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Country : RUMANIA
Category: Cultivated Plants. Grains.

Abs Jour: RZhBiol., No 22, 1958, No 100268

Author : Sandulescu, N.; Murafa, Nineta
Inst : State Agric. Station
Title : Cultivation of Corn at the Minastirea State Farm.

Orig Pub: Rev. gospod. agric. stat. 1958, No 2, 5-7.

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Aerodynamic characteristics of triangular wings in harmonic oscillating motion under supersonic conditions. p.711

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A125/A026

10.9010

AUTHOR: Săndulescu, Serban

TITLE: The Aerodynamic Characteristics of Polygonal Ailerons With Sonic Joints, Having a Harmonic Oscillation

PERIODICAL: Studii şi Cercetări de Mecanică Aplicată, 1960, No. 1, pp. 49-60

TEXT: The article deals with the oscillation motion of ailerons in the boundary case, when the OO^* joint is located in the Mach cone. Considering a nonpermanent supersonic motion, its potential $\Phi(x_1, x_2, x_3, t)$ satisfies in the hypothesis of small disturbances the equation (1). According to the Fourier theorem all oscillating motions can be obtained by adding some harmonic oscillations. In this case, the potential of the respective motion can be expressed by (2), and the equation (1) changes into (3). The author then considers a polygonal-shaped aileron with a harmonic oscillation of small pulsation around the OO^* joint (Fig. 1). In a previous paper (Ref. 2) he showed that the oscillating motion of the $OA_1A_3O^*$ surface can result by adding two harmonic oscillating motions having the same pulsation. He also established the expressions of the reduced vertical speed (4a) and (4b), the reduced potentials (5), and

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The Aerodynamic Characteristics of Polygonal Ailerons With Sonic Joints, Having a Harmonic Oscillation

the corresponding pressure coefficients (6a) and (6b). Based on these results, the author establishes the reduced axial speeds, the potentials of the conic motion and the partial aerodynamic coefficients of a polygonal aileron with subsonic leading edges; a polygonal aileron with supersonic leading edges and a triangular aileron. In case of a polygonal aileron with subsonic leading edge, and considering an oscillating motion of the OA_1A_2 surface (Fig. 2), the reduced axial speeds of the first and second homogeneous order are expressed by (7) and (8), the potential of the conic motion by (9) and the partial aerodynamic coefficients C_{z1}, C_{x1}, C_{l1}, and C_{m1}, by (10), (11), (12) and (13). In case of the oscillating motion of the $O^*A_3A_2$ surface, the reduced axial speeds are expressed by (14) and (15), the reduced potential of the conic motion by (16) and the partial coefficients by (17), (18) and (19). In case of a polygonal aileron with supersonic leading edge, the reduced axial speeds u^*_0 and u^*_1, and the reduced potential Φ^*_1 of the $O^*A_3A_2$ surface can be expressed by (14), (15) and (16). The partial aerodynamic coefficients are also the same since the C^*_p pressure coefficient does not change. The reduced axial speeds and the

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10.9010 also 1103,1327

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D256/D301

AUTHOR: Săndulescu, Şerban

TITLE: The aerodynamic characteristics of polygonal ailerons with a sonic hinge line having a harmonic oscillation

PERIODICAL: Studii şi cercetări de mecanică aplicată, no. 1, 1960, 49 - 60

TEXT: In the present article the author studies the harmonic oscillating motion of ailerons in a supersonic condition, when the OO' hinge line is located on the Mach cone. Considered is a non-permanent supersonic motion, the $\varphi(x_1, x_2, x_3, t)$ potential of which satisfies -- in the hypothesis of small disturbances -- Eq. (1)

$$-B^2 \frac{\partial^2 \varphi}{\partial x_1^2} + \frac{\partial^2 \varphi}{\partial x_2^2} + \frac{\partial^2 \varphi}{\partial x_3^2} = \frac{1}{a_\infty^2} \frac{\partial^2 \varphi}{\partial t^2} + 2U_\infty \frac{\partial^2 \varphi}{\partial x_1 \partial t} . \qquad (1)$$

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According to the Fourier theorem, all oscillating motions can be obtained by adding some harmonic oscillations. In this case, the potential of the respective motion may be expressed by

$$\varphi(x_1, x_2, x_3, t) = U_\infty e^{i(\omega t + k x_1)} \Phi(x_1, x_2, x_3), \quad (2) \qquad (2)$$

and Eq. (1) changes into

$$-B^2 \frac{\partial^2 \Phi}{\partial x_1^2} + \frac{\partial^2 \Phi}{\partial x_2^2} + \frac{\partial^2 \Phi}{\partial x_3^2} = \frac{\lambda^2}{h^2} \frac{1 + B^2}{B^2} \Phi . \qquad (3)$$

Since the pulsation of the motion is small, the second member of Eq. (3) may be neglected and the reduced potential may be determined by using the conventional methods of the permanent motion. The author then considers a polygonal-shaped aileron with a harmonic oscillation of small pulsation around the 00* hinge line, as shown in Fig. 1. In a previous work, E. Carafoli and Ş. Săndulescu

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(Ref. 2: Oscillations harmoniques des ailerons de forme générale en régime supersonique (Harmonic Oscillations of Generally Shaped Ailerons in a Supersonic Condition), Archivum Mechaniki Stosowanej, 6, 1958) showed that the oscillating motion of the $OA_1A_3O^*$ surface may result by adding two harmonic oscillating motions having the same pulsation, i.e. 1) a harmonic oscillating motion $\Omega_1 = \Omega_0 e^{i\omega t}$ of the OA_1A_2 surface around the OA_2 axis; and 2) a harmonic oscillating motion $\Omega_2 = \Omega_0 e^{i(\omega t+\pi)} = -\Omega_0 e^{i\omega t}$ of the $O^*A_3A_2$ surface around the fictive axis O^*A_2, located at the extension of the OO^* hinge line. Decomposing the harmonic oscillating motion into the components according to the coordinate axes, the reduced vertical speed in case of the oscillating motion of the OA_1A_2 surface may be expressed by:

$$\beta \approx -E_2 + i\frac{\lambda}{h}\left(E_1 x_2 - E_2 x_1 \frac{1+2B^2}{B^2}\right), \quad (4\text{ a}) \qquad (4a)$$

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and in case of the oscillating motion of the $O^*A_3A_2$ surface by

$$\beta^* \approx E_2 - i\frac{\lambda}{h}\left(E_1 x_2^* - E_2 x_1^* \frac{1+2B^2}{B^2}\right), \quad (4b) \qquad (4b)$$

In this situation, the reduced potentials have the following expressions:

$$\Phi \approx \Phi_1 + i\frac{\lambda}{h}\Phi_2, \quad \Phi^* \approx \Phi_1^* + i\frac{\lambda}{h}\Phi_2^*, \quad (5) \qquad (5)$$

thus, the problem of the harmonic oscillations against an axis is reduced to the study of two homogeneous motions of the first and second orders, the potentials of which satisfy Eq. (3) without the second member. The pressure coefficient of the first oscillating motion is given by:

$$C_p \approx -2e^{i\omega t}\left[\frac{\partial \Phi_1}{\partial x_1} - i\frac{\lambda}{h}\left(\frac{1}{B^2}\Phi_1 - \frac{\partial \Phi_2}{\partial x_1} + \frac{1+B^2}{B^2}x_1\frac{\partial \Phi_1}{\partial x_1}\right)\right], \quad (6a) \qquad (6a)$$

