rocket which accomplished the hypothetical space flight mentioned in the article. The largest of the component parts is made of plastics, metal alloys or metal-ceramic materials. Jet deflectors are made of graphite-coated "borazon" resistant to 700 atm and 2,650° C. The nose of the rocket is made of super-resistant stainless steel which maintained without a cooling system a resistance of 21 t/sq cm up to a temperature of 800° C and with a cooling system of 0.3 t/sq cm up to a temperature of 4,000°. The following component parts are made of epoxide resins, resistant to a temperature of 1,650°C: casing of electronic apparatus, wing coverings of the first reactive stages, fuel tanks, etc. The tight cockpits, the acoustic and thermal insulations of cockpit and engines, the fuel pumps, the storage batteries, the dampers, the servo-installations, etc. are made of polyester-polymers. The control surfaces, the turbine of the auxiliary power installation, the fuel pipes and other instal-

lations which have to resist a temperature of 2,500° C are made of phenolic plastics. The rocket fuselage is made of silicon, resisting a temperature of 2,760°C. The behavior of boral alloy exposed to radiation has been accurately studied. Boral is made by combining boron carbides with aluminum alloys. A 6.35-mm-thick boral sheet had the same quick neutrons arresting effect as a 100 times thicker concrete block. But the boral and the "cronibor" can not stop the gamma rays as well as the "lidolon" alloy does, which is composed of 95% lead and 5% polyethylene. The facts mentioned in this article seem fantastic, but the successes of of Soviet space navigation showed that many of these predictions will be materialized in the near future. There are 4 figures.

report presented at the 1st All-Union Congress of Theoretical and Applied Mechanics, Moscow, 27 Jan - 3 Feb '60.

268. L. N. Stavraki (Kuibishev): Strain design and general stability of structures.

269. L. N. Stavrayi (Kuibishev): A general method of solving non-linear problems of structural mechanics.

270. B. D. Stepanov (Moscow): A contribution to the non-linear problem of plate flutter.

271. L. G. Stepanskii, E. P. Unksov (Moscow): On the use of variational principles for the approximate solution of some problems of plastic equilibrium.

272. A. I. Strelbitskaia (Kiev): Experimental investigation of the oblique bending of steel beams beyond the elastic limit.

[illegible]. A. G. Stroganov (Moscow): Strength and visco-plastic flow of soils.

274. G. I. Ter-Stepanian (Erevan): The relation between pore pressure and rate of creep of slopes.

275. L. A. Tolokonnikov (Tula): Finite plastic strains of non-linearly deformed bodies.

276. A. D. Tomlenov (Moscow): Piercing of metals by a spherical punch considering contact friction.

277. Ia. L. Turchinskaia (Moscow): An asymptotic method of designing flexible blades of variable pitch at high speeds of rotation.

278. B. V. Tumas (Moscow): Application of similarity methods to the analysis of the flow of rubber compounds.

279. A. A. Trapeznikov, T. G. Shalopalkina (Moscow): Dependence of the maximum elastic and discontinuous strains of aluminum-naphtenate gels on strain rates.

280. S. A. Tumarkin (Moscow): An asymptotic method for the design of toroidal shells.

281. V. K. Turkin (Moscow): Some problems of soil dynamics.

282. R. V. Tiabin (Kazan): The flow in the boundary layer of an elastic, visco-plastic medium.

283. A. G. Ugodtsikov (Gorkii): Some problems concerning the analysis of stresses in shrink fits.

284. S. V. Uzhik (Moscow): On strength and rupture criteria for metals in the presence of stress concentrations.

285. I. I. Ulitskii (Kiev): Some problems of non-linear creep.

286. A. A. Umanskii (Moscow): Analogy and model methods in problems of structural mechanics concerning bars and thin-walled structures.

287. M. T. Urazbaev (Tashkent): The problem of seismic strength of fluid supported hydraulic structures.

288. Ia. S. Ufliand (Leningrad): Application of integral transformations to the solution of some problems concerning an elastic wedge.

289. L. A. Fadeeva (Moscow): Deformations of plastic clays in moulding.

290. I. V. Fadeev (Moscow): Elastic-plastic equilibrium of an ... wedge.

291. M. L. Faldman (Dnepropetrovsk): Stability and vibrations of orthotropic plates of variable thickness.

292. A. P. Filippov (Kharkov): Extensional vibrations of turbine discs.

293. M. M. Filonenko-Borodich (Moscow): On the possibility of generalizing the Mohr and Huber-Mises-Hencky theories of rupture.

294. E. P. Fleishman (Lvov): Some problems concerning the bending of plates and shells with stiffeners.

295. L. M. Flitman (Moscow): On the impact of a wave on a heavy rigid sphere embedded in an elastic medium.

296. V. A. Florin (Leningrad): Some problems concerning rock formations of hydraulic structures.

297. V. A. Florin (Leningrad): Present state and problems of soil mechanics.

298. V. A. Florin (Leningrad): Flow conditions for saturated sands.

299. N. V. Florina (Leningrad): Experimental study of real and apparent friction in vibrating soils.

300. B. E. Fradlin, S. M. Shakhnovskii (Kiev): On the construction of Green's functions for the equilibrium problem of shallow shells.

