached.
BF_3 was used for the calibration of the columns. There are 3 figures, 1 table, and 1 reference, 1 of which is Slavic.

SUBMITTED: July 8, 1957

AVAILABLE: Library of Congress

1. Chlorine isotopes-Separation 2. Sulfur isotopes-Separation-Mathematical analysis

Card 2/2

.21(5) SOV/89-6-3-13/29

AUTHORS: Gverdtsiteli, I. G., Tskhakaya, V. K.

TITLE: Separation of the Heavy Isotopes of Carbon, Sulfur, Krypton, and Neon by Diffusion in a Vapor Current (Polucheniye tyazhelykh izotopov ugleroda, sery, kriptona i neona metodom diffuzii v potoke para)

PERIODICAL: Atomnaya energiya, 1959, Vol 6, Nr 3, pp 329-330 (USSR)

ABSTRACT: The used apparatus consists of 80 separation pumps made of glass. They contain steel cylinders of a height of 50 mm and a diameter of 16 mm forming the external skeleton of the diaphragms which have a thickness of 0.3 mm. The number of the openings in the diaphragms with a diameter of 0.4 mm is 500. The total length of the cascade is ~ 6 m. Mercury was used as working liquid. The performance of the electric furnace for each pump is on the average 140 w. In order to fill the cascade at a pressure of 10 torr ~90 normal-cm^3 gas is necessary. In the separation of sulfur isotopes SO_2 and in the separation of carbon CH_4 was used. With these substances as well as in the separation of krypton, working pressure was 12 torr. The equilibrium state was attained with-

Card 1/3

in less than 15 hours. The separation coefficients for a stage of separation furnished the following values:

system of isotopes	coefficient of separation
$S^{34}O_2 - S^{32}O_2$	1.036
$S^{36}O_2 - S^{32}O_2$	1.057
$C^{13}H_4 - C^{12}H_4$	1.095
$Kr^{86} - Kr^{84}$	1.033
$Ne^{22} - Ne^{20}$	1.16 - 1.2

The separation of sulfur isotopes was carried out in 2 cycles. In the first cycle S^{34} was enriched up to 20% (initial concentration 4.18%) and S^{36} to 0.66% (initial concentration 0.016%). Within 24 hours 80 normal-cm^3 were obtained. In the second cycle S^{34} was enriched up to 45% and S^{36} to 5.5%. The enrichment of krypton equally took place in two cycles.

SOV/89-6-3-13/29

Separation of the Heavy Isotopes of Carbon, Sulfur, Krypton, and Neon by Diffusion in a Vapor Current

In the first cycle Kr^{86} could be pushed up to 60% (initial concentration 17.5%). For this case 60 normal-cm^3 were produced within 24 hours. In the second cycle Kr^{86} was obtained in a concentration of ~92% and with a separation of 30 - 40 normal-cm^3 within 24 hours. For the separation of carbon isotopes $C^{13}H_4$ in an initial concentration of 2.7% was used as starting material. The enrichment was carried out by means of a device in which only 70 pumps were connected in series. In a separation of 30 normal-cm^3 within 24 hours a maximum concentration of $C^{13}H_4$ of ~90% and at a separation of 130 normal-cm^3 within 24 hours of ~75% could be obtained. There are 2 references, 1 of which is Soviet.

SUBMITTED: August 9, 1958

Card 3/3

22876

21,3200

S/089/61/010/005/004/015
B102/B214

AUTHORS: Gverdtsiteli, I. G., Nikolayev, Yu. V., Oziashvili, Ye. D., Ordzhonikidze, K. G., Muskhelishvili, G. N., Kiladze, N. Sh., Mikirtumov, V. R., Bakhtadze, Z. I.

TITLE: An automatic cascade apparatus for obtaining highly concentrated heavy nitrogen isotope

PERIODICAL: Atomnaya energiya, v. 10, no. 5, 1961, 487-492

TEXT: The growing use of N^{15} in different domains (for example, N^{15} nitrates in homogeneous reactors; N^{15} has a thermal neutron capture cross section of $2\cdot 10^{-5}$b, whereas the value for natural nitrogen is 1.8 b) makes it of interest to develop suitable methods for the preparation of this isotope. The principal difficulty lies in the smallness (0.365%) of N^{15} content in the natural nitrogen. Spindel and Taylor (Ref. 1: W. Spindel, T. Taylor. J. Chem. Phys., 23, 981 (1955); 24, 626 (1956); Trans. N. Y. Acad. Sci., 19, 3 (1956); T. Taylor, W. Spindel. Proceedings of the

X

Card 1/4

International Symposium on Isotope Separation. Amsterdam, North - Holland Publishing Company, 1958, p. 158; L. Kauder, T. Taylor, W. Spindel. J. Chem. Phys., 31, 232 (1959)) have developed a cascade apparatus with two columns allowing N^{15} to be obtained with 99.8 % purity. On this basis the authors of the present paper have developed and constructed an automatic cascade apparatus that allows 99.8 % pure N^{15} to be obtained from natural nitrogen by the method of NO-HNO_3 exchange. The yield is about 0.5 g per day. The chemical exchange NO-HNO_3 is described in Ref. 1, and also in the introduction of the present paper. Fig. 2 shows the scheme of construction of the actual automatic apparatus; 3 and 6 (in Fig. 2) correspond to the first and the second column of the cascade. The HNO_3 is conveyed from the reservoir 1 to the first column via a regulating valve 4 and a flow meter 2. The enriched solution is taken through a regulating valve 5 and a second flow meter 2 to the upper part of the second column for further enrichment, the remaining part flowing through the sleeve pipe 7 into the reactor. In the reactor 10 HNO_3 reacts with SO_2. The oxide mixture produced is led into the column 3 where it reacts with nitric acid with isotope exchange. The HNO_3 from column 6 enters the reactor 9 (which is analogous to the reactor 10). The nitric oxide from the reactors is brought back to the column 6 and reaches finally the lower part of the first column. The NO free of N^{15} is discharged from the cascade; the H_2SO_4 formed in the reactors is led off to the reservoir. The HNO_3 enriched in N^{15} is led away from the lower part of the second column through an electromagnetic dropper 8. Columns, valves, and connecting pieces are made of nonrusting steel of the type 1X19H9T (1Kh19N9T). The packing material is teflon. The reactors consist of quartz. The automatic regulation is related to the stabilization of the acid and water flows in the large and small reactor, to the stabilization of the quantity of the discharged product (acid), and the regulation of the gas addition. The regulating system consists of the automatic stabilizers, a signal block controlling the automatic regulators and stabilizers, and a feeding block. The whole regulating system is free from contacts in its working and must give an accurate and reliable performance over a period of

X

operation. The enriched samples (N_2 and NO) were subjected to a mass spectroscopic investigation which allowed the isotopic composition to be determined to an accuracy of ±0.02 %. Depending on the amount of nitrogen taken the concentrations are given by:

Nitrogen taken, g/day	N^{15} concentration, %
0.55	99.8
0.69	64
0.84	50

The authors thank V. A. Vlasenko, R. V. Tishchenko, R. M. Sakandelidze, D. K. Puradashvili, G. L. Partsakhushvili, L. V. Yermakova, A. M. Gasparov, M. S. Mikhelashvili, L. I. Chernova, S. V. Bubnov, and I. A. Kuras for collaboration. There are 5 figures, 1 table, and 5 references: 2 Soviet-bloc and 3 non-Soviet-bloc.

SUBMITTED: June 7, 1960

Legend to Fig. 2: Specifications of length in mm; Ⓐ outlet of the product.

(NOTE: Due to the size of the figure, we were unable to fit it to a master.)