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and that of the second oscillating motion by:

$$C_p^* \approx -2e^{i\omega t}\left[\frac{\partial \Phi_1^*}{\partial x_1^*} - i\frac{\lambda}{h}\left(\frac{1}{B^2}\Phi_1^* - \frac{\partial \Phi_2^*}{\partial x_1^*} + \frac{1+B^2}{B^2}x_1^*\frac{\partial \Phi_1^*}{\partial x_1^*}\right)\right], \quad (6b) \qquad (6b)$$

On the basis of the above, the author then studies a polygonal aileron with subsonic leading edge, a polygonal aileron with supersonic leading edge and a triangular aileron. At the beginning of the article the author mentions all notations used in the article: $O\ x_1\ x_2\ x_3$ = the system of orthogonal coordinates to which the oscillating motion of the OA_1A_2 surface is referred, (first oscillating motion); $O^*x_1^*x_2^*x_3^*$ = the system of orthogonal coordinates to which the oscillating motion of the $O^*A_3A_2$ surface is referred (second oscillating motion); d = distance between the Ox_1 and O^*x_1 axes; U_∞ = speed of the nondisturbed stream; a_∞ = speed of the sound; M_∞ = Mach number of the nondisturbed stream; φ (x_1, x_2,

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x_3, t) = potential of the nonpermanent motion; $\Omega_1 = \Omega_0 e^{i\omega t}$ = = oscillating motion of the OA_1A_2 surface around the OA_2 axis; $\Omega_2 = -\Omega_0 e^{i\omega t}$ = oscillating motion of the $O^*A_3A_2$ surface around the O^*A_2 axis; $\Phi(x_1, x_2, x_3)$, $\Phi^*(x_1^*, x_2^*, x_3^*)$ = reduced potentials of the two oscillating motions; $\beta = \frac{\partial \Phi}{\partial x_3}$, $\beta^* = \frac{\partial \Phi^*}{\partial x_3^*}$ = reduced vertical speeds; $\Phi_1(x_1, x_2, x_3)$, $\Phi_1^*(x_1^*, x_2^*, x_3^*)\cdots$ = potentials of the homogeneous motion of the first order; $\Phi_2(x_1, x_2, x_3)$, $\Phi_2^*(x_1^*, x_2^*, x_3^*)$ = potentials of the homogeneous motion of the second order; $x = y + iz$ = auxiliary plane obtained from the Busemann plane $\xi = \eta + i\zeta$, by the transformation $Bx = \frac{2\xi}{1 + \xi^2}$; u_0, v_0, u_0^*, v_0^* = the reduced speeds of the homogeneous motion of the first order; u_1, u_1^*

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The aerodynamic characteristics ... D256/D301

= reduced axial speeds of the homogeneous motion of the second order; ω = pulsation of the two oscillating motions; $\lambda = \frac{\omega h}{U_\infty}$ = reduced pulsation; $k = -\frac{\lambda}{h}\frac{1+B^2}{B^2}, (B = \sqrt{M_\infty^2 - 1})$ = nondimensional coefficient; h = maximum chord of the aileron; C_p, C_p^* = pressure coefficients; l_1 = abscissa of the trace of the OA_1 leading edge in the $x = y + iz$ plane; l_3 = abscissa of the trace of the O^*A_3 edge in the $x^* = y^* + iz^*$ plane; $S_1 = OA_1A_2$ surface; $S^* = O^*A_3A_2$ surface; S = surface of the $OA_1A_3O^*$ aileron; $C_{za} = C_{z1} + C_z$ = total lift coefficient; $C_{z1} = -\frac{2}{S}\iint_{S_1} C_p\, d\sigma$ = partial lift coefficient of the OA_1A_2 surface; $C_z^* = -\frac{2}{S}\iint_{S^*} C_p^*\, d\sigma$ = partial lift coefficient of the $O^*A_3A_2$ surface; $C_{xa} = C_{xa}(\Theta_2 - \alpha_0) + C_{xa}'$ = resistance coefficient at the advanc-

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The aerodynamic characteristics ...

ing; α_0 = incidence of the wing; $\Theta_1 = E_1 e^{i\omega t}, (E_1 = \Omega_0 \cos\gamma)$ = harmonic oscillating motion around the Ox_1 axis; $\Theta_2 = E_2 e^{i\omega t}, (E_2 = -\Omega_0 \sin\gamma)$ = harmonic oscillating motion around the Ox_2 axis; $C_{x_s} = -S_c \cos\chi_1 / \frac{\rho}{2} S U_\infty^2$ = the component due to the suction force; S_c = suction force; M_{n1} = Mach number of the perpendicular component of the speed on the OA_1 leading edge; χ_1 = angle formed by the OA_1 leading edge with the Ox_2 axis; γ = angle formed by the OO^* hinge line with the Ox_2 axis; $C_{la} = C_{l1} + C_l^{\cdot} - \frac{d}{b_0} C_z^{\cdot}$ = rolling moment coefficient of the aileron taken against the Ox_1 axis; $C_{l1} = -\frac{2}{Sb_0} \iint_{S_1} C_p x_2 d\sigma$ = partial rolling moment coefficient of the OA_1A_2 surface in ratio with the Ox_1 axis;

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$C_l^* = -\frac{2}{Sb_0}\iint_{S^*} C_p^* x_2^* d\sigma$ = partial rolling moment coefficient of the $0^*A_3A_2$ surface in ratio with the $0^*x_1^*$ axis; $C_{mc} = C_{m1} + C_m^* - \left(1 - \frac{h^*}{h}\right) C_z^*$ = pitching moment coefficient taken in ratio with the axis which passes at 2/3 of the maximum chord of the aileron; $C_{m1} = -\frac{2}{hS}\iint_{S_1} C_p\left(\frac{2}{3}h - x_1\right) d\sigma$ = partial pitching moment coefficient of $0A_1A_2$ surface taken in ratio with an axis parallel to $0x_2$ which passes through a point located at 2/3 h; $C_m^* = -\frac{2}{hS}\iint_{S^*} C_p^*\left(\frac{2}{3}h^* - x_1^*\right) d\sigma$ = partial pitching moment coefficient of the $0^*A_3A_2$ surface taken in ratio with an axis parallel to $0^*x_2^*$ which passes through a point located at 2/3 h; $C_{mca} = C_{mc1} + C_{mc}^*$ = hinge moment coefficient; $C_{mc1} = \left[\left(\frac{2}{3} + \frac{C_{m1}}{C_{z1}}\right)\sin\gamma + \frac{b_0 C_{l1}}{h C_{z1}}\sin\gamma\right] C_{z1}$ = partial hinge moment coefficient

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20563

The aerodynamic characteristics ... R/008/60/000/001/002/009
D256/D301

of the OA_1A_2 surface; $C^*_{mc} = \left[\left(\frac{2}{3}\frac{h^*}{h} + \frac{C^*_m}{C^*_z}\right)\sin\gamma + \frac{b_0 C^*_l}{h C^*_z}\cos\gamma\right] C^*_z$ = partial hinge moment coefficient of the $O^*A_3A_2$ surface; b_0 = aileron span; h^* = chord of the $O^*A_3A_2$ surface; There are 3 figures and 3 references: 2 Soviet-bloc and 1 non-Soviet-bloc. The reference to the English-language publication reads as follows: John W. Miles, On Harmonic Motion on Supersonic Speeds, Journ. Aero. Sci. 16, 378, 1949.

SUBMITTED: June 19, 1959

Card 10/11

APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001447120004-8"

"APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001447120004-8

SANDULESCU, S.

"Tables of higher functions" by Iahnke-Emde. Reviewed by S. Sandulescu. Studii cerc mec apl 13 no.1:261 '62.

APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001447120004-8"

"APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001447120004-8

SANDULESCU, S.

"Studies on the flow; Physical foundations from the technical point of view. Vol. 1. Hydro- and aerostatics; flow of ideal fluids" by O. Tietjens. Reviewed by S. Sandulescu. Studii cerc mec apl 13 no.1:262. '62.

APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001447120004-8"

"APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001447120004-8

SANDULESCU, Serban; NASTASE-GHIA, Adrianna

Mixed problem of triangular wings in the conical motion of a higher order. Studii cerc mec apl 13 no.5:1099-1126 '62.

APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001447120004-8"

"APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001447120004-8

SANDULESCU, Serban, ing.

Problems caused by the re-entry of spacecraft into the atmosphere.
Rev transport 10 no.4:177-180 Ap '63.

APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001447120004-8"

"APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001447120004-8

SANDULESCU, Serban, ing.

Thermal protection of cosmic ships on their landing curves.
Rev transport 10 no. 7:326-330 Jl '63.

APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001447120004-8"

"APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001447120004-8

SANDULESCU, Spirea

With the help of the trade-union members. Munca sindic 6 no.5:18 My '62.

1. Casier al comitetului sindicatului Schela Moreni, Raionul Cimpina.

APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001447120004-8"

"APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001447120004-8

Sandulescu, St.

STOENESCU, V.
SURNAME (in caps); Given Names

7

Country: Rumania

Academic Degrees: Dr.

Affiliation: Institute of Pathology and Animal Hygiene (Institutul de Patologie si Igiena Animala)

Source: Bucharest, Probleme Zootehnice si Veterinare, No 5, 1961, pp 54-61.

Data: "Investigations on the Prevention and Combatting of Paratyphoid Fever in Birds."

Co-authors:

SANDULESCU, St., Veterinarian, Institute of Pathology and Animal Hygiene (Institutul de Patologie si Igiena Animala).
VIDR, C., Veterinarian, Institute of Pathology and Animal Hygiene (Institutul de Patologie si Igiena Animala).
RNACHE, A., Dr., Department of State Farms (Departamentul G.A.S.).

APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001447120004-8"

"APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001447120004-8

SANDULESCU, St.

Country: Rumania

Academic Degrees:

Affiliation: Institute of Pathology and Animal Hygiene (Institutul de Patologie si Igiena Animala).

Source: Bucharest, Probleme Zootehnice si Veterinare, Vol XI, No 9, Sep 1961, pp 40-49.

Data: "Experimental Studies on the Medical Drug Treatment of Paratyphoid in Chicks."

Authors:

STOENESCU, V., -Dr.-
SANDULESCU, St., -Veterinarian.-
VIOR, C., -Veterinarian.-

GPO 981643

APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001447120004-8"

"APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001447120004-8

SCHWARTZ, J.,; ELIAS, H.,; SPART, T.,; FRIEDMAN, I.,; DUMITRESCU, S.,; SAMUEL, I.,; SANDULESCU, T.

Strains of Coxsackie virus isolated from paralytic poliomyelitis patients in Bucharest. Stud. cercet. inframicrobiol., Bucur. 6 no. 1-2:51-54 Jan-June 55.

(POLIOMYELITIS, pathology
Coxsackie virus strains isolated from polio. patients in Bucharest)
(COXSACKIE VIRUSES
strains isolated from polio. patients in Bucharest)

APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001447120004-8"

"APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001447120004-8

SANDULESCU, T.

MOSCOVICI, O.; SAMUEL, J.; SCHWARTZ, J.; FRIEDMANN, I.; WIEGLER, R.; SANDULESCU, T.

Complement fixation test in diagnosis of mumps infections. Stud. cercet. inframicrobiol., Bucur. 8 no.3:387-393 1957.

(MUMPS, diagnosis
complement fixation test)
(COMPLEMENT
fixation test in diag. of mumps)

APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001447120004-8"

"APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001447120004-8

MARINESKU, G. [Marinescu, G.]; SHTARK, M. [Stark, M.]; TEYNDEL, K. [Teindel, K.]; KUCHURYANU, S. [Cuciureanu, S.]; STROYESKU, K. [Stroescu, C.]; SANDULESKU, T. [Sandulescu, T.]

Case of acute myopathy in influenza; recovery. Vop.virus. 7 no.6:739 N-D '62. (MIRA 16:4)

1. Virusologicheskiy institut Akademii nauk Rumynskoy Narodnoy Respubliki i Bukharestskaya klinika infektsionnykh bolezney.
(MUSCLES—DISEASES) (INFLUENZA)

APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001447120004-8"

"APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001447120004-8

Ca

22

The relation between the chemical composition and the quality of the petroleum for explosion motors. I. Properties and causes of the inferior qualities of Romanian lubricating oils. I. L. Blum and T. Sandulescu. *Bul. Chim. Soc. Române Chim.* 38, 37–50(1935–36).—Three oils were investigated after various periods of use up to 50 hrs. The d. increased slightly. Poor oils showed an appreciable increase in viscosity. The Conradson C residue of Romanian oils in use increased 2 to 3 times more rapidly than that of American oils. A good oil should have a C residue of 1. The oils showing the greatest consumption and corrosive action had the largest free C, and ash, and the greatest C residue and viscosity change on use. This contg. large amts. of unsatd. hydrocarbons had high d. Romanian oils contained appreciable amts. of unsatd. hydrocarbons, but when these were removed, the oils were as good as the American oils. **II. The improvement of mineral oil from Romanian crude oils.** *Ibid.* 61–75.—Romanian paraffin oils after 2 extns. with $PhNO_2$ were as good as American oils and the yields were high. The asphaltic oils were greatly improved by this treatment.

Joseph H. Wells

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001447120004-8"

"APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001447120004-8

SANDULESCU, T.

Considering the Problem of Determining the Utilization Limits and Exchange Periods of Lubricants. Revista De Chimie (Journal of Chemistry), #2:97:Feb 55

APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001447120004-8"

"APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001447120004-8

SANDULESCU, Th.

3

H U N G .

Determination of the useful life of lubricating oils. Th. Săndulescu and P. Pătrăscoiu. *Rev. Chim.* (Bucharest) 6, [illegible](1961).—Several equations for the prediction of the useful life of lubricating oils under certain conditions are presented, based on theoretical considerations and periodic analysis of oil in service. Gerard Auflegar

APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001447120004-8"

"APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001447120004-8

Determination of the [illegible] Teodor Săndulescu and Pavel Fătrăşanu. Petrol şi Gaze (Bucharest) 4, 185-95(1956)(German summary); cf. C.A. 49, 11993b.—New correlations are presented which make possible the prediction of the useful life of lubricating oil in service under a variety of conditions. Gary Gerard

APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001447120004-8"

"APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001447120004-8

RUMANIA/Chemical Technology - Chemical Products and Their Application - Treatment of Natural Gases and Petroleum. Motor and Rocket Fuels. Lubricants. H.

Abs Jour : Ref Zhur - Khimiya, No 9, 1958, 30195

Author : Sandulescu, T. and Patrascoiu, P..
Inst : -
Title : Determination of Oil Change Schedules

Orig Pub : Studii si cercetari chim, 5, No 1, 151-167 (1957) (in Rumanian with Summaries in French and Russian)

Abstract : The studies were made on type GAZ-51 automotive engines. A relationship of the type Y=A/l^k, where A and k are constants depending on the quality of oil used and on the type of engine, has been observed between the degree of deterioration of the oil (Y) and the distance covered by the car (l) [TN: actually operating time]. Y can be determined from the concentration of degradation products in the oil; the latter represents the sum of the

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"APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001447120004-8

SANDULESCU, Teodor, dr. ing.; STANESCU, Anton; NICULESCU, Stefan

Determining the oil consumption by combustion in internal combustion engines. Metalurgia constr mas 14 no.11:1034-1036 N '62.