301. S. E. Fraifeld (Kharkov): Further development of the initial rheological equation.

302. V. M. Fraler (Moscow): Temperature stresses in cantilever plates and their effect on stiffness.

FLORINA, N.V. (Leningrad)

Equilibrium conditions of a rigid die on a flexible rough support under the action of variable loads. Izv.AN SSSR.Otd.tekh.nauk.Mekh.i mashinostr. no.6:108-112 N-D '62. (MIRA 15:12)
(Dies ([redacted]alworking))

FLORINA, N. V. (Leningrad)

"On the behaviour of a punch on the elastic rough foundation under vibrational and impact loadings".

report presented at the 2nd All-Union Congress on Theoretical and Applied Mechanics, Moscow, 29 January - 5 February 1964

FLORINA, Ye.Ye., Geroy Sotsialisticheskogo Truda, zven'yeva

[Two hundred and ninety-six centners of apples per hectare] 296 tsentnerov iablok s gektara. Kishinev, Partiinoe izd-vo TsK KP Moldavii, 1962. 17 p. (MIRA 15:7)

1. Sovkhoz imeni Dzerzhinskogo Dubossarskogo rayona, Moldaviya (for Florina).
(Moldavia--Apple)

GHEORGHIU, C.; FLORINESCU, A.

Seismism and the areas of seismism. Natura Geografie 15 no.2:32-44 Mr-Ap '63.

GHEORGHIU, C. (Bucuresti); FLORINESCU, A. (Bucuresti)

Seismicity and the seismic areas; earthquakes on Rumania territory. Pt. 2. Natura Geografie 15 no.3:25-37 My-Je '63.

FLORINESCU, A.

Regions in our country with earthquake focuses. p. 281

STUDII SI CERCETARI DE ASTRONOMIE SI SEISMOLOGIE. Bucuresti, Rumania
Vol. 1, no. 2, 1957.
Vol. 4, no. 1, 1959.

Monthly List of East European Accession (EEAI). LC, Vol. 8 No. 9, September, 1959

Uncl.

FLORINESCU, A., prof. (Bucuresti)

No mountains on the planet of Mars. Natura Geografie 15 no.6:76-80 N-D '63.

PRIDANTSEVA, Ye.A., nauchnyy sotrudnik; PONIROVSKIY, V.K. (Khar'kov); GRACHEV, A.F.; VOVCHENKO, D.P., kand. biolog. nauk; CHEMODANOVA, Ye.V., kand. sel'skokhoz. nauk; KALINICHENKO, A.N.; PETRUSHOVA, N.I., kand. sel'skokhoz. nauk; OVCHARENKO, G.V.; FLORINSKAYA, G.N.; DROZDOVSKIY, E.M.; DROZDOVSKIY, E.M.; MATLASHENKO, Ye.V., aspirantka

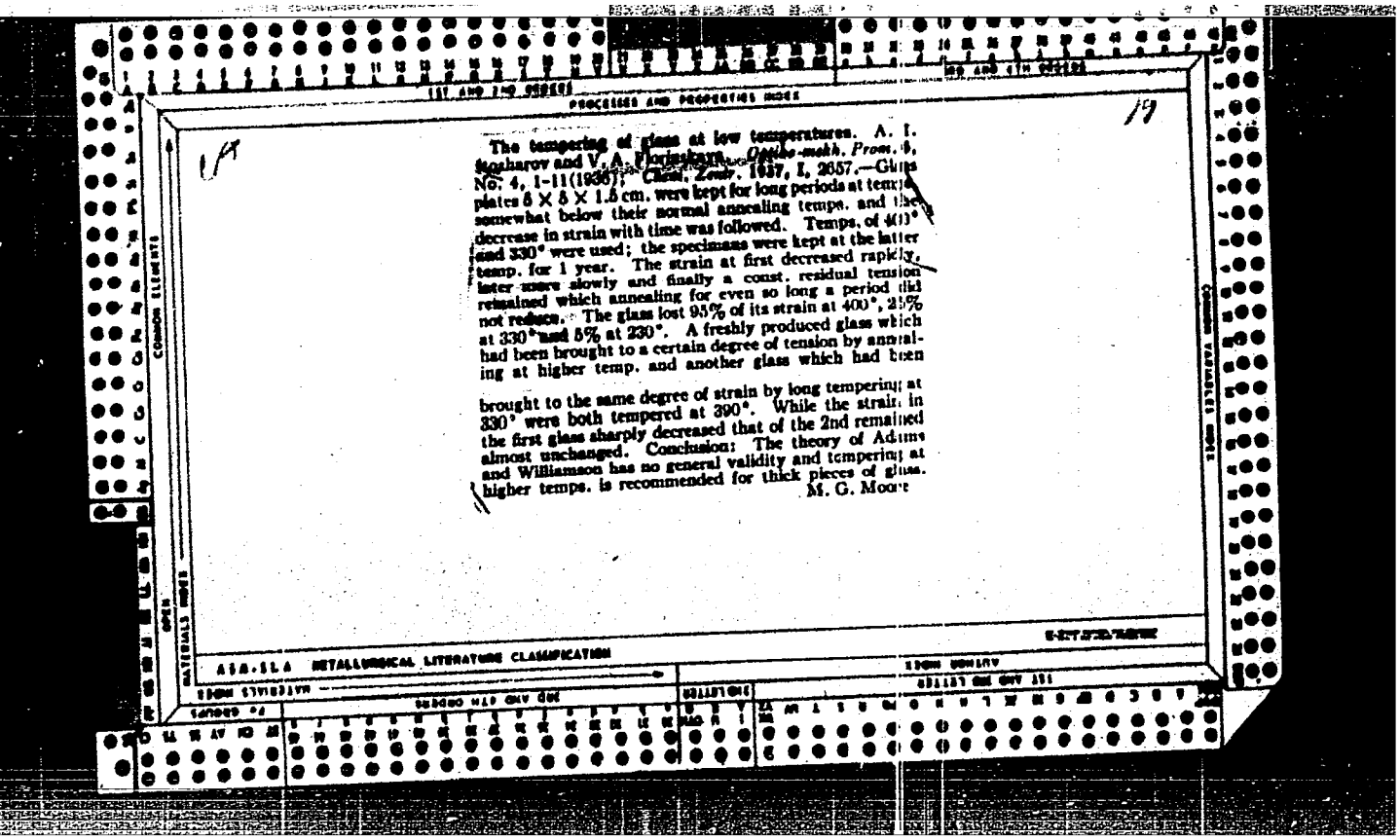
Brief news. Zashch. rast. ot vred. i bol. 9 no.7:50-53 '64.
(MIRA 18:2)