GVERDTSITELI, I.G.; KARAMYAN, A.T.; MENABDE, N.Ye.

Measurement of the diffusion coefficient of binary vapor-gas mixtures. Soob. AN Gruz. SSR 26 no.4:409-413 Ap '61.
(MIRA 14:8)

1. Fiziko-tekhnicheskiy institut AN Gruzinskoy SSR. Predstavleno chlenom-korrespondentom AN GruzSSR G.V.Tsitsishvili.
(Gases) (Diffusion)

24652
S/076/61/035/006/002/013
B127/B203

24.6210

AUTHORS: Borisov, A.V., and Gversdtsiteli, I.G.

TITLE: Measurement of the pressure difference between $B^{10}F_3$ and $B^{11}F$

PERIODICAL: Zhurnal fizicheskoy khimii, v. 35, no. 6, 1961, 1212-1214

TEXT: The authors distilled BF_3 to obtain highly concentrated isotopic compounds. The volatility of $B^{10}F_3$ and $B^{11}F_3$ was measured near the boiling point of BF_3 (-100, 7°C): $p_{o1}/p_{o2}=1.0082$ at $-103^{\circ}C$, $p_{o1}/p^{o}_{o2}=1.0075\pm0.005$ at $-100^{\circ}C$. p_{o1} and p_{o2} are the partial pressures of the saturated vapors of $B^{10}F_3$ and $B^{11}F_3$. In the presence of partially concentrated isotopes, the measurement of the concentration coefficients is essentially a measurement of the pressure difference between them at

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24652
Measurement of the ...
S/076/61/035/006/002/013
B127/B203

an equilibrium of the system vapor - liquid. The concentration coefficient $\varepsilon=(p_{o1}-p_{o2})/p_{o2}$ (1) for ideal solutions is, according to Raoult's law, expressed by the measurable pressure and the measurable concentration: $\varepsilon=(p_1-p_2)/p_2(c_1-c_2)$. Here, p_1 and p_2 are the pressures of the saturated vapors of the mixture with the concentrations c_1 and c_2. The results of measurement are tabulated. The measurements were made at a concentration of 81.6% and 18.6% $B^{10}F_3$ with a differential manometer in a temperature range of 160-170.4°K. At these temperatures, $B^{11}F_3$ appeared to be the more volatile compound. The concentration coefficient $\varepsilon=\frac{p_{o1}}{p_{o2}}-1\approx\frac{p_1-p_2}{p_2\Delta c}$ grew with the decrease in temperature from $(8.4\pm0.13)\cdot10^{-3}$ at $T=170.4^{\circ}K$ to $(10.1\pm0.24)\cdot10^{-3}$ at $T=160^{\circ}K$.

There are 1 figure, 5 tables, and 5 references, 2 Soviet bloc.

Card 2/4

24652
S/076/61/035/006/002/013
B127/B203

Measurement of the ...

The most important reference to English-language publications reads as follows: Nettley P.T., Cartwright D.K., Kronberger H. Proc. Sympos. on isotope separation, Amsterdam, 1957, p.385.

ASSOCIATION: Moskovskiy gosudarstvennyy universitet im. M. V. Lomonosova (Moscow State University imeni M. V. Lomonosov)

SUBMITTED: August 4, 1959

X

Card 3/4

S/020/63/149/001/014/023
B144/B186

AUTHORS: Amirkhanova, I. B., Borisov, A. V., Gverdtsiteli, I. G., Karamyan, A. T., Kucherov, R. Ya.

TITLE: Evaporation coefficients of liquid C_2H_5OH, BCl_3, BF_3, and CH_4

PERIODICAL: Akademiya nauk SSSR. Doklady, v. 149, no. 1, 1963, 114-116

TEXT: The evaporation coefficients were determined by measuring the pressure increase effected by evaporation of the substance in a closed system. The apparatus used consisted of an evaporation vessel with a screw stirrer and a counterpressure chamber, both put into a Dewar flask, and was calibrated on the basis of the evaporation coefficient of C_2H_5OH. After evacuation to 10^{-5} mm Hg, the apparatus was purged with the gas studied; then the substance was condensed. After establishing a pressure equilibrium, the pressure was quickly reduced with a syphon and the subsequent pressure increase due to the evaporation of the liquid

Card 1/2

Evaporation coefficients of liquid ... S/020/63/149/001/014/023
B144/B186

studied was recorded. With the same apparatus the condensation coefficients of liquids can be measured if the initial pressure in the evaporating vessel is adjusted so that it exceeds the equilibrium pressure. It is asserted that this was done for the first time. The evaporation and condensation coefficients were calculated from the measurements using the formula of L. Bogdandy et al. (Zs. Elektrochem. 59, 460 (1955)) and compared in the case of C_2H_5OH with previous results. For BF_3 and BCl_3 the evaporation and condensation coefficients were almost consistent. Further theoretical and experimental research should clear up why the values found are so low. There are 2 figures and 1 table.

PRESENTED: October 27, 1962, by N. M. Zhavoronkov, Academician

SUBMITTED: June 27, 1962

Card 2/2

AMIRKHANOVA, I.B.; BORISOV, A.V.; GVERDTSITELI, I.G.; KUCHEROV, R.Ya.

Possible reason for divergence in the results of measurements of the ratios of isotope vapor pressures at equilibrium as shown by the differential and Rayleigh methods. Dokl. AN SSSR 149 no.2: 351-352 Mr '63. (MIRA 16:3)

1. Fiziko-tekhnicheskiy institut AN GruzSSR. Predstavleno akademikom N.M.Zhavoronkovym.
(Isotope separation) (Vapor pressure)

GVERDTSITELI, I. G.; NIKOLAYEV, Yu. V.; GAGUA, T. A.

"Commercial production of stable isotopes."

report submitted for 3rd Intl Conf, Peaceful Uses of Atomic Energy, Geneva, 31 Aug-9 Sep 64.

GVERDTSITELI, I. G.; YERSHOVA, Z. V.; GUBANOV, Yu. F.

"Thermoelectrical generator with isotopic heat source."

report submitted for 3rd Intl Conf, Peaceful Uses of Atomic Energy, Geneva, 31 Aug-9 Sep 64.

L 18316-65 EWG(j)/EWT(l)/EWP(e)/EWG(k)/EWT(m)/EPF(c)/EPF(n)-2/EPR/EEC(b)-2/EWP(b)
Pz-6/Pr-4/Ps-4/Pu-4 IJP(c)/AFWL/SSD WW/AT/WH

ACCESSION NR: AP4049532 S/0089/64/017/005/0329/0335

8

AUTHOR: Millionshchikov, M. D.; Gverdtsiteli, I. G.; Abramov, A. S.; Gorlov, L. V.; Gubanov, Yu. D.; Yefremov, A. A.; Zhukov, V. F.; Ivanov, V. Ye.; Kovy*rzin, V. K.; Koptelov, Ye. A.; Kosovskiy, V. G.; Kukharkin, N. Ye.; Kucherov, R. Ya.; Laly*kin, S. P.; Merkin, V. I.; Nechayev, Yu. A.; Pozdnyakov, B. S.; Ponomarev-Stepnoy, N. N.; Samarin, Ye. N.; Serov, V. Ya.; Usov, V. A.; Fedin, V. G.; Yakovlev, V. V.; Yakutovich, M. V.; Khodakov, V. A.; Kompaniyets, G. V.