1. Institutul de cercetari si prelucrare a petrolului.

APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001447120004-8"

"APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001447120004-8

BAZAVAN, I., ing.; SANDULESCU, Valeria, ing.; FAIBIS, Rozina, chimist [deceased]

Method to determine the solubility of water-soluble dyestuffs. Ind text Rum 13 no.6:226-228 Je '62.

1. Laboratorul central coloristic al Ministerului Industriei Petrolului si Chimiei.

APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001447120004-8"

"APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001447120004-8

CALIN, C.; SANDULESCU, Valeria

Determination of sulfur dyestuffs by bisulfitation. Rev chimie Min petr 13 no.11:690-692 N '62.

1. Laboratorul central coloristic.

APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001447120004-8"

"APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001447120004-8

CALIN, C., ing.; SANDULESCU, Valeria, ing.

Some methods for indentifying dyes of unknown structure. Ind text Rum 15 no.10:531-534 O '64.

1. Ministry of the Petroleum and Chemical Industry.

APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001447120004-8"

"APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001447120004-8

CALIN, C., ing.; SANDULESCU, Valeria, ing.; TIBREA, Eugenia, ing.

A new method for determining the solubility of dyes. Ind text Rum 15 no.11:590-594 N '64.

1. Coloristic Central Laboratory of the Ministry of the Petroleum and Chemical Industry.

APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001447120004-8"

"APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001447120004-8

L 64813-65 EWP(j) RM

ACCESSION NR: AP5023229

RU/0003/64/015/010/0624/0629

AUTHOR: Calin, C.; Sandulescu, Valeria

TITLE: Identification of some secondary dyes in the direct R black product (C.I. 30245)

SOURCE: Revista de chimie, v. 15, no. 10, 1964, 624-629

TOPIC TAGS: dye chemical

ABSTRACT: A study on the effect of "parasitic" secondary dyes which can be detected chromatographically. The authors show that the addition of up to 0.5 percent of the parasitic dyes does not change the resistance of the base dye, and that the addition of varying proportions of secondary dyes can be used to change the hue of the resulting color. Orig. art. has: 27 formulas, 2 tables.

ASSOCIATION: none

SUBMITTED: 00 ENCL: 00 SUB CODE: GC

NR REF SOV: 000 OTHER: 009 JPRS

Card 1/1

APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001447120004-8"

"APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001447120004-8

MARINESKU, G. [Marinescu, G.]; TEYNDEL', K.; PREDESKU, I.; SHTARK, M.; KONSTANTINESKU, M.; SANDULESKU, T.

Paralysis of the facial nerve in influenza. Vop. virus 6 no.4:509-510 Jl-Ag '61. (MIRA 14:11)

1. Virusologicheskiy institut Akademii Rumynskoy Narodnoy Respubliki i kliniki infektsionnykh bolezney "Kolentina", Bukharest.
(PARALYSIS, FACIAL) (INFLUENZA)

APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001447120004-8"

"APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001447120004-8

RUMANIA/Electronics - Electrical Discharger in Gases and Gas Discharge Apparatus. H.

Abs Jour : Ref Zhur - Fizika, No 7, 1959, 15922

Author : Mihul, C., Grosu, X., Grosu, D., Sandulouic, M.

Inst : University Al. I. Cuza, Rumania

Title : Voltage Installations Between the Electrodes of a dc Discharge in Nitrogen.

Orig Pub : An. stiint. Univ. Iasi., 1956, Sec. 1,2, No 1-2, 187-194

Abstract : Oscillations at a frequency of approximately 1 Mcs were observed at pressures of 0.2 and 0.5 mm mercury with anodes of diameters 1, 1.5, 2, and 12 mm. More stable oscillations occur in the case of the first three anodes. In the case of low pressures, 0.11 and 0.15 mm mercury, and also in the case of high pressures, 8.5 and 13 mm mercury, oscillations with frequency from several

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APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001447120004-8"

"APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001447120004-8

L 3080-66 EWT(m)/EPF(c)/T/EWP(t)/EWP(b)/EWA(c) IJP(c) JD/JG

ACCESSION NR: AP5024001 UR/0020/65/164/002/0323/0325

AUTHOR: Budnikov, P. P., (Corresponding member AN SSSR); Popov, N. M.; Sandulov, D. B.

TITLE: Use of the superhigh-voltage electron microscope for studying single-crystal whiskers of beryllium oxide

SOURCE: AN SSSR. Doklady, v. 164, no. 2, 1965, 323-325, and insert facing p. 307

TOPIC TAGS: beryllium, metal whisker, crystal growth

ABSTRACT: Filamentary crystals of beryllium oxide were grown by high-temperature oxidation of metallic beryllium in an argon atmosphere containing 0.01% N and 0.003% O_2. The moisture content of the argon was 0.03 g/m^3 at 760 mm Hg. The oxidation was done in a quartz glass vessel for 24 hours at 1450-1500°. A grayish white cottony mass was formed on the substrate in direct contact with the metallic beryllium. Microscopic analysis showed that this mass was made up of interwoven individual crystals of BeO from 1 to 10-15 mm in length. The grayish color was caused by the presence of small metal spheres on the ends of the filamentary crystals. In several cases, spiderlike formations were observed consisting of several whiskers attached

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"APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001447120004-8

L 3080-66

ACCESSION NR: AP5024001

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radially to a single sphere. A superhigh-voltage electron microscope with an accelerating voltage of 400 kv (electron energy of 557 kev) was used for identification of crystals, determination of the direction of growth and the diameter and for studies by transillumination. Calculations made from point electron-diffraction patterns show lattice parameters identical to those of beryllium oxide. The diameter of the BeO whiskers varies from hundredths of a micron to 4-5 μ. The diameter of the spheres on the ends of the crystals varies from 1 to a few dozen microns. The main direction of growth coincides with axes [000$\bar{1}$] and [10$\bar{1}$0]. Orig. art. has: 4 figures.

ASSOCIATION: Moskovskiy khimiko-tekhnicheskiy institut im. D. I. Mendeleyeva (Moscow Chemical Engineering Institute)

55

SUBMITTED: 02Jun65 ENCL: 00 SUB CODE: SS, OP

NO REF SOV: 002 OTHER: 003

Card 2/2

APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001447120004-8"

"APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001447120004-8

L 27397-66 EWP(e)/EWT(m)/T/EWP(t) IJP(c) JD/WH

ACC NR: AP6017667 SOURCE CODE: UR/0063/65/010/005/0506/0511

AUTHOR: Budnikov, P. P. (Academician AN SSSR); Sandulov, D. B.