1. Dal'nevostochnaya opytnaya stantsiya Vsesoyuznogo nauchno-issledovatel'skogo instituta rasteniyevodstva (for Grachev). 2. Mleyevskaya opytnaya stantsiya sadovodstva, Cherkasskaya oblast' (for Vovchenko). 3. Velikolukskiy sel'skokhozyaystvennyy institut (for Chemodanova). 4. Altayskaya opytnaya stantsiya sadovodstva, Barnaul (for Kalinichenko). 5. Nikitskiy botanicheskiy sad (for Petrushova, Ovcharenko). 6. Moldavskiy institut sadovodstva, vinogradarstva i vinodeliya, Kishinev (for Florinskaya). 7. Nauchno-issledovatel'skiy zonal'nyy institut sadovodstva nechernozemnoy polosy (for Drozdovskiy). 8. Tadzhikskiy nauchno-issledovatel'skiy institut sel'skogo khozyaystva (for Matlashenko).

PATERIOLO, G.A., doktor sel'skokhoz.nauk; FLORINSKAYA, G.N.

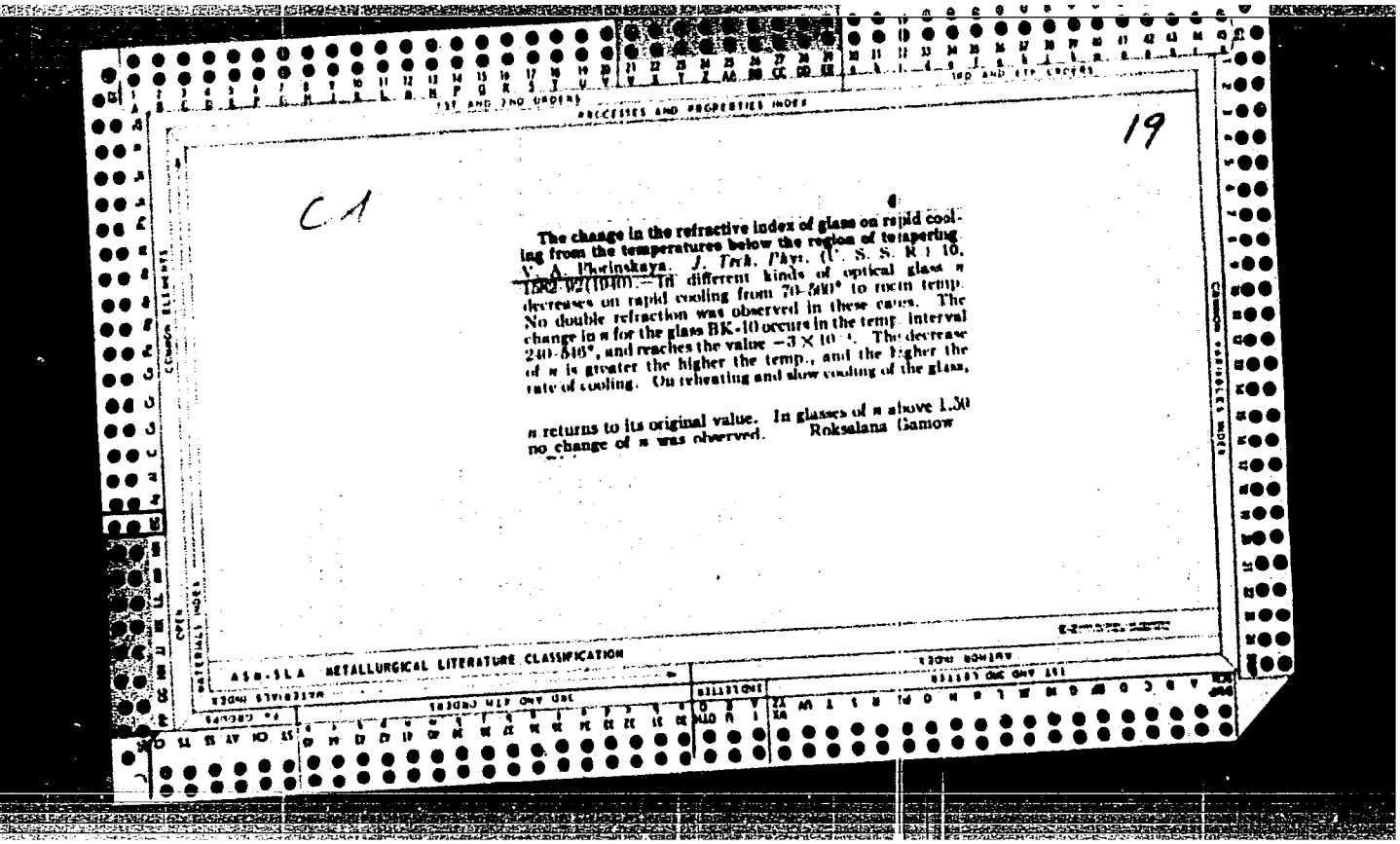
Controlling apple powdery mildew in nurseries. Zashch. rast. ot vred. i bol. 8 no.7:25 Jl '63. (MIRA 16:9)

1. Moldavskiy institut sadovodstva, vinogradarstva i vinodeliya, Kishinev. 2. Starshiy laborant Moldavskogo instituta sadovodstva, vinogradarstva i vinodeliya, Kishinev (for Florinskaya).