TITLE: The "Romashka" high-temperature reactor-converter /9

SOURCE: Atomnaya energiya, v. 17, no. 5, 1964, 329-335

TOPIC TAGS: nuclear power reactor, reactor feasibility study, research reactor, thermoelectric converter/Romashka

7

ABSTRACT: The authors briefly describe the construction, parameters, test results, and operating experience of the "Romashka" reactor-

Card 1/3

L 18316-65
ACCESSION NR: AP4049532

converter unit, which has been in operation at the Kurchatov Atomic Energy Institute since August 1964. The fuel used is uranium dicarbide enriched to 90% U^{235}. Graphite and beryllium are used as reflectors. Electricity is generated by silicon-germanium semiconductor thermocouples distributed on the outer surface of the reflector and connected in four groups which can be connected in series or in parallel. The temperatures of the active zone and outer surface are 1770 and 1000C, respectively. The power ratings are 0.50--0.80 kW electric and 40 kW thermal, the maximum current (parallel connection) is 88 A, the neutron flux is 10^{13} neut/cm^2 sec in the center of the active zone and 7 x 10^{12} on its boundary. The reactor has a negative temperature reactivity coefficient. The equipment has high inherent stability and requires no external regulator, and little change was observed in the thermocouple properties after 2500 hours of operation. Tests on the equipment parameters are continuing, and the results are being analyzed for use in future designs. Orig. art. has: 8 figures and 1 formula.

Card 2/3

L 8316-65

ACCESSION NR: AP4049532

0

ASSOCIATION: None

SUBMITTED: 00

ENCL: 00

SUB CODE: NP

NO REF SOV: 000

OTHER: 000

ATD PRESS: 3155

Card 3/3

L 27831-65 EWT(m)/EPF(c)/EPF(n)-2/EWG(m)/EWP(b) Pr-4/Pu-4 DM

ACCESSION NR: AP5007358 S/0089/64/017/005/0384/0393

AUTHOR: Akopov, Yu. R.; Gverdtsiteli, I. G.; Kaminskiy, V. A.; Partsakhashvili, G. L.

24
21
B

TITLE: Column packing used for isotopic separation 19

SOURCE: Atomnaya energiya, v. 17, no. 5, 1964, 384-393

TOPIC TAGS: isotopic separation

ABSTRACT: Requirements are formulated for the packings used for isotope separation in columns. The properties of various wire packings were studied, and the region of their use was determined. Orig. art. has: 6 tables, 10 graphs, 6 figures.

ASSOCIATION: none

SUBMITTED: 17Oct63 ENCL: 00 SUB CODE: GC

NO REF SOV: 011 OTHER: 014 NA

Card 1/1

ACCESSION NR: AP4018354 S/0251/64/033/001/0079/0084

AUTHORS: Vlasenko, V. A.; Gverdtsiteli, I. G.; Nikolayev, Yu. V.; Oziashvili, Ye.D.

TITLE: Production of B^{10} isotope by the method of exchange distillation of the $(CH_3)_2O\cdot BF_3$ complex (Presented by academician G. V. Tsitsishvili, Oct. 10, 1962)

SOURCE: AN GruzSSR. Soobshcheniya, v. 33, no. 1, 1964, 79-84

TOPIC TAGS: boron, boron isotope, boron trifluoride, methyl ether, ether fluoride complex, distillation, exchange distillation, neutron, thermal neutron

ABSTRACT: Since the B^{10} isotope possesses a large thermal neutron capture cross section, a method was developed which permitted the enrichment of boron with the B^{10} isotope. This method is based on the principle of exchange distillation of the complex $(CH_3)_2O\cdot BF_3$ in a pilot fractionating column at 100C, at a pressure of 150 mm mercury. Its daily capacity amounted to 10 g of boron containing 80% B^{10}, while in the issuing complex the concentration amounted to only 16%. The separation of the boron isotopes is achieved by vaporization of the fluid $(CH_3)_2O\cdot BF_3$ phase and condensation of the gaseous BF_3 phase. The result is an enrichment of the fluid phase with B^{10} and a corresponding depletion of B^{10} in the gaseous phase, according

Card 1/2

to the formula $(CH_3)_2 O\cdot B^{11}F_3 + B^{10}F_3 \rightleftarrows (CH_3)_2O\cdot B^{10}F_3 + B^{11}F_3$. In view of the corrosive properties of the $(CH_3)_2O\cdot BF_3$ complex, only corrosion resistant materials were used in the installation, such as stainless steel, copper, lead, teflon, and polyethylene. Orig. art. has: 1 picture, 1 chart, and 1 table.

ASSOCIATION: Akademiya Nauk Gruzinskoy SSR, Fiziko-tekhnicheskiy institut (Academy of Sciences Georgian SSR, Physical and Technical Institute)

SUBMITTED: 25Aug62   DATE ACQ: 19Mar64   ENCL: 00

SUB CODE: CH   NO REF SOV: 004   OTHER: 003

L 4450-66 EWP(e)/EWT(m)/EPF(c)/EWP(i)/EWP(t)/EWP(b) DIAAP/IJP(c) JD/JW/DM

ACC NR: AP5028435 SOURCE CODE: UR/0089/65/019/001/0020/0024

43
41
B

AUTHOR: Amirkhanova, I. B.; Borisov, A. V.; Gverdtsiteli, I. G.; Karamyan, A. T.

ORG: none

TITLE: Relative difference of vapor pressure in sup 11 BF sub 3 - sup 10 BF sub 3

SOURCE: Atomnaya energiya, v. 19, no. 1, 1965, 20-24

TOPIC TAGS: differential calculus, vapor pressure, difference method, solution property, radioisotope, boron, fluoride, radiation chemistry

19 27

ABSTRACT: The relative differences of vapor pressures of the isotopic molecules $^{11}BF_3$ and $^{10}BF_3$ at temperatures of 147 to 247.7°K were measured by a differential method. The coefficient of enrichment is reduced from 20×10^{-3} (147.0°K) to 1.1×10^{-3} (247.7°K). Within the limits of error of the experiment (2 to 4%), the liquids of the $^{11}BF_3$-$^{10}BF_3$ solutions are ideal. In the measured interval of temperatures corrections to the coefficient of enrichment associated with the nonideality of the gas phase are calculated. Data obtained in the presence of other parameters of the process of fractionation of BF_3 (the height of the theoretical plate, the throughput of the adapter, etc.) allow the efficiency of the process of separation of $^{11}BF_3$ and $^{10}BF_3$ at various pressures to be calculated. G. L. Kakuliya participated in taking the measurements. The mass spectrometer measurements were made by L. I. Chernovaya under the direction of K. G. Ordzhonikidze. The authors express thanks to Yu. V. Nikolayev.