ORG: none

18

72
B

TITLE: Filamentary monocrystals of refractory oxides and their applications

SOURCE: Vsesoyuznoye khimicheskoye obshchestvo. Zhurnal, v. 10, no. 5, 1965, 506-511

TOPIC TAGS: refractory oxide, single crystal strontium compound, molybdenum, zirconate, crystal growth, elastic deformation, polycrystal, aluminum oxide, cuprous oxide, beryllium, crystal growing, magnesium oxide

ABSTRACT: The high strength-to-weight properties shown by filamentary crystals (whiskers) of the most diverse materials - salts, oxides, and metals - afford grounds for anticipation that the filamentary crystals themselves or compositions based on them (metallic matrix - ceramic fiber; ceramic matrix - metallic fiber) will find broad applications in technology. Preliminary studies have shown that the introduction into a matrix of polycrystalline strontium zirconate of 20-30% molybdenum fiber, 50 microns in diameter and 1.6 mm in length, alters the strength modulus of the material from $1.4 \cdot 10^5$ kg/cm^2 for polycrystalline $SrZrO_3$ to $1.7 \cdot 10^6$ kg/cm^2 for the composition. At present there are quite

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UDC: 66.065.58+666.765

APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001447120004-8"

"APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001447120004-8

L 27397-66

ACC NR: AP6017667

a large number of methods of obtaining filamentary crystals: crystallization from the gaseous phase of melts, solutions, decomposition of certain compounds, oxidation of metals, splitting of massive crystals along twinning planes, etc. As a rule, filamentary crystals obtained by deposition from the gaseous phase have the most perfect surface and the best properties.

Filamentary crystals of aluminum oxide are obtained when volatile lower oxides of aluminum are deposited from the gaseous phase, with their subsequent oxidation to Al_2O_3. The methods by which these compounds are obtained basically are oxidation of metallic aluminum and its alloys in a hydrogen medium containing small amounts of oxygen and water, or their reduction in Al_2O_3 at high temperatures.

Filamentary crystals of beryllium have been obtained by the condensation of the substance on apices of a growing crystal when polycrystalline BeO is heated to 1600, 1800, and 1900°C on the floor of a graphite block in argon for 10 hours. The growing crystals are arranged on the inner wall of a lid 10-50°C hotter than the specimen. Crystals in the form of plates and rods are up to 5 mm in size, and the rodlike crystals grow in groups in the same direction, forming columnar outgrowths. Short hexagonal prisms are 100 x 100 microns in size.

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APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001447120004-8"

"APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001447120004-8

L 27397-66

ACC NR: AP6017667

Filamentary crystals of magnesium oxide have been obtained by heating a magnesium monocrystal in hydrogen, carbon dioxide, or mixtures of these gases at 1400 - 2100°K. A layer of thin filamentary monocrystals of magnesium oxide gradually envelopes the original monocrystal like a coccoon. It is assumed that the transfer of MgO passes through the gaseous phase.

Filamentary crystals of manganese oxide (MnO) of a high degree of perfection have been obtained when $MnCl_2$ is heated in a current of hydrogen for 1.5 hours at 900°C in a stainless tube. The crystal length varies from 0.5 to 5 mm.

Filamentary crystals of CuO grew spontaneously on copper on the surface (001) of annealed sheets (99.999% purity) as the result of oxidation in air (pressure of 760 mm Hg) at 300, 500, and 700°C; in which initially, a layer of CuO was formed; after which the growth of filamentary CuO crystals occurred. The most intense crystal growth was noted to 500°C and at a pressure of 760 mm Hg.

The most interesting and important properties of filamentary crystals are their high strength and high elastic deformation. According to certain literature data, the strength of filamentary crystals of beryllium oxide is 2500 kg/mm^2. The strength modulus of filamentary crystals is not different from its ordinary value.

Orig. art. has: 1 figure, 2 tables and 8 formulas. [JPRS]

SUB CODE: 20, 11 / SUBM DATE: none / ORIG REF: 14 / OTH REF: 27

Card 3/3 90

APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001447120004-8"

"APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001447120004-8

L 29797-66 EWT(1)/EWT(m)/T/EWP(t)/ETI IJP(c) JD/JG/GG

ACC NR: AP6015064 (A) SOURCE CODE: UR/0363/66/002/005/0829/0832

AUTHOR: Budnikov, P. P.; Kushakovskiy, V. I.; Sandulov, D. B.; Butra, F. P. 46 B

ORG: Moscow Chemical Engineering Institute im. D. I. Mendeleyev (Moskovskiy khimiko-tekhnologicheskiy institut)

TITLE: Growing of beryllium oxide single crystals

SOURCE: AN SSSR. Izvestiya. Neorganicheskiye materialy, v. 2, no. 5, 1966, 829-832

TOPIC TAGS: beryllium compound, single crystal growing, crystallization

ABSTRACT: Beryllium oxide single crystals were grown by the vaporization-condensation method in a stream of moist air at 1400-1600°C. The crystals obtained had various forms (prisms, whiskers, plates). X-ray analysis revealed that the direction of growth of prismatic and filamentary crystals coincides with the direction of crystallographic axis c. High-temperature thermal tests showed that single crystals heated up to 1970, 2000, and 2100°C retained their form and transparency. X-ray diffraction showed that crystals heated to 2200°C lost their transparency and cracked due to the presence of discrete disoriented blocks in place of the single

Card 1/2 UDC: 556.45:548.55

APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001447120004-8"

"APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001447120004-8

L 29797-66

ACC NR: AP6015064

crystal. Crystallization of fused beryllium oxide from 2450-2500°C produced coarse (2 × 2 × 2 mm), transparent grains which x-ray diffraction data identify as pseudo-crystals. The disorientation of the blocks in the crystals is apparently due to a polymorphic transformation of beryllium oxide taking place during cooling of the single crystals. Orig. art. has: 3 figures and 1 table.

SUB CODE: 20,11 / SUBM DATE: 02Aug65/ ORIG REF: 001/ OTH REF: 004

Card 2/2

APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001447120004-8"

"APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001447120004-8

L 07460-67 EWT(m)/EWP(t)/ETI IJP(c) JD/JH

ACC NR: AP6034571 SOURCE CODE: UR/0020/66/170/006/1310/1311

AUTHOR: Budnikov, P. P. (Corresponding member AN SSSR); Sandulov, D. B.; Popov, N. M.

ORG: Moscow Institute of Chemical Technology im. D. I. Mendeleyev (Moskovskiy khimiko-tekhnologicheskiy institut)

37
35
B

TITLE: Investigation of magnesium oxide whiskers

SOURCE: AN SSSR. Doklady, v. 170, no. 6, 1966, 1310-1311

TOPIC TAGS: magnesium oxide, ~~magnesium oxide~~ metal whisker, single crystal, ~~whisker~~ growth crystal

ABSTRACT: Single-crystal magnesium-oxide whiskers were grown from polycrystalline magnesium oxide at 1400—1500C in a kryptol furnace lined with magnesite tubes. The transport of magnesium oxide was done by the reaction: $MgO + CO \rightleftarrows Mg + CO_2$ or $2MgO + C \rightleftarrows 2Mg + CO_2$. The CO or C were supplied by the diffusion of carbon through the furnace lining. The structure, length, and shape of crystals depended upon the temperature: at 1500—1600 acicular crystals up to 30 mm long and 300 μ thick were formed. Whiskers up to 15 mm long and up to 30 μ in diameter grew at 1400—1500C, when the crystal growth is the most rapid; the growth rate is 2—3 μ/sec. The holding time extended over 2—3 hr transforms whiskers into angular crystals. Whiskers whose thickness is less than 3—4 μ have a very smooth surface. On heavier whiskers, the growth planes can be

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L 07460-67

ACC NR: AP6034571

2

seen. No capillarity was observed in whiskers. The authors express their thanks to R. S. Akbasheva and V. K. Sturman for their assistance in growing crystals. Orig. art. has: 1 figure.