The tempering of glass at low temperatures. A. I. Stcharov and V. A. Florinskaya. *Optiko-mekh. Prom.* 4, No. 4, 1-11(1936); *Chem. Zentr.* 1937, I, 2657.—Glass plates 8 × 8 × 1.6 cm. were kept for long periods at temps. somewhat below their normal annealing temps. and the decrease in strain with time was followed. Temps. of 400° and 330° were used; the specimens were kept at the latter temp. for 1 year. The strain at first decreased rapidly, later more slowly and finally a const. residual tension remained which annealing for even so long a period did not reduce. The glass lost 95% of its strain at 400°, 25% at 330° and 5% at 230°. A freshly produced glass which had been brought to a certain degree of tension by annealing at higher temp. and another glass which had been brought to the same degree of strain by long tempering at 330° were both tempered at 390°. While the strain in the first glass sharply decreased that of the 2nd remained almost unchanged. Conclusion: The theory of Adams and Williamson has no general validity and tempering at higher temps. is recommended for thick pieces of glass.

M. G. Moore



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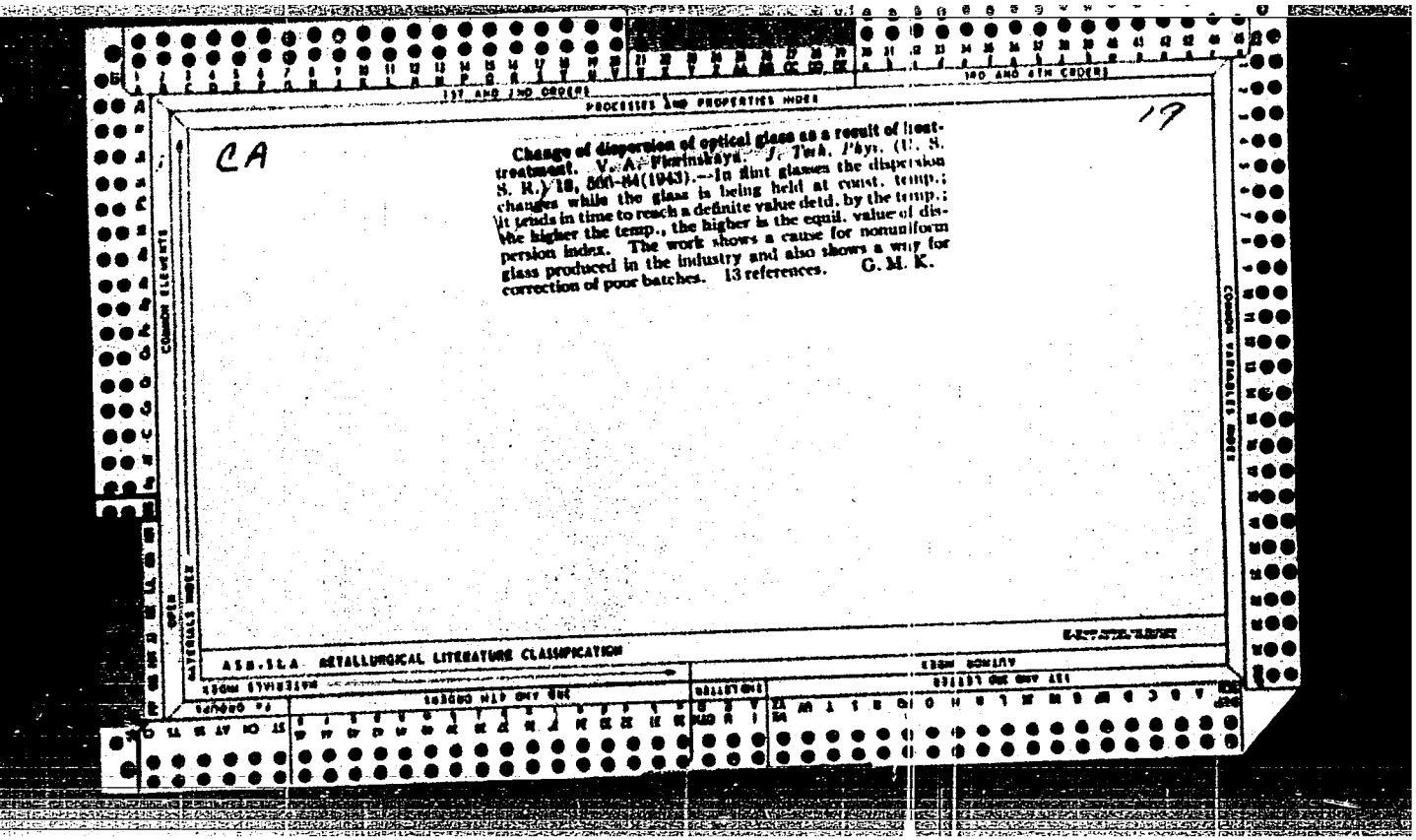
The change in the refractive index of glass on rapid cooling from the temperatures below the region of tempering. V. A. Pheinskaya. *J. Tech. Phys.* (U. S. S. R.) 10, 1262-92(1940).—10 different kinds of optical glass n decreases on rapid cooling from 70–540° to room temp. No double refraction was observed in these cases. The change in n for the glass BK-10 occurs in the temp. interval 240–540°, and reaches the value -3×10^{-4}. The decrease of n is greater the higher the temp., and the higher the rate of cooling. On reheating and slow cooling of the glass, n returns to its original value. In glasses of n above 1.50 no change of n was observed. Roksalana Gamow