UDC: 621.039.332/546.27

Card 1/2

L 4450-66

ACC NR: AP5028435

2

V. V. Boyko, and N. Ye. Menabde for participation in discussion of the work. Orig. art. has: 4 figures, 4 formulas. [NA]

SUB CODE: NP, TD, GC, MA / SUBM DATE: 01Jul64 / ORIG REF: 008 / OTH REF: 003

PC

Card 2/2

Ca

10

The addition of hydrogen to acetylene derivatives. XXXI. Catalytic hydrogenation of acetylene γ-glycols containing cyclopentyl radicals. Yu. S. Zal'kind and I. M. Gverdtsitch. *J. Gen. Chem.* (U. S. S. R.) 9, 855-62 (1939); cf. *C. A.* 33, 4195³.—To (⫶CMgBr)₂, prepd. from 12 g. Mg, 55 g. EtBr and CH⫶CH, there is added 42 g. cyclopentanone while cooling and stirring. After 24 hrs. the mixt. is decompd. and the reaction product extd. with Et_2O. The residue from Et_2O gives bis(1-hydroxycyclopentyl)acetylene (I), m. 109.8-10.8°, in 45.2% yield. I yields acetylene on warming with 40% KOH soln. and gives a violet color with concd. H_2SO_4. It is slightly sol. in C_6H_6, rather sol. in alc. and Et_2O. The filtrate from I gives 1-ethynyl-1-hydroxycyclopentane, b. 145-50°. I in alc. contg. colloidal Pd is hydrogenated to bis(1-hydroxycyclopentyl)ethylene (II) which is obtained in 2 isomeric forms, m. 129.6-30.6° (III) and 82-3° (IV), resp. Both isomers give a bright-violet color with H_2SO_4. 1,2-Bis-(1-hydroxycyclopentyl)ethane (V), m. 131.2-1.4°, is obtained from I on hydrogenation in the presence of Pt. III and IV yield the γ-oxide, m. 81-2°, on heating with a crystal of I; it is also obtained on warming III with H_2SO_4. The diacetate of I, m. 44.5-5.5°, prepd. by heating 12 g. I, 36.5 g. Ac_2O and 1 g. NaOAc, is easily sol. in alc., Et_2O, ligroin and MeOH and yields on hydrogenation in the presence of colloidal Pd the diacetate of V, b_7 108-10° (partial decompn.), d^{16} 1.0084, n_D^{16} 1.47507. When the hydrogenation is stopped after the addn. of 2 atoms H, the diacetate of II is obtained, b_7 126.5-9° (partial decompn.), d^{12} 1.072. To EtMgBr prepd. from 24 g. Mg and 110 g. EtBr is added in small portions 42 g. dimethylethynylcarbinol within 1.5 hrs. while cooling and stirring. The mixt. is heated for 15 min. and allowed to stand for 2-3 hrs. Then 42 g. cyclopentanone is added slowly while cooling. After 24 hrs. the mixt. is heated with moist Et_2O. The residue from Et_2O is distd. with steam, and the residue from the steam distn. is extd. with Et_2O. After evapn. of the Et_2O dimethyl(1-hydroxycyclopentylethynyl)carbinol (VI) m. 56-8°, b_4 123-6°, is obtained, which is easily sol. in org. solvents. Hydrogenation of VI in the presence of colloidal Pd gives dimethyl 1-hydroxycyclopentylvinyl carbinol, m. 89-90°. G. B.

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

Synthesis of glycols of the biacetylene series. Yu. S. Zal'kind and I. M. Gverdtsiteli. *J. Gen. Chem.* (U. S. S. R.) 9, 971-4(1939); cf. *C. A.* 31, 4283². The previously described method for the synthesis of biacetylene glycols was used in the prepn. of *bis(1-hydroxycyclopentyl)biacetylene* (I), m. 133.2-4.2°, from 1-hydroxycyclopentylacetylene. The yield was almost quant. I, hydrogenated in the presence of Pt black, added 8 H atoms, forming *1,4-di(1-hydroxycyclopentyl)butane*, m. 91.8-92.8°. In the presence of colloidal Pd, the hydrogenation after addn. of 4 H atoms proceeded very slowly. Stopping the reaction at this stage yielded, probably, *1,4-di(1-hydroxycyclopentyl)-1,3-butadiene*, m. 101-4°. The application of this reaction to the synthesis of biacetylene derivs. of OH compds., using secondary acetylene alcs., was also investigated. For this purpose, the following alcs. were prepd. by the Iotsitch and Ivanova method (cf. *C. A.* 31, 8580) from the corresponding aldehydes, BrMgC:CMgBr and alc.: *1-butyn-3-ol*, b. 107-9°; *1-pentyn-3-ol*, b. 121-6°, d^{20} 0.8851, n^{20}_D 1.43447, MR_D 24.74; *1-hexyn-3-ol*, b. 140-1°, d^{20} 0.8704, n^{20}_D 1.43207, MR_D 29.38, and *phenylethynylcarbinol*, PhCH(OH)C:CH, b_{10} 114-15°, d^{20} 1.0215, n^{20}_D 1.5291, MR_D 40.815. In all cases the yield was 20-30% (theory). The condensation of these alcs. yielded, in very small amts.: *3,5-octadiyne-2,7-diol*, in 2 isomeric forms, m. 107-9° and 67-9°; *4,6-decadiyne-3,8-diol*, $[MeCH_2CH(OH)C:C]_2$, b_2 154-8°; *5,7-dodecadiyne-4,9-diol*, $[MeCH_2CH_2CH(OH)C:C]_2$, b_2 150-62°; and *1,6-diphenyl-2,4-hexadiyne-1,6-diol*, $[PhCH(OH)C:C]_2$, m. 132-3°. The condensation probably proceeded through the formation of free radicals by removal of a H atom with subsequent condensation of free radicals. The formation of free radicals in the case of secondary alcs. is retarded because the pos. inductive effect of Me group, which promotes this process, is balanced by the neg. effect of OH, whereas in the case of tertiary alcs. the effect of 2 Me groups is only partially balanced by 1 OH group. This explains the low yields of biacetylene derivs. of OH compds. A. A. Podgorny

1ST AND 2ND ORDERS

PROCESSES AND PROPERTIES INDEX

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Synthesis of an α-glycol of the acetylene series (1,2-diphenyl-3-butyne-1,2-diol). I. M. Gverdtsiteli. *Zhur. Obshchei Khim.* (J. Gen. Chem.) 18, 1187-8(1948).—To the BrMgC:CMgBr from 24 g. Mg, 110 g. EtBr, and C_2H_2 in Et_2O was added 10 g. powd. benzoin and the stirred mixt. warmed occasionally on a steam bath over 72 hrs. and treated with moist Et_2O, then with water acidified with H_2SO_4, giving 80% *1,2-diphenyl-3-butyne-1,2-diol*, m. 112-13° (from petr. ether), as well as a small amt. of a stereoisomer, m. 64-6°. G. M. Kosolapoff

Lab. Org. Chem., Tbilisi State U.