SUB CODE: 11, 24/ SUBM DATE: 17Jun66/ ORIG REF: 001/ OTH REF: 003/ ATD PRESS: 5104

Card 2/2

APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001447120004-8"

"APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001447120004-8

SANDULOV V.N.

AID P - 5496

Subject : USSR/Aeronautics

Card 1/1 Pub. 135 - 13/26

Author : Kiriyenko, N. I., Major and Sandulov, V. N., Sen. Technician-Lt.

Title : Specialists of aircraft armament narrate...

Periodical : Vest. vozd. flota, 3, 66-67, Mr 1957

Abstract : Under this title two short articles appear. The first article describes how the fire adjustment of aircraft cannons is carried out at night on the firing range. The second article deals with the failures of friction brakes of tow winches.

Institution : None

Submitted : No date

APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001447120004-8"

"APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001447120004-8

USSR/Physical Chemistry - Crystals, B-5

Abst Journal: Referat Zhur - Khimiya, No 1, 1957, 265

Author: Andriyevskiy, A. I., Karelin, N. N., and Sandulova, A. V.

Institution: Lvov Polytechnical Institute

Title: On the Electrical Conductivity of Artificially Grown Single Crystals of Cuprous Oxide

Original Periodical: Dokl. L'vovsk. politekhn. in-ta, 1955, Vol 1, No 2, 23-26

Abstract: Single and polycrystals of Cu_2O were obtained by the oxidation of Cu at 1,030°. In order to obtain single crystals with a surface area larger than one cm^2, the Cu was first heated in vacuum to 1,000°. The conductivity σ is given by the formula $\sigma = \sigma_0 \exp(-E/RT)$, where σ and E for single and polycrystals have very close values. A break is observed in the graph $\lg\sigma = f(1/T)$ only when $E > 0.14$ ev.

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"APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001447120004-8

SOV/112-57-5-11737

Translation from: Referativnyy zhurnal. Elektrotekhnika, 1957, Nr 5, p 318 (USSR)

AUTHOR: Andriyevskiy, A. I., Sandulova, A. V.

TITLE: Changes in Static Voltage-Current Characteristics of Cuprous-Oxide Rectifiers Depending on Silver and Oxygen Electrolytically Introduced into the Rectifiers (Izmeneniya staticheskikh vol'tampernykh kharakteristik mednozakisnykh elementov v zavisimosti ot vvedennykh v nikh posredstvom elektroliza serebra i kisloroda)

PERIODICAL: Dokl. L'vovsk. politekhn. in-ta, 1955, Vol 1, Nr 2, pp 43-47

ABSTRACT: Effect of excess-oxygen and silver admixtures on the forward and backward resistances of cuprous-oxide rectifiers was studied. The rectifier elements were prepared by oxidizing copper foil in the air at 1,020°C for 20 minutes. Surplus oxygen was introduced either by an additional anode oxidizing of the elements in a K_2SO_4 solution or by annealing at 600°C. Silver was admixed electrolytically. Voltage-current characteristics of such rectifiers

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SOV/112-57-5-11737

Changes in Static Voltage-Current Characteristics of Cuprous-Oxide Rectifiers . . . .

were determined. It was found that electrolytic introduction of oxygen into the cuprous-oxide layer is equivalent in its effects to annealing; it results in a considerable improvement in the rectifying characteristics of the element. Introduction of silver into the cuprous-oxide layer reduces both the forward and backward resistances and thereby impairs the rectifying characteristics. The damaging effect of silver can be neutralized by introducing excess oxygen.

E.A.M.

Card 2/2

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"APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001447120004-8

Sandulova, A.V.

Category : USSR/Electricity - Semiconductors G-3

Abs Jour : Ref Zhur - Fizika, No 2, 1957, No 4191

Author : Andriyevskiy, A.I., Sandulova, A.V., Shchevelev, M.I.
Title : Effects of Artificially Introduced-Impurities on the Capacitance of Copper-Oxide Rectifiers.

Orig Pub : Dokl. L'vovsk. politekhn. in-ta, 1956, 1, No 2, 9-12

Abstract : The capacitance C and the resistance R of copper-oxide rectifiers were determined by measurement with an a-c bridge. Using electrolysis, impurities of silver or oxygen were introduced into the tested specimens. It turned out that introducing silver for a time ranging from several tens of seconds to a minute lowers C and R of the barrier layer to very samll values. If one now adds O_2 to these specimens for several minutes, the previous values of C and R of the barrier layer are restored. These phenomena are explained by the fact that the added silver, disturbing the stoichiometry of the barrier layer, behaves like a metallic impurity, while the added oxygen atoms, which combine with the silver atoms, form molecules of silver oxide, and thus restore the stoichiometry and the initial properties of the rectifiers.

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"APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001447120004-8

SANDULOVA, A.V.

USSR/Electricity - Semiconductors G-3

Abs Jour : Ref Zhur - Fizika, No 1, 1958, 1336

Author : Sandulova, A.V., Andriyevskiy, A.I.

Inst :

Title : Diffusion of Chemical Impurities in Cuprous Oxide and Their Influence on Its Rectifying Properties.

Orig Pub : Radiotekhn. i elektronika, 1956, 1, No 12, 1492-1502

Abstract : The diffusion coefficient of radioactive isotopes $P^{32}S^{35}I^{131}Au^{198}$ in Cu_2O have been determined. The experiments were effected by various means: (1) The impurity was coated on the surface of the initial copper by precipitation from a solution or was introduced electrolytically into the copper. The diffusion of the impurity took place simultaneously with the formation of the oxide layer in an electric tubular furnace (1020 -- 1050° C). (2) The impurity was diffused from a quenching bath into

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USSR/Electricity - Semiconductors G-3

Abs Jour : Ref Zhur - Fizika, No 1, 1958, 1336

Cu_2O as it was cooled.

(3) The impurity was precipitated electrolytically on mono- and poly-crystalline specimens of Cu_2O, and the diffusion was investigated at 1000° C. The distribution of the diffused impurity in a layer of Cu_2O was determined from the activity of polished thin layers.

The following coefficients of diffusions were found:

$D(P^{32}) = 2.1 \times 10^{-8} cm^2/sec$ (1020° C); $D(Au^{198}) = 1.03 \times 10^{-9} cm^2/sec$ (1000° C); $D(I^{131}) = 8.0 \times 10^{-9} cm^2/sec$ (1020° C); $D(S^{35}) = 0.89 \times 10^{8} cm^2/sec$ (1000° C).

It is shown that the diffusion of silver, sulphur, and phosphors takes place in the same manner in single crystals and in polycrystals of Cu_2O.

An investigation was made of the influence of impurities

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S/112/59/000/013/049/067
A002/A001

Translation from: Referativnyy zhurnal, Elektrotekhnika, 1959, No. 13, p. 232, # 27845

AUTHORS: Andriyevskiy, A.I., Dereberya, N.A., Sandulova, A.V.

TITLE: The Effects of Temperature and Annealing Time on the Change of Electric Characteristics of Cuprous Oxide Elements During Aging

PERIODICAL: Nauchn. zap. Ukr. poligr. in-t, 1958, Vol. 12, No. 1, pp. 69-75

TEXT: In the manufacturing process, cuprous oxide rectifiers are placed for some time into an annealing furnace after having been in an oxidation furnace. The effects of temperature and annealing time on the resistance and the rectification factor have been investigated. The optimum annealing temperature is 500-600°C. The annealing time depends essentially on the inverse resistance of the elements. The barrier layer is formed by cooling from the oxidation temperature of 1,000°C to the annealing temperature. In this case, the best condition is a cooling time equal to the annealing time.