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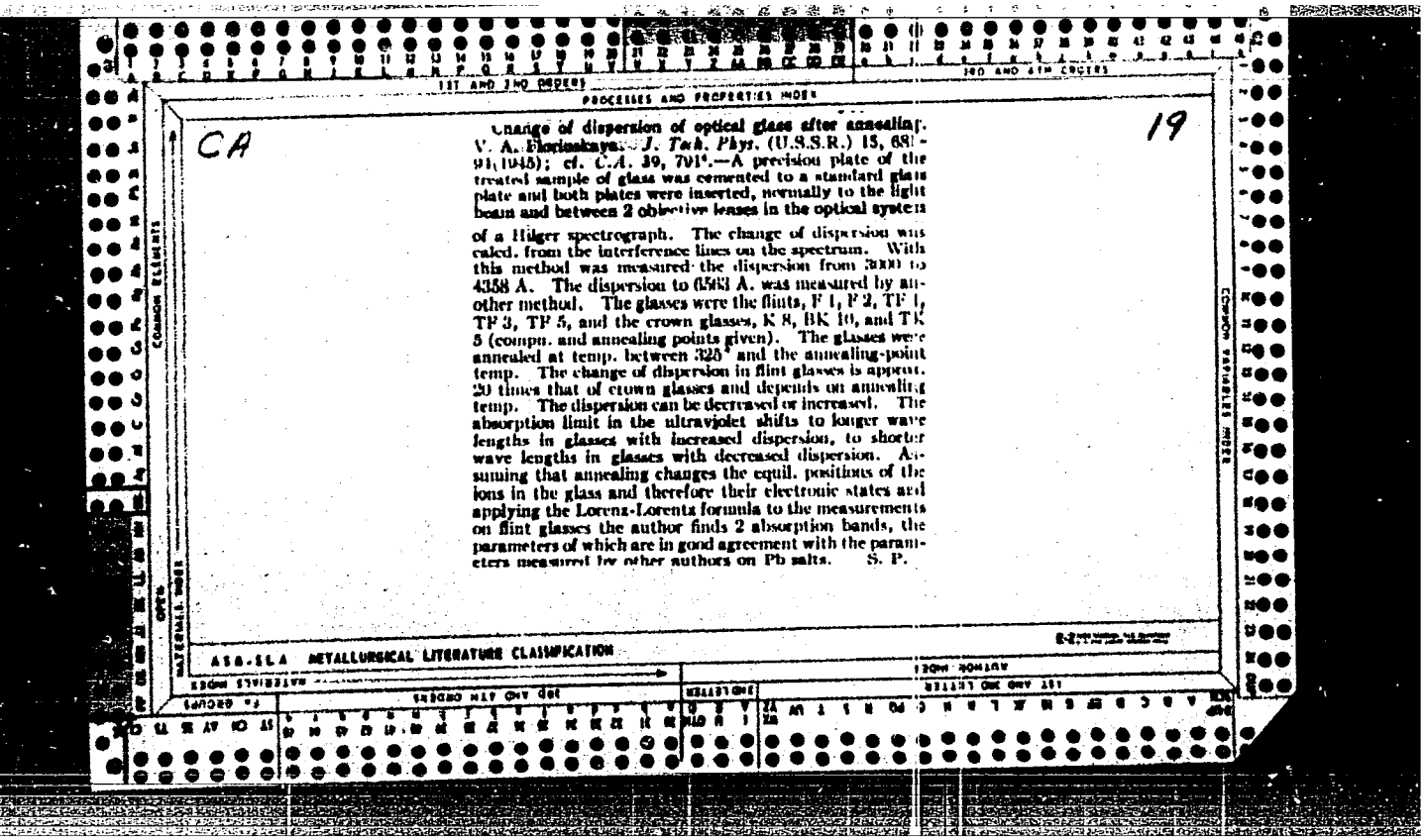
17

Change of dispersion of optical glass as a result of heat-treatment. V. A. Florinskaya. *J. Tech. Phys.* (U. S. S. R.) 13, 500-04(1943).—In flint glasses the dispersion changes while the glass is being held at const. temp.; it tends in time to reach a definite value detd. by the temp.; the higher the temp., the higher is the equil. value of dispersion index. The work shows a cause for nonuniform glass produced in the industry and also shows a way for correction of poor batches. 13 references. G. M. K.