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

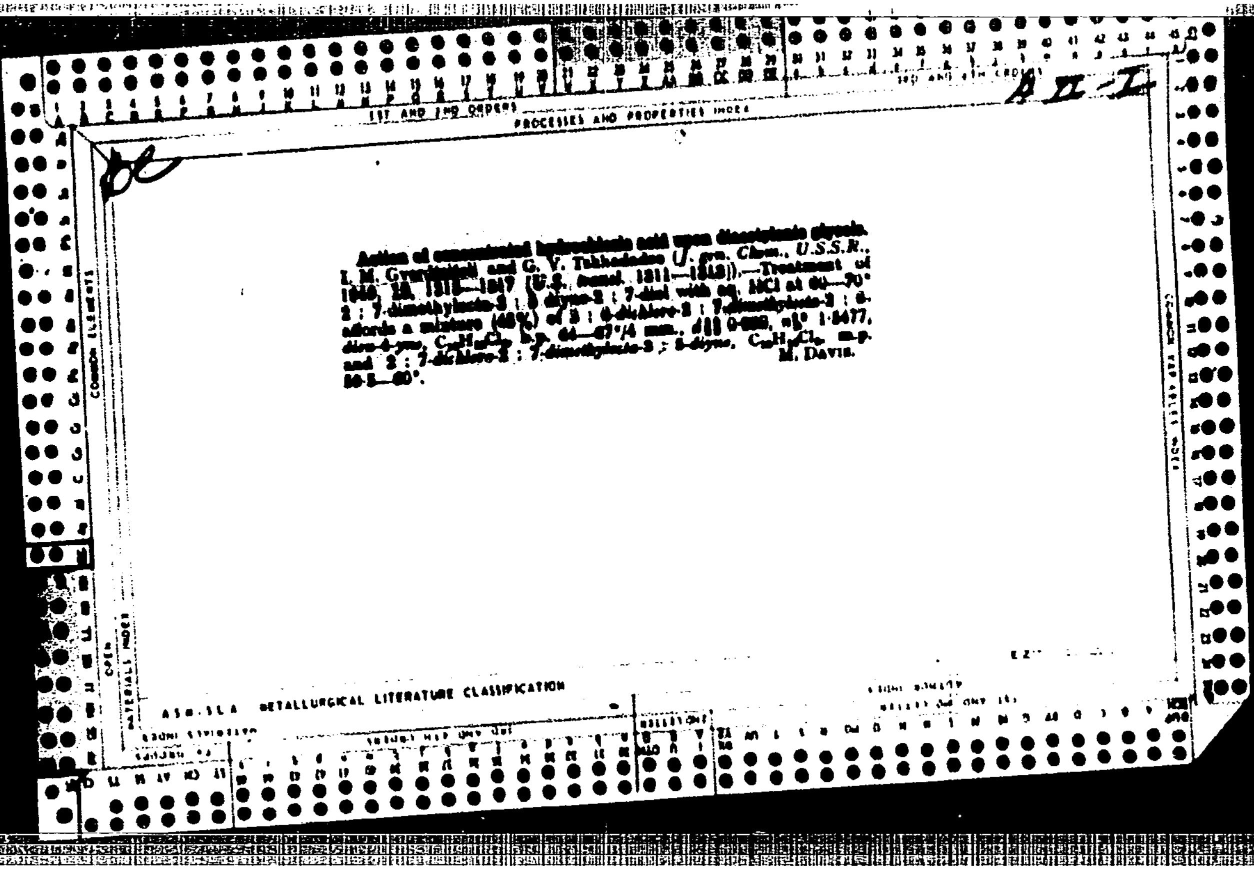
PROCESSES AND PROPERTIES INDEX

10

CA

Synthesis of vinylpropargyl alcohol. I. M. Gverdtsiteli. *Doklady Akad. Nauk S.S.S.R.* 60, 57-8(1948).—CH_2:CHC:CH and CH_2O were condensed on a Cu-Bi salt catalyst on silica gel by the method of Reppe (C.A. 40, 2085) but at somewhat higher pressure (unstated conditions). After filtration of the Et_2O ext. of the catalyzate, distn. gave 38.4% *vinylpropargyl alcohol*, b_{10-11} 55-8°, d_4^{20} 0.9508, n_D^{20} 1.4988. Small amts. of unidentified by-products are obtained, as well as 28.5% tar, which appears to be a polymer of the vinylpropargyl alc. G. M. K.

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION



Action of concentrated hydrochloric acid upon diacetylenic glycols. I. M. Gverdtsiteli and G. V. Tskhakaia (*J. gen. Chem., U.S.S.R.*, 1948, 18, 1311—1317 (U.S. transl. 1311—1318)).—Treatment of 2 : 7-dimethylocta-3 : 5-diyne-2 : 7-diol with aq. HCl at 60—70° affords a mixture (48%) of 2 : 6-dichloro-2 : 7-dimethylocta-2 : 6-dien-4-yne, $C_{10}H_{14}Cl_2$, b.p. 64—67°/4 mm., d_4^{20} 0·999, n_D^{20} 1·5477, and 2 : 7-dichloro-2 : 7-dimethylocta-3 : 5-diyne, $C_{10}H_{14}Cl_2$, m.p. 59·5—60°.

M. Davis.

Addition of hydrogen to acetylene derivatives. Catalytic hydrogenation of methylethyl(1-hydroxycyclopentylethynyl)carbinol. I. M. Gverdtsiteli and N. G. Patarava. *Zhur. Obshchei Khim.* (J. Gen. Chem.) 19, 1179-82(1949).—MeEt(HC:C)COH (23 g.) added to EtMgBr (from 55 g. EtBr) in Et_2O with cooling, followed by 20 min. on a steam bath and standing 3-4 hrs., then addn. with cooling of 27 g. cyclopentanone over 2 hrs. and standing overnight, with decompn. by moist Et_2O, gave 43.7% *methylethyl(1-hydroxycyclopentylethynyl)carbinol*, m. 50-2°, purified by removal of traces of an acetylenic alc. by steam distn. Hydrogenation of 1.82 g. with 10 mg. Pd (on starch) in H_2O is 96-8% complete in 6-9 min., with addn. of 4 H; the rate is somewhat slower than that of tetramethylbutynediol; further addn. of H is much slower after addn. of 2H; use of Pt black leads to a continuous addn. without a rate break at 2H addn. The adduct of 2H addn., *methylethyl[2-(1-hydroxycyclopentyl)vinyl]carbinol*, m. 54-6° (from C_6H_6); the *satd. analog* m. 52-4°. G. M. Kosolapoff

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CA

The addition of hydrogen to acetylene derivatives. The catalytic hydrogenation of methylethyl(1-hydroxycyclopentylethynyl)carbinol. I. M. Gverdtsiteli and N. G. Pataraya (J. V. Stalin Tbilisi State Univ.). *J. Gen. Chem. U.S.S.R.* 19, 1481-4(1949)(Engl. translation). See C.A. 44, 1038e. H. L. M.

1151

Synthesis of vinylethynylcarbinols. I. M. Gverdtsiteli (I. V. Stalin State Univ., Tiflis). *Doklady Akad. Nauk S.S.S.R.* **72**, 891-3(1950).—Although the reaction of $CH_2:CHC:CH$ (I) with KOH and ketones readily yields tertiary vinylethynylcarbinols, the reaction cannot be used with aldehydes because of resinification. However, the Reppe reaction may serve to yield the secondary carbinols satisfactorily (*C.A.* **42**, 6738h), although the yields decline as the size of the aldehyde increases. The Reppe reaction with AcH and I, under somewhat modified conditions (these are not described; for Reppe reaction cf. *C.A.* **40**, 2985^9) gave, after sepn. of the catalyst and extn. with Et_2O, some solid polymer of I and 32.2% *ethynylmethylvinylcarbinol*, b_4 49-52°, d_4^{20} 0.8832, n_D^{20} 1.4832. PrCHO similarly gave 21.22% *ethynylpropylvinylcarbinol*, b_{12} 76-8°, d_4^{20} 0.905, n_D^{20} 1.4780. BzH gave 6.3% *ethynylphenylvinylcarbinol*, b_4 102-3°, d_4^{20} 1.0387, n_D^{20} 1.5655. All distns. are done in a N atm. G. M. K.

GVERDTSITEL, I. M. Dr. Chemical Sci.

"Synthesis and Properties of Acetylenic Alcohols, Acetylenic and Di-Acetylenic Glycols." Sub 5 Apr 51, Inst of Organic Chemistry, Acad Sci USSR.

Dissertations presented for science and engineering degrees in Moscow during 1951.

SO: Sum. No. 480, 9 May 55

CA

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Addition of hydrogen to acetylenic derivatives. Catalytic hydrogenation of 1,4-di-(*o*-cumyl)-2-butyne-1,4-diol. I. M. Gverdtsiteli and Sh. G. Mikadze (I. V. Stalin State Univ., Tbilissi). *Zhur. Obshchei Khim.* (J. Gen. Chem.) 21, 1476-9 (1951).—To the Grignard reagent from 8 g. Mg, 37 g. EtBr, and C_6H_6 was added 30 g. *o*-iso-PrC_6H_4CHO and the mixt. worked up after 72 hrs., yielding 36.8% (*o-iso-*$PrC_6H_4CH(OH)C:)_2$, m. 117.5-19.0° (from petr. ether). Its hydrogenation over Pd-on-starch is much slower than that of $[PhCH(OH)C:]_2$ or *sym*-$[MePhC(OH)C:]_2$; the rate, however, increases with increased amts. of the catalyst. After addn of 2 H there was isolated the *olefinic analog*, m. 123-5° (from petr. ether). Hydrogenation over Pt is rapid and no pronounced rate change is observed after the addn. of 2 H, and the final product is the *satd. analog*, m. 103-5° G. M. Kosolapoff

← Lab. Org. Chem.