B. A. G.

Translator's note: This is the full translation of the original Russian abstract.

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"APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001447120004-8

5 (4)

AUTHORS: Sandulova, A. V., Ho Yü-lien SOV/20-128-2-30/59

TITLE: Diffusion and Solubility of Tantalum in Germanium

PERIODICAL: Doklady Akademii nauk SSSR, 1959, Vol 128, Nr 2, pp 329-332 (USSR)

ABSTRACT: The above-mentioned properties were investigated in germanium monocrystals of different specific resistance and in polycrystalline germanium. One surface of the crystal pattern was coated by radioactive Ta^{182}. The samples were then heated in quartz ampules to 671-899°. The diffusion was determined by removing thin coats and by measurement of their radioactivity. The diffusion coefficient was calculated by Fick's formula. Figure 1 shows the linear relation between the logarithm of the concentration C and x^2 (x = depth of diffusion). Figure 2 shows the dependence of the logarithm of the temperature coefficient D and $\frac{1}{T}$, which is also linear. Besides, a dependence of the diffusion rate on the purity of the germanium crystals is found. The solubility was also investigated by means of radioactive tantalum after soaking of n- and p-germanium crystals for 20-60 hours (Fig 3). Figure 4 shows the dependence of the

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solubility on temperature. The maximum solubility of n- as well as of p-germanium is near 880°, whereby the solubility in n-germanium reaches a somewhat higher amount in the range of temperature. Table 1 compares the diffusion coefficient and the loosening energy for the investigated patterns and the elements P, As, Sb. There are 4 figures, 1 table, and 6 references, 2 of which are Soviet.

ASSOCIATION: L'vovskiy politekhnicheskiy institut (L'vov Polytechnic Institute)

PRESENTED: May 11, 1959, by A. F. Ioffe, Academician

SUBMITTED: May 5, 1959

APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001447120004-8"

"APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001447120004-8

Sandulova, A. V.

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S/181/60/002/04/11/034
B002/B063

24.7500

AUTHORS: Andriyevskiy, A. I., Sandulova, A. V., Yurkevich, M. I.

TITLE: Diffusion of Silver Into Cuprous Oxide

PERIODICAL: Fizika tverdogo tela, 1960, Vol. 2, No. 4, pp. 624-628

TEXT: Cuprous oxide was prepared from purified copper and atmospheric oxygen at 1,030°C. The crystal surfaces were etched, and a thin layer of radioactive Ag^{110} was electrolytically applied to them. The diffusion of silver into cuprous oxide between 800°C and 1,050°C was examined in nitrogen atmosphere or in vacuo. After quenching of the cuprous oxide, thin layers were taken from the crystal, and their gamma activity was measured. From this the authors determined the silver content by means of a calibration curve (Fig. 1). The following temperature dependence was found for the coefficient of silver diffusion into single crystals of cuprous oxide (Fig. 2): $D_{Cu_2O(single)} = 0.6 \cdot 10^{-2} \exp\left[-\frac{27630}{RT}\right]$ cm²/sec. Two regions are distinguished for diffusion into polycrystalline material: Up to 850°C, the

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Diffusion of Silver Into Cuprous Oxide

81952
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B002/B063

pre-exponential factor equals $0.24 \cdot 10^{-4} cm^2/sec$, and above this point it equals $0.56 \cdot 10^{-2} cm^2/sec$ (Fig. 3):

$$D_{Cu_2O(poly)} = 0.56 \cdot 10^{-2} \exp\left[-\frac{28270}{RT}\right] + 0.24 \cdot 10^{-4} \exp\left[-\frac{14080}{RT}\right] cm^2/sec.$$

The diffusion of silver into single crystals and polycrystalline material above 850°C takes place via the free copper sites of the lattice. The diffusion into polycrystalline material below 850°C takes place via intercrystalline layers. Further, the authors studied the diffusion of silver during the oxidation of copper. (Fig. 4). There are 4 figures, 1 table, and 7 references: 4 Soviet, 2 British, and 1 German.

ASSOCIATION: L'vovskiy politekhnicheskiy institut (L'vov Polytechnic Institute)

SUBMITTED: March 27, 1959

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APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001447120004-8"

"APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001447120004-8

SANDULOVA, A.V., DZHAN YEYE-TSIN

Anisotropy of zinc diffusion in polycrystalline cuprous oxide.
Fiz. tver. tela 2 no.5:874-877 My '60. (MIRA 13:10)

1. Politekhnicheskiy institut, L'vov.
(Diffusion) (Semiconductors)

APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001447120004-8"

"APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001447120004-8

SANDULOVA, A.V. [Sandulova, H.V.], TAN FU-SHAN [T'ang P'u-shang]

Effect of silver on the energy spectrum of copper oxide. Ukr.fiz. zhur. 5 no.2:150-157 Mr-Ap '60. (MIRA 13:12)

1. L'vovskiy politekhnicheskiy institut.
(Copper oxide--Spectra) (Silver)

APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001447120004-8"

"APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001447120004-8

SANDULOVA, A.V.; DRONYUK, M.I.; RYBAK, V.M.

Parameters of the diffusion of indium in germanium of different degrees of purity. Fiz.tver.tela 3 no.10:2913-2917 O '61. (MIRA 14:10)

1. L'vovskiy politekhnicheskiy institut.
(Diffusion) (Indium) (Germanium)

APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001447120004-8"

"APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001447120004-8

S/181/62/004/010/043/063
B102/B112

AUTHORS: Sandulova, A. V., and Dronyuk, M. I.

TITLE: Visualization of dislocations in silicon single crystals when dissolved in vapors of other substances

PERIODICAL: Fizika tverdogo tela, v. 4, no. 10, 1962, 2917-2920

TEXT: The authors developed a new method of visualizing dislocations on the (111) and (100) planes of Si single crystals visible. The crystals, ground and polished in the ordinary way, were kept in quartz ampoules (10^{-5}mm Hg) for 20 - 40 min at 1000 - 1200°C together with a weighed portion of a solvent (Se, S, Te, I, or Br). In all experiments the vapor pressure in the ampoule was lower than the saturation vapor pressure at experimental temperature. With iodine and bromine as solvents the ampoules were evacuated at nitrogen temperature. In all cases the rate of dissolution of the Si crystals was higher than their evaporation rate in the vacuum. After the treatment the surfaces were studied microscopically. After a 20-min treatment in Se vapor (1100°C) the

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(111)-plane showed the same pattern as observed after etching with liquids, i.e., the action of vapor, like that of etching, causes grooves at the sites of dislocations. The depth of these grooves is proportional to the duration of the action of vapor. The bottoms of these figures are plane, broken by numerous uniformly oriented dislocation grooves in the form of equilateral triangles (40 min iodine, 1100°C, (111)plane). The site at which any individual linear dislocation emerges is found to be the common center of equilateral triangles superimposed on one another in the form of steps. The larger these triangles, the more strongly their sides are bent outward, so that the lowest are almost circular in shape. The dislocation grooves on the (100) planes are square in shape. The dissolution of Si in vapor takes place down to 800°C. This process can be accelerated by increasing the vapor pressure. There are 5 figures.

ASSOCIATION: L'vovskiy politekhnicheskiy institut (L'vov Polytechnic Institute)

SUBMITTED: April 10, 1962 (initially) June 12, 1962 (after revision)

APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001447120004-8"

"APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001447120004-8

SANDULOVA, A.V. [Sandulova, H.V.]; DRONYUK, M.I.; RYBAK, V.M.; SHCHERBAY, K.S.