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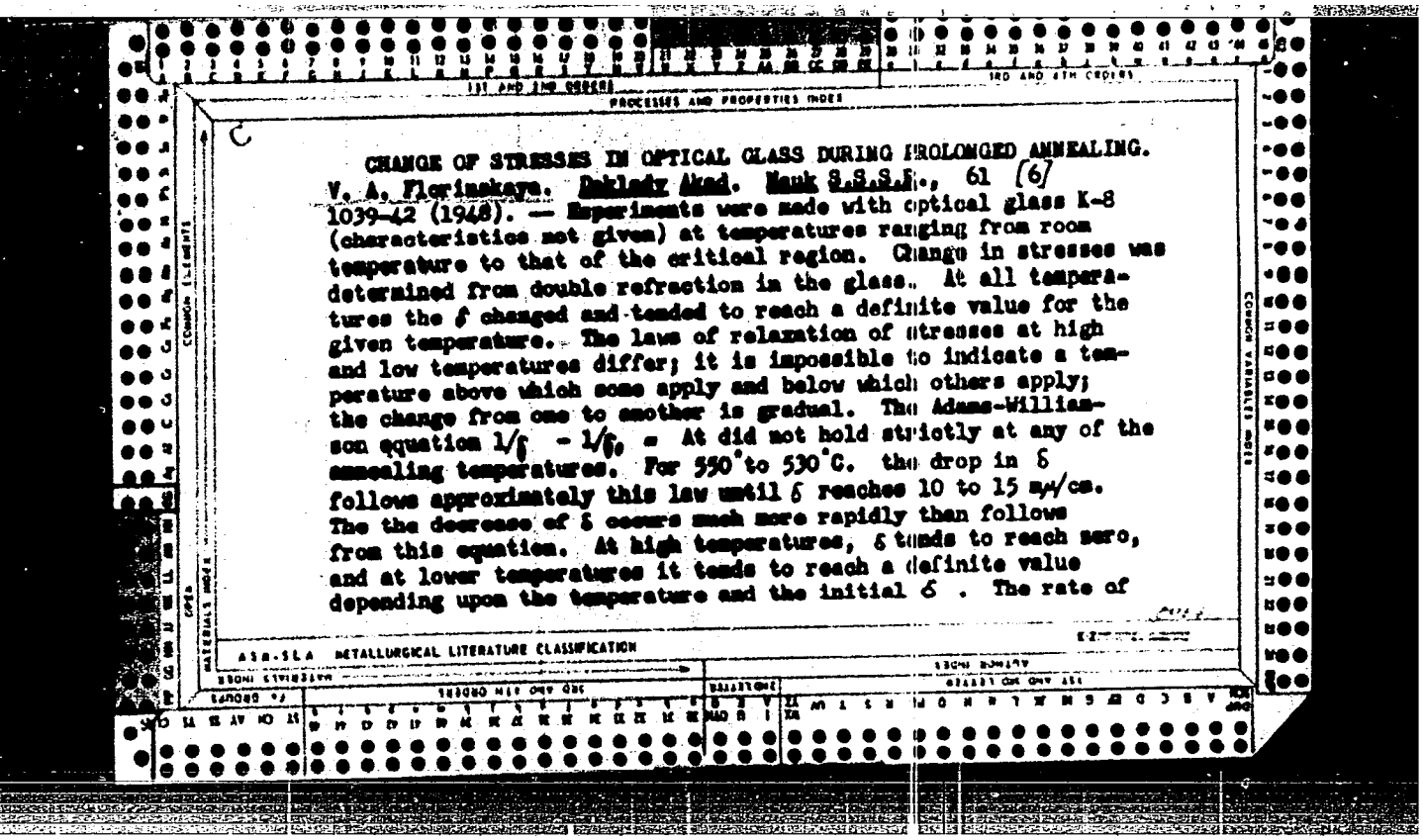
19

Change of dispersion of optical glass after annealing. V. A. Florinskaya. *J. Tech. Phys.* (U.S.S.R.) 15, 681-91 (1945); cf. *C.A.* 39, 701⁴.—A precision plate of the treated sample of glass was cemented to a standard glass plate and both plates were inserted, normally to the light beam and between 2 objective lenses in the optical system of a Hilger spectrograph. The change of dispersion was calcd. from the interference lines on the spectrum. With this method was measured the dispersion from 3300 to 4358 A. The dispersion to 6563 A. was measured by another method. The glasses were the flints, F 1, F 2, TF 1, TF 3, TF 5, and the crown glasses, K 8, BK 10, and TK 5 (compn. and annealing points given). The glasses were annealed at temp. between 325° and the annealing-point temp. The change of dispersion in flint glasses is appar. 20 times that of crown glasses and depends on annealing temp. The dispersion can be decreased or increased. The absorption limit in the ultraviolet shifts to longer wave lengths in glasses with increased dispersion, to shorter wave lengths in glasses with decreased dispersion. Assuming that annealing changes the equil. positions of the ions in the glass and therefore their electronic states and applying the Lorenz-Lorentz formula to the measurements on flint glasses the author finds 2 absorption bands, the parameters of which are in good agreement with the parameters measured by other authors on Pb salts. S. P.



CHANGE OF STRESSES IN OPTICAL GLASS DURING PROLONGED ANNEALING.
V. A. Florinskaya. Doklady Akad. Nauk S.S.S.R., 61 (6) 1039-42 (1948). — Experiments were made with optical glass K-8 (characteristics not given) at temperatures ranging from room temperature to that of the critical region. Change in stresses was determined from double refraction in the glass. At all temperatures the δ changed and tended to reach a definite value for the given temperature. The laws of relaxation of stresses at high and low temperatures differ; it is impossible to indicate a temperature above which some apply and below which others apply; the change from one to another is gradual. The Adams-Williamson equation $1/\delta - 1/\delta_0 = At$ did not hold strictly at any of the annealing temperatures. For 550° to 530°C. the drop in δ follows approximately this law until δ reaches 10 to 15 mμ/cm. Then the decrease of δ occurs much more rapidly than follows from this equation. At high temperatures, δ tends to reach zero, and at lower temperatures it tends to reach a definite value depending upon the temperature and the initial δ. The rate of

change of δ was much greater for freshly annealed samples than for those subjected to prolonged annealing. The presence of zigzags on the δ curves of glasses subjected to prolonged heat-treatment at low temperatures is assumed to be due to the formation of certain intramolecular bonds which produce a large increase in viscosity of the glass. For this reason, the relaxation of stresses in glass at low temperatures can take place only up to a certain limit, after which it stops and an increase in temperature by even 30° for a considerable length of time cannot produce it. At very high temperatures these aggregates fall apart. For strongly annealed specimens having a δ of 450 mμ/cm. there is a gradual weakening of the stresses at room temperature; after 11 years it reached about 0.5 to 1%. Along with a change of δ and curvature of surface at room temperature, there was also a gradual change in index of refraction. B.Z.K.

FLORINSKAYA V.A.