1952

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CA

The addition of hydrogen to an acetylenic derivative. Catalytic hydrogenation of 1,4-di(*o*-cumyl)-2-butyne-1,4-diol. I. M. Gverdtsiteli and Sh. G. Mikadze. *J. Gen. Chem. U.S.S.R.* 21, 1609-11(1951)(Engl. translation).—See *C.A.* 46, 2993*e*. R R

GVERDTSITELI, I.M.; MIKADZE, SH. G.

Addition of hydrogen to acetylenic compounds. The rate of hydrogenation of 1,4-butynediol and its acetate. Zhur. Obshchey Khim. 22, 1401-5 '52. (MLRA 5:8)
(CA 47 no.13:6338 '53)

1. Tiflisskiy gosudarstvennyy universitet.

GVERDTSITELI, I. M.

Chem ②

Chemical Abst.
Vol. 48 No. 5
Mar. 10, 1954
Organic Chemistry

Addition of hydrogen to acetylenic compounds. The rate of hydrogenation of 1,4-butynediol and its acetate. I. M. Gverdtsiteli and Sh. G. Mikadze. *J. Gen. Chem. U.S.S.R.* 22, 1145-8(1952)(Engl. translation). See *C.A.* 47, 6338f.
H. L. H.

GVERDTSITELI, I. M.

5

CZECH

Addition of hydrogen to acetylenic derivatives. Catalytic hydrogenation of tetrapropylhexadiynediol. I. M. Gverdtsiteli and Sh. G. Mikadze (I. V. Stalin State Univ., Tiflis). *Sbornik Statei Obshchei Khim.* 2, 952-5(1953).—Passage of C_2H_2 at −10° into 108 g. KOH and 300 ml. Et_2O with addn. of 65 g. Pr_2CO gave, after the usual treatment, 3 g. $[Pr_2C(OH)C:]_2$ (I), m. 125°, and an unstated yield of $Pr_2C(OH)C:CH$, b_{11} 74°, n^{20}_D 1.4481, d^{20}_4 0.8730. The latter (35 g.) added slowly to 35.9 g. $CuCl_2$, 105 g. NH_4Cl, 350 ml. H_2O, and 1 ml. concd. HCl at 50-60° with air blowing, gave in 5 hrs. 60% $[Pr_2C(OH)C:C]_2$, m. 123-3.5°. Hydrogenation of this over Pd gave the *diene analog*, m. 111-15°, while hydrogenation over Pt black gave the *satd. analog*, m. 88-9°. Over Pd the reaction is more rapid than is that of I, although it is slower than that of the tetra-Me or sym. dimethyldiethyl analogs. In the diynediols the hydrogenation curve does not show a break after partial satn. (cf. *C.A.* 33, 8569). G. M. Kosolapoff

GVERDTSITELI, I. M.

USSR.

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Catalytic hydrogenation of acetylenic glycols. [Catalytic] hydrogenation of tetrapropylbutynediol and bis(1-hydroxycycloheptyl)acetylene. I. M. Gverdtsiteli, Sh. G. Mikadze, and T. D. Tsiklauri (T. V. Stalin State Univ., Tbilisi). *Sbornik Statei Obshchei Khim.* 2, 950-6 (1953); cf. C.A. 34, 387°.—Passage of C_2H_2 at 5-10° into 51 g. powd. KOH and 200 ml. Et_2O while 50 g. cycloheptanone was being added to the mixt. over 10 hrs. gave after the usual aq. treatment 12.3% 1-ethynyl-1-hydroxycycloheptane, b_{14} 78-9°, d_4^{20} 0.860, n_D^{20} 1.4121, along with 23.5 g. [(*CH₂CH₂CH₂*)₂*C*(*OH*)C:]₂, b. 152-4°, m. 78-80°. Hydrogenation of this diol over Pd on starch gave the *ethylene analog*, b. 164-5°, d_4^{20} 0.8973, n_D^{20} 1.400, while hydrogenation over Pt black gave the *satd. analog*, b. 154-6°, d_4^{20} 0.8620, n_D^{20} 1.4688. Hydrogenation of [*Pr₂C*(*OH*)*C*:]₂ over Pd gave 20% *ethylene analog*, m. 116-17.5°, and 50% *stereoisomer*, m. 81-2.5°. Hydrogenation over Pt black gave the pure satd. *analog*, m. 89-91°. The tetra-Pr glycol hydrogenates at a much slower rate than does the cycloheptyl deriv.

G. M. Kosolapoff

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CZECH

Catalytic hydrogenation of acetylenic glycols. The rate of hydrogenation of 2,2,3,6,7,7-hexamethyl-4-octyne-3,6-diol and 2,5,6,6-tetramethyl-3-heptyne-2,5-diol. I. M. Gverdtsiteli and Sh. G. Mikadze (I. V. Stalin State Univ., Tiflis). *Sbornik Statei Obshchei Khim.* 2, 930-2(1953).—Hydrogenation of $[:CCMe(OH)CMe_3]_2$, m. 78-80°, over Pd gave the dihydro deriv. (*ethylene analog*), m. 39.5-41.5°. Addn. of 22 g. $Me_2C(OH)C:CH$ to 60 g. powd. KOH in 200 ml. Et_2O gave after 3 days at room temp. 48% $Me_3CCMe(OH)C:CC(OH)Me_2$, m. 76-7° (from ligroine), hydrogenated over Pd to the *ethylene analog*, b_{11} 128-9°, d_{20}^{20} 0.9147, n_D^{20} 1.4028. Hydrogenation over Pt black showed no breaks during the reaction and yielded the *ethane analog*, b_{17} 130-1°, d_{20}^{20} 0.9307. Introduction of a Me_3C group in place of a Me group in acetylenic glycols reduces the rate of hydrogenation.

G. M. Kosolapoff

GVERDTSITELI, I. M.

Chemical Abstracts
May 25, 1954
Organic Chemistry

Mechanism of the Favorskii reaction. I. M. Gverdtsiteli and Sh. G. Mikadze (I. V. Stalin State Univ., Tiflis). *Doklady Akad. Nauk S.S.S.R.* 89, 861–4(1953); cf. Petrov and Mitrofanova, *C.A.* 43, 509*f*; 44, 6388*g*.—The Favorskii reaction of C_2H_2 with carbonyl compds. in the presence of KOH proceeds as follows: the 1st step is the formation of KC:CH, which at low temp. adds across the CO group of the ketone and the product on hydrolysis yields the acetylenic alc. The acetylenic glycols occur through formation of C_2K_2 which adds to 2 moles of the ketone at elevated temp. To 10 g. powd. KOH were added dropwise 5 g. CH:CC(OH)Me_2 (temp. rise to 60° occurred) and after 5 min., 12 g. Me_2CO all at once (temp. rise to 85°); the mixt. solidified and after 15 min. was treated with H_2O and extd. with Et_2O, yielding 18% tetramethylbutynediol, m. 93–4°. For the prepn. of γ-acetylenic glycols the following procedure was used: a slow stream of C_2H_2 (2–3 fold excess) was passed into 3 moles powd. KOH at 70–80°, 1 mole ketone added, and the mixt. treated after 5–10 min. with H_2O and extd. with Et_2O. Me_2CO gave 30–40% tetramethylbutynediol, m. 94–5°; CH:CC(OH)Me_2 gave 3–10% of the same glycol; MeEtCO gave 80–90% dimethyldiethylbutynediol, m. 54–5°; iso-Pr_2CO gave 61% tetraisopropylbutynediol, m. 106–7°; cyclohexanone gave 80–90% corresponding acetylenic diol, m. 101–2° (if only a theoretical amt. of C_2H_2 is used, the yield is 70–80%).