Diffusion of indium in cuprous oxide. Ukr.fiz.zhur. 7 no.3:289-293 Mr '62. (MIRA 15:7)

1. L'vovskiy politekhnicheskiy institut.
(Diffusion) (Indium) (Cuprous oxide)

APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001447120004-8"

"APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001447120004-8

dissolution of Ge and Si are closest to each other: $6.5 \cdot 10^{-6}$ and $5.2 \cdot 10^{-6}$ g/cm^2·sec, respectively. This was considered for the cultivation of single crystals of solid solutions. The weighed portions of Ge and Si required for a given composition of the solid solution, as well as a certain weighed portion of Se were filled into a small quartz ampul. The ampul was evacuated to 10^{-5} mm Hg and heated in an electric furnace for 2-5 days. The experiments were conducted at 10-15 atm Se vapor pressure and 1000-1250°C. The weights of Ge and Si corresponded to solid solutions, the composition of which changed stepwise by 5 atom %. The experiments were terminated on total dissolution of Ge and Si. Monocrystalline character, homogeneity and composition of the crystals obtained were investigated by X-ray analysis. On the Laue diffraction pattern of the crystal of a solid solution with 50 atom % Ge and 50 atom % Si, ray direction perpendicular to (100), symmetrical interference spots as well as clearly developed ellipses were ascertained, which proves the monocrystalline character. The lattice constants are inversely proportional (linear dependence) to the Si content, and are composed of the values of pure Ge and Si. Increase in resistivity with the Si content up to

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200-300 ohm·cm was observed. Sulfur, selenium, tellurium and iodine, may also be used as solvent. Professor A. I. Andriyevskiy is thanked for his advice. There are 3 figures.

ASSOCIATION: L'vovskiy politekhnicheskiy institut (L'vov Polytechnic Institute)

PRESENTED: November 30, 1961, by N. V. Belov, Academician

SUBMITTED: November 16, 1961

APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001447120004-8"

"APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001447120004-8

SANDULOVA, A.V.; DRONYUK, M.I.

Detection of dislocations in silicon single crystals by dissolution in the vapors of another substance. Fiz.tver.tela 4 no.10:2917-2920 O '62. (MIRA 15:12)

1. L'vovskiy politekhnicheskiy institut.
(Dislocations in crystals) (Silicon)

APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001447120004-8"

"APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001447120004-8

L 19570-63 EWP(q)/EWT(m)/EWP(B)/BDS AFFTC/ASD Pad JD/HW

ACCESSION NR: AP3007498 S/0181/63/005/009/2580/2586

AUTHOR: Sandulova, A. V.; Bogoyavlenskiy, P. S.; Dronyuk, M. I.

TITLE: Growing technique and properties of thread and needle crystals of germanium, silicon, and their solid solutions

SOURCE: Fizika tverdogo tela, v. 5, no. 9, 1963, 2580-2586

TOPIC TAGS: silicon thread crystal, germanium thread crystal, silicon needle crystal, germanium needle crystal, thread crystal, crystal growing technique, crystal growing, needle crystal, gas phase crystal growing, bromine, silicon, germanium

ABSTRACT: A new method of growing crystals is described, based on crystallization from the gas phase with the aid of a solvent. By this method it is possible to grow monocrystals of different shapes, lengths, and cross sections having a high mechanical strength and an adequate degree of purity and perfection of structure. A quartz capsule 28 cm long and 2.6 cm in diameter, divided by a neck into two interconnecting chambers, was used for the process. The larger chamber contained single crystals of the substance to be crystallized,

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ACCESSION NR: AP3007498

together with the solvent substance (solid bromine, with iodine added in certain cases). The loaded capsule was evacuated in liquid nitrogen to a pressure of 10^{-5} mm Hg, sealed, and placed in a furnace in which the larger chamber was maintained at 950—1250C and the smaller chamber, at 800—1000C. Full dissolution of the mother crystals occurred within 40—60 hr. Two types of crystals were formed in the smaller "cold" chamber of the capsule, a polycrystalline layer and bunches of threads and needles. Individual threads were straight and uniform in cross section, with lengths up to 30 mm. No indications of twinning were revealed by Laue diffraction patterns taken from the junctions and bends. Elongation of needles occurs along the third-order axis; the cross section of these needles is hexagonal. The threads had a thickness of several microns and a round cross section. In the case of Si it was possible to exercise a certain amount of control for preferential growing of threads or needles by manipulating the solvent vapor pressure and temperature gradient. The thickness of threads depends to some extent on the length and diameter of the neck connecting the chambers. For example, to grow Si threads in a 2-cm capsule, the neck diameter was narrowed to 6—8 mm, and the length, to 4 cm. Measurement data

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ACCESSION NR: AP3007498

on the mechanical properties of threads and needles reveal great strength and elasticity, without plastic deformation. The strength of threads of 16—28-μ diameter averaged about 200 kg/mm² and reached a maximum of 500 kg/mm² in certain cases. The specific resistivity was generally found to be considerably higher than that of the mother crystals, owing to the higher degree of purity attained in the recrystallization process. Orig. art. has: 7 figures and 3 tables.

ASSOCIATION: L'vovskiy politekhnicheskiy institut (L'vov Polytechnic Institute)

SUBMITTED: 16Aug62 DATE ACQ: 14Oct63 ENCL: 00

SUB CODE: PH NO REF SOV: 002 OTHER: 001

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"APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001447120004-8

SANDULOVA, A.V.; RYBAK, V.M.

Anisotropy of the microhardness of silicon. Fiz. tver tela 5 no.9:2587-2590 S '63. (MIRA 16:10)

1. L'vovskiy politekhnicheskiy institut.

APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001447120004-8"

"APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001447120004-8

SANDULOVA, A.V.; BOGOYAVLENSKIY, P.S.; DRONYUK, M.I.

Production of germanium and silicon single crystals from the gaseous phase by the addition of a second component. Dokl. AN SSSR 153 no.1:82-85 N '63. (MIRA 17:1)

1. L'vovskiy politekhnicheskiy institut. Predstavleno akademikom A.V. Shubnikovym.

APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001447120004-8"

"APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001447120004-8

SANDULOVA, A.V.

Production and determination of certain properties of whisker type and acicular single crystals in solid solutions of the system Ge - Si. Dokl. AN SSSR 153 no.2:330-332 N '63. (MIRA 16:12)

1. Predstavleno akademikom N.V.Belovym.

APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001447120004-8"

"APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001447120004-8

ACCESSION NR: AT4040558 S/2564/64/004/000/0122/0124

AUTHOR: Sandulova, A.V.; Andriyevskiy, A. I.; Dronyuk, M. I.

TITLE: Forms of growth of germanium and silicon crystals grown from a gaseous solution

SOURCE: AN SSSR. Institut kristallografii. Rost kristallov, v. 4, 1964, 122-124

TOPIC TAGS: germanium, silicon, germanium crystal, silicon crystal, crystal growth, gas phase crystallization, germanium monocrystal, silicon monocrystal

ABSTRACT: Sulfur, selenium, bromine, tellurium and iodine were used as solvents in a study of the crystallization of germanium and silicon at 800-900 and 1000-1200C, respectively. Octahedrons with well developed (111) faces were the most frequent form among a great variety of crystal shapes obtained. Other forms included cubes with more or less pronounced octahedral faces and spherolites. The shape of the crystal could be changed by changing the solvent, its vapor pressure or the temperature. Lauegrams of the thread-shaped crystals demonstrated their monocrystalline nature. The simple forms

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