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Reflection and transmission spectra of different modifications of silica in the infrared region. V. A. FLORINSKAYA AND R. S. PECHENKINA. *Dokl. Akad. Nauk SSSR*, 87(6), 1265-8 (1952) *In Russian.*

Presents the results of a research on the ir spectra in the region up to 14 μ for different modifications of SiO_2: reflection spectra for low-temperature crystalline quartz, quenched crystalline quartz, fused quartz, and low-temperature tridymite and cristobalite in powder form; transmission spectra for low-temperature quartz, tridymite and cristobalite, quenched crystalline quartz, and pure silicic acid with 20% water). A mirror monochromator with a rocksalt prism, and a thermopile with a multiplier were used. The reflection was measured in non-polarized light (constant angle of incidence = 13°). The transmission was measured with the aid of a Beckman spectrophotometer. Some characteristic maxima were observed for tridymite and cristobalite.

I. LACHMAN

FLORINSKAYA, V. A.

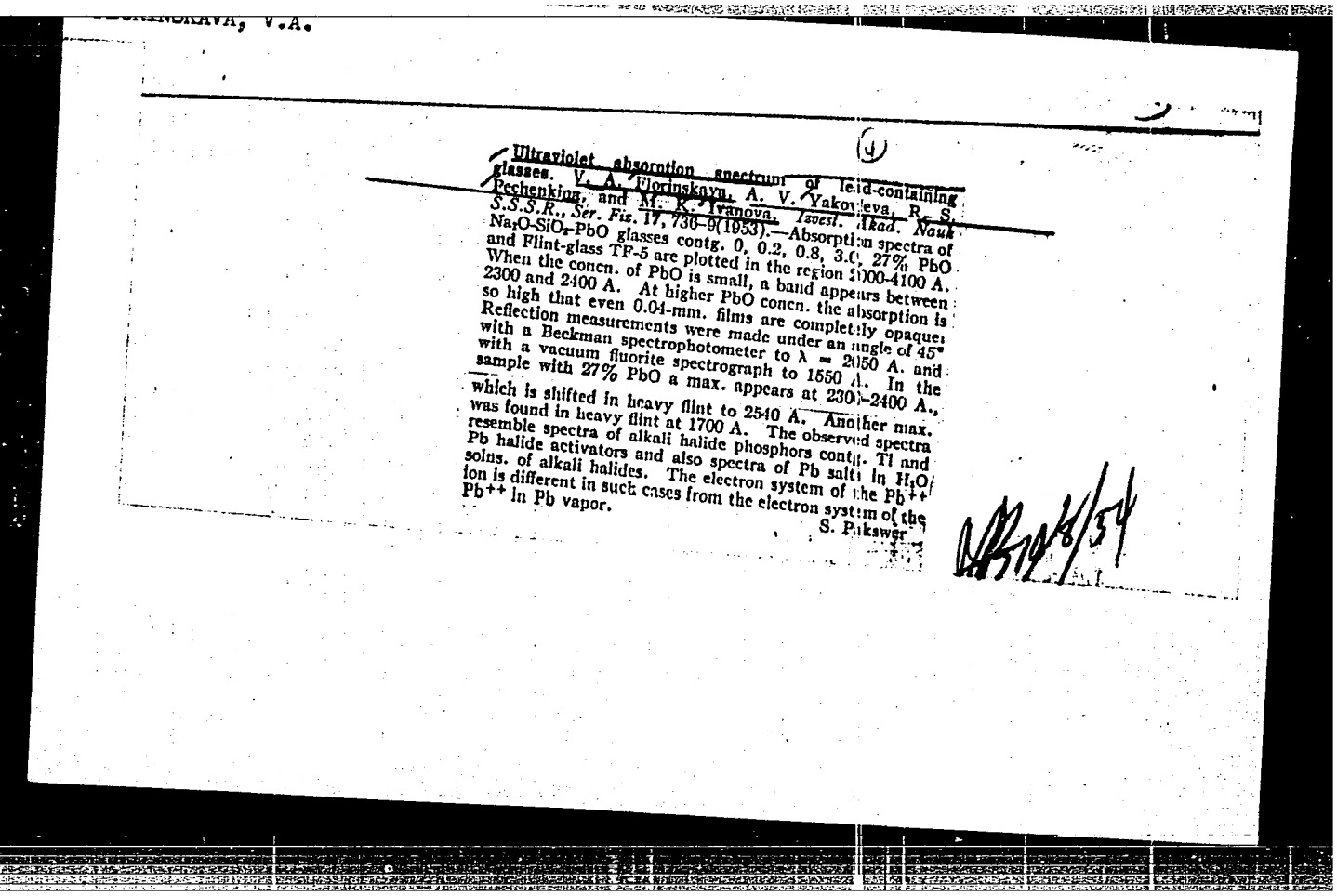
USSR/Physics - Infrared Spectra, Silica — Sep/Oct 53

"Reflection and Transmission Spectra of Various Modifications of Silica in Infrared Region," V.A. Florinskaya and R.S. Pechenkina

Iz Ak Nauk, Ser Fiz, Vol 17, No 5, pp 649-653

Present graphically results of experimental research of reflection and transmission spectra of quartzes, cristobalite and tridymite. Finds properties of Ural quartz similar to those of Brasilian quartz.

274T100



FLORINSKAYA, V.A.

(4)

Ultraviolet absorption spectrum of lead-containing glasses. V. A. Florinskaya, A. V. Yakovleva, R. S. Pechenkina, and M. K. Ivanova. *Izvest. Akad. Nauk S.S.S.R., Ser. Fiz.* 17, 736–9(1953).—Absorption spectra of Na_2O-SiO_2-PbO glasses contg. 0, 0.2, 0.8, 3.0, 27% PbO and Flint-glass TF-5 are plotted in the region 2000-4100 A. When the concn. of PbO is small, a band appears between 2300 and 2400 A. At higher PbO concn. the absorption is so high that even 0.04-mm. films are completely opaque. Reflection measurements were made under an angle of 45° with a Beckman spectrophotometer to λ = 2050 A. and with a vacuum fluorite spectrograph to 1550 A. In the sample with 27% PbO a max. appears at 2300–2400 A., which is shifted in heavy flint to 2540 A. Another max. was found in heavy flint at 1700 A. The observed spectra resemble spectra of alkali halide phosphors contg. Tl and Pb halide activators and also spectra of Pb salts in H_2O solns. of alkali halides. The electron system of the Pb^{++} ion is different in such cases from the electron system of the Pb^{++} in Pb vapor.