G. M. Kosolapoff

36929

S/081/62/000/007/013/033
B156/B101

5.3700

AUTHORS: Petrov, A. D.; Gverdtsiteli, I. M., Cherkezishvili, K. M.

TITLE: Action of triethyl silane on vinyl ethinyl carbinols

PERIODICAL: Referativnyy zhurnal. Khimiya, no. 7, 1962, 274, abstract 7Zh348 (Tr. Tbilissk. un-ta, v. 74, 1959, 121-125)

TEXT: The synthesis of $RR'C(OH)C[Si(C_2H_5)_3]=CHCH=CH_2$ by adding $(C_2H_5)_3SiH$ (II) to $RR'C(OH)C \equiv CCH=CH_2$ (IIIa-e) in the presence of Pt/C is described. (Ia-e; here and later (a) R = R' = CH_3; (b) R = CH_3, R' = C_2H_5; (c) R = CH_3, R' = H; (d) R = n-C_3H_7, R' = H; (e) R + R' = cyclohexylidene). A mixture of 36 g of IIIa, 38 g of II, and 0.2 g of Pt/C is heated for 20 hrs at 97-98°C, and Ia separated from the filtrate (the figures given here and later for the substances produced are: yield in percent, boiling point in °C/mm Hg, $n^{20}D$, and d_4^{20}): 27, 98-99/3, 1.4850, 0.8880. From 27 g of IIIb, 25 g of II, and 0.2 g of Pt/C,

Card 1/2

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B101/B110

11.1340

AUTHORS: Gverdtsiteli, I. M., Mikadze, Sh. G.

TITLE: Dehydration of glycols of the diacetylene series. Dehydration of 2,7-dimethyl-octadiin-3,5-diol-2,7

PERIODICAL: Referativnyy zhurnal. Khimiya, no. 6, 1962, 176, abstract 6Zh34 (Tr. Tbilissk. un-ta, v. 74, 1959, 173 - 179)

TEXT: 2,7-dimethyl-octadien-1,7-diin-3,5 (I) is obtained by heating (2 hr, bath temperature 160 - 170°C) 10 g of 2,7-dimethyl-octadiin-3,5-diol-2,7 with 1 g of P_2O_5 in 60 ml of benzene in a Dean Stark apparatus, yield 20 - 25 %, b. p. 57 - 58°C/3 mm Hg, n_D^{20} 1.5700, d_4^{20} 0.8463. After long standing (10 to 15 days), I forms a polymer which on contacting a glass rod ignites explosively. 2,7-dimethyl octane, b.p. 154 - 155°C/726 mm Hg, n_D^{18} 1.4110, d_4^{20} 0.7304, is obtained by complete hydration of 2.6 g I in 50 ml CH_3OH over platinum black. [Abstracter's note: Complete translation.]

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SOV/20-129-4-25/68

AUTHORS: Petrov, A. D., Corresponding Member AS USSR, Gverdtsiteli, I. M., Cherkezishvili, K. I.

TITLE: Interaction of Triethylsilane With Secondary and Tertiary Vinyl Ethinyl Carbinols in the Presence of H_2PtCl_6

PERIODICAL: Doklady Akademii nauk SSSR, 1959, Vol 129, Nr 4, pp 805-808 (USSR)

ABSTRACT: In the addition of hydrosilanes to olefines higher yields are obtained on platinized coal (pt/c) than by means of other catalysts and the side reactions of polymerization are suppressed more strongly. Higher yields are obtained also on the addition of methyl- and ethyl dichlorosilane to unsaturated compounds on pt/c, polymerization, however, takes place also in this case (A. D. Petrov, V. A. Ponomarenko et al, Ref 2). A. D. Petrov et al (Ref 3) investigated metals of the VIII group on various carriers in this respect. The catalysts investigated are classified into 2 groups: a) groups which favor the main reaction, b) groups which favor the side reaction. A new catalyst: 0.1 m-solution of $H_2PtCl_6 \cdot 6H_2O$ in isopropyl alcohol (Ref 4) shows an increased catalytic activity and makes possible the addition of hydride silanes to olefines

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67262

already at room temperature. The duration of reaction is shortened and the yield is increased. In the present paper the authors repeated the reactions mentioned in the title (Ref 5) using the new catalyst. In the latter case the reaction was completed at room temperature within 2 hours. The yield in tertiary vinyl ethinyl carbinols attains in this case 55-65% of the theoretically possible yield. The reaction with the secondary carbinols however proceeds according to another scheme (see Scheme) and an ether (II) is formed. A. D. Petrov et al. suspected already in 1953 (Ref 6) that the interaction between the Grignard reagent with acetylene alcohol and with R_3SiX may proceed in 2 directions (a) and (b). The authors proved however, (as was done also by I. A. Shikhiyev et al., Refs 8, 9) that for their experimental conditions only reaction (b) is concerned. In the present case it was found, however, that the reaction may proceed according to scheme (I) and to (II) according to the conditions and the state of carbinol and the catalyst. For the purpose of identifying the obtained organosilicon ether reaction (III) was carried out. All constants of this substance from the reactions (II) and (III) are in good agreement. Thus it may be maintained that the addition of

4

hydride silanes to the secondary vinyl acetylene alcohols may take place according to scheme (I) and (II). The type of reaction depends on the character of the catalyst and on the unsaturated initial compound. By dehydrogenating the produced organosilicon compounds with double bonds in an α- and γ-position with respect to the silicon atom and with a hydroxyl group in a β-position (by $KHSO_4$) trienes for the first time obtained in good yields. Table 1 shows the properties of all compounds obtained. There are 1 table and 9 references, 6 of which are Soviet.

4

ASSOCIATION: Tbilisskiy gosudarstvennyy universitet im. I. V. Stalina (Tbilisi State University imeni I. V. Stalin)

SUBMITTED: August 12, 1959

Card 3/3

GVERDTSITELI, I.M.; MIKHEYEV, I.P.; FIDLER, Kh.N.; ABASHIDZE, G.S.; KUBLASHVILI, M.V.; UGREKHELIDZE, D.Sh.

Technological processes for obtaining molding materials based on tung cake, Plast.massy no.11:49-50 '61. (MIRA 14:10)
(Tung nut) (Plastics)

43792

S/251/62/028/001/007/003
I032/I242

AUTHORS: Gverdtsiteli, I. M. and Fidler, Kh. N.

TITLE: The condensation of tunga press-cake with phenol and phenolic alcohols in the presence of various catalysts

PERIODICAL: Akademiya nauk gruzinskoy SSR. Soobshcheniya, v. 28, no. 1, 1962, 25-32

TEXT: The use of tunga press cake as a raw material for manufacture of thermoplastic and thermosetting resins is proposed. 73% of the dry matter of tunga press cake are constituted of proteins, cellulose, tunga oil and pentosans. Cellulose, lignin, oleostearinic acid amino acids and pentosans can give condensation products with phenol in the presence of sulfuric acid.

Cellulose is apparently hydrolyzed to d-glucose, pentosans to d-xylose and furfurol. The condensation of these products with phenol proceeds according to the formaldehyde-phenol condensation mechanism to yield linear polymers in the first stage of the process. These thermoplastic resins can be made to react further in an alkaline medium, with formaldehyde and phenolic alcohols, to give polymers with a lattice structure. Condensation with formaldehyde takes place at the free reactive points of the phenol rings. Tunga press-cake treated with lime yields calcium oleosterate and calcium salts of amino acids. Calcium oleosterate can be condensed with phenol; calcium salts of aminoacids can be condensed with formaldehyde. Further condensation of all

Card 1/2

The condensation of tunga press-cake with...

S/251/62/028/001/007/003
I032/I242

these products leads to the formation of linear and lattice-type polymers. Lignin too is soluble in alkalis. In an alkaline solution lignin probably acquires a linear structure in which phenolic hydroxides are set free. This it can be condensed with aldehydes. The yield of resin is higher than that obtained from comparable quantities of phenol and formaldehyde in a phenol-formaldehyde synthesis .A two stage process of manufacture is recommended: a) condensation to tunga press cake with phenol in the presence of salfuric acid; b) condensation of the thermoplastic resins and other components of the press-cake which did not react in the first stage, with formaldehyde and phenolic alcohols in an alkaline medium.

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ASSOCIATION: Nauchno issledovatelskiy institut promstroymaterialov, Soviet Narodinovo Khosyaystva GSSR, Tbilisi (Scientific Research Institute. Industrial and Building Materials, National Economic Council GSSR, Tiflis

PRESENTED: by Kometiani, P. A., Academician

SUBMITTED: March 20, 1960

Card 2/2

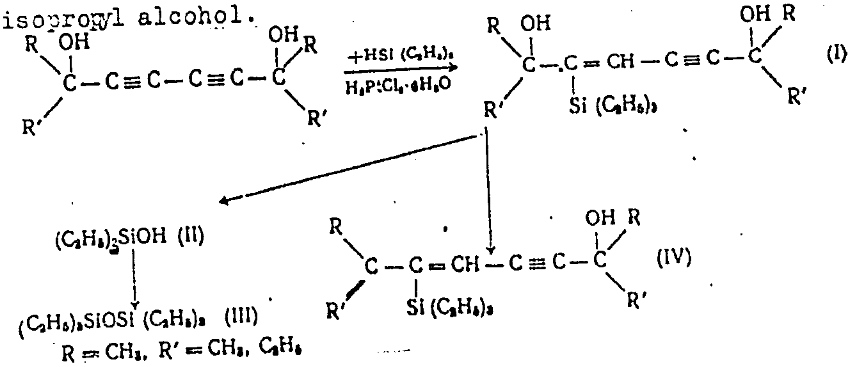
S/020/62/145/004/016/024
B144/B101

AUTHORS: Gverdtsiteli, I. M., and Doksopulo, T. P.

TITLE: Effect of triethyl silane on diacetylene glycols in the presence of H_2PtCl_6

PERIODICAL: Akademiya nauk SSSR. Doklady, v. 145, no. 4, 1962, 789 - 792

TEXT: Triethyl silane was made to react with 2,7-dimethyl-3,5-octadiine-diol-2,7 and 3,8-dimethyl-4,6-decadiine-diol-3,8 in the presence of $H_2PtCl_6 \cdot 6H_2O$ in isopropyl alcohol.



(I)

(IV)

R = CH_3, R' = CH_3, C_2H_5

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Effect of triethyl silane on diacetylene ... S/020/62/145/004/016/024
B144/B101

II forms by β-decomposition of I and yields III; IV is obtained by dehydration with $KHSO_4$ (yields 19 - 24 %). The addition of triethyl silane to one tertiary bond was deduced from the difference between the parameters of these reaction products and those obtained when the same initial substances are brought into reaction with triethyl chlorosilanes in a pyridine medium (addition to the OH-group). The stability of the Si-containing vinyl ethiryl glycols obtained suggests that the β-decomposition as well as the dehydration take place in the presence of H_2PtCl_6 or of its reduction products ($PtCl_4$, $PtCl_2$). The b.p. (°C/mm Hg), n_D^{20}, and d_4^{20} of the obtained compounds are: 2,7-dimethyl-3-triethylsilyl-octen-3-yn-5-ol-7:121/2, 1.4890, 0.9225; 2,7-dimethyl-3-triethylsilyl-octadien-1,3-yn-5-ol-7:114/3, 1.5002, 0.9072; 2,7-dimethyl-3-triethylsilyl-octatrien-1,3,7-yne-5:96/3, 1.4976, 0.8799; 1-ethyl-7-methyl-3-triethylsilyl-octen-3-yne-5-diol-3,7:129/2, 1.4920, 0.9251; 3,8-dimethyl-4-triethylsilyl-decadien-2,4-yn-6-ol-8:122/2, 1.4920, 0.9043; 3,8-dimethyl-4-triethylsilyl-decatrien-2,4,8-yne-6:113/4, 1.5100, 0.8822; 2,7-dimethyl-2,7-ditriethylsiloxy-octadiyne-3,5:139/3, 1.4700, 0.8938; 2,7-dimethyl-2-tri-

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ethylsiloxy-octadiyn-3,5-ol-7:115/3, 1.4720, 0.9137; 3,8-dimethyl-3,8-ditriethylsiloxy-decadiyne-4,6:153/3, 1.4739, 0.8942; 3,8-dimethyl-3-triethylsiloxy-decadiyn-4,6-ol-8:136/3, 1.4790, 0.9170. There is 1 table.

ASSOCIATION: Tbilisskiy gosudarstvennyy universitet (Tbilisi State University)

PRESENTED: March 5, 1962, by A. N. Nesmeyanov, Academician

SUBMITTED: February 23, 1962

L 14269-63 EWP(j)/EPF(c)/EWT(m)/BDS ASD Pc-4/Pr-4 RM/WW

ACCESSION NR: AP3001509 S/0251/63/030/003/0289/0296

65
64

AUTHORS: Gverdtsiteli, I. M.; Doksopulo, T. P.

[redacted]

TITLE: Effect of triethylsilane on diacetylene glycols (Delivered by academician G. B. Tsitsishvili, 15Oct62)

SOURCE: AN GruzSSR.Soobshcheniya, v. 30, no. 3, 1963, 289-296

TOPIC TAGS: unsaturated organo-silane, functional group, glycol, vinyl-acetylene glycol

ABSTRACT: The reaction between triethylsilane and diacetylene glycols was conducted in a flask with a mechanical stirrer and reflex condenser, in the presence of chloroplatinic acid in isopropyl alcohol. The reaction proceeded instantaneously and energetically and was completed within 1-2 hours, then the mixture was fractionated in a vacuum at temperatures ranging from 34-175C, and the resulting fractions were analyzed. Besides synthesizing several new silica containing vinylacetylene glycols, the authors also studied the effect of methyl, ethyl, propyl, cyclopentil, and cyclohexyl radicals of diacetylene glycol homologues on the reaction with triethylsilane. It was found that the reaction generally resulted in the attachment of triethylsilane to one of the glycol triple bonds. The presence of

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ACCESSION NR: AP3001509

the methylisopropyl radical made it necessary to heat the mixture for one hour at 100C, as did the use of triethylchlorsilane. While the presence of cyclohexyl did not noticeably affect the standard reaction with diacetylene glycol, the reaction with the cyclopentil homologue was able to proceed in the presence of one-half of the catalyst requirement. Orig. art. has: 4 formulas and 1 table.

ASSOCIATION: Tbilisskiy gosudarstvenny"y universitet (Tbilisi State University)

SUBMITTED: 15Oct62	DATE ACQ: 14Jun63	ENCL: 00
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