S. Pikaswer

FLORINSKAYA, V.A.

62

Transmission spectra of thin silicate glass films in the infrared. V. A. Florinskaya and N. S. Pechenkina. *Doklady Akad. Nauk S.S.S.R.* 89, 37-40(1953)(Engl. translation issued as *U.S. Atomic Energy Comm.* NSF-tr-30, 4 pp.(1953)); cf. *C.A.* 48, 5050f.—Transmission spectra of thin films of 2-component Pb silicate glasses with PbO content varying from 23 to 69 mole-% and of some industrial flint and crown glasses are studied. The film thicknesses were of the order of 1-3 μ or thinner. Transmission was measured by using a Beckman spectrophotometer. The presence of an absorption band in the Pb glasses in the vicinity of 13 μ indicates the existence of crystallites with an ordered arrangement of atoms. As the PbO content is increased, from 23% to 60% in 2-component glasses, the absorption max. moves toward longer wave lengths of 9.8–11.1 μ. In increasing the Pb content from 60% to 69% no further absorption max. shift takes place. For all heavy flint glasses starting with the compn. of Pb metasilicate, this max. shows a slight split. The presence of a 2nd band indicating the presence of zones with orderly arrangements moves from 12.8 to 13.05 μ with increase in PbO content and simultaneously becomes considerably weaker. When the PbO content exceeds 60% this band vanishes completely. Thus the increase of the metal-ion content in the glass considerably weakens the ring formation of the tetrahedra and, at a concn. of 60 mole-% or higher, this ring formation is destroyed. A theory for the change in refractivity of glasses with increasing Pb content is given. A 2-component glass with a mol. compn. 33.33% Na_2O and 66.66% SiO_2 gives an absorption max. between 9 and 10 μ and a 2nd max. at 13 μ. This is taken to indicate that ring formation is pronounced in glass of this compn.

Alvin J. Cohen

(1)

FLORINSKAYA, V.A.

USSR

535.391

6524. Reflection spectra of ordinary and devitrified lead glasses in the infrared, V. A. FLORINSKAYA. *Dokl. Akad. Nauk SSSR*, 89, No. 3, 461–4 (1953). *In Russian.* English translation, *U.S. National Sci. Found. NSF-tr-50.*

Presents the results of an investigation on the reflection spectra of lead glasses [see also Abstr. 6645 (1953)] both with and without devitrification caused by heat-treatment. A mirror monochromator spectrometer with a NaCl prism, and a thermopile were used. The curves for the ordinary and devitrified glass are very similar. The simplest reflection curves of devitrified glass have been obtained for glasses with, or near, the composition $2PbO.SiO_2$. The curves become more complex as the SiO_2 content increases. Starting from 55% PbO downwards, a reflection band appears near 12·6 μ, caused by regular rings of tetrahedra. Some devitrified glasses show features of reflection curves for Pb metasilicate and orthosilicate.

F. LACHMAN

MA. KOUTS
2 copies

FLORINSKAYA, V. A.

62

Reflection spectra of compound silicate glasses in the infrared before and after thermal treatment. V. A. Florinskaya. *Doklady Akad. Nauk S.S.S.R.* 90, 1011–14 (1953) (English translation issued as *U.S. Atomic Energy Comm.* NSF-tr-148, 5 pp.(1953)); cf. preceding abstr.—The results of a study of the reflection spectra of optical glasses subjected to long heat-treatment at const. temp. in the annealing range, above it, and considerably below it, are presented. No absorption band is found in the range 12 to 13 μ before thermal treatment by the reflection method as observed in the transmission spectra. Heat-treatment apparently results in an increase in the size and no. of silica crystallites, and the 12 to 13 mμ absorption band appears in the reflection spectra. Two and possibly more types of silica crystallites can coexist within a wide temp. range.
A. J. Cohen

FLORINSKAYA, V. A.

V"

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M.A. YOUTZ
2 copies

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6523. Reflection and transmission spectra of potassium-silicate glasses in the infrared. V. A. FLORINSKAYA AND R. S. PECHENKINA. *Dokl. Akad. Nauk SSSR*, 91, No. 1, 59–62 (1953) *In Russian.* English translation, *U.S. National Sci. Found. NSF-tr-108.*

Reflection spectra were investigated with surfaces freshly polished with rouge and kerosene; transmission spectra on fine films, a few μ thick, drawn out of the melt. All glasses investigated (K content 15–31%) show a transmission band corresponding to one of the active atomic oscillations in the SiO_4 tetrahedron, and another corresponding to the pulsation of the SiO_4 tetrahedron. The degree of polymerization of the SiO_4 tetrahedra decreases as the K-ion content increases. Reflection experiments show that, during heat treatment, the growth occurs of zones with an ordered atomic arrangement. F. LACHINIAN

FLORINSKAYA, V. A.

(2)

9198 **Reflection and Transmission Spectra of Potassium-Silicate Glasses in the Infrared.** V. A. Florinskaya and R. S. Pechenkina. *National Science Foundation Translation, no.* 108, Nov. 1953, 4 p. (From *Doklady Akademii Nauk SSSR*, v. 92, 1953, p. 59-62.)

Transmission spectra studies of two-component K_2SiO_3 glasses with molecular K content varying from 15 to 35%. Reflection spectra of some of these glasses before annealing and after prolonged heat treatment. Graphs. 7 ref.

10-12-54

15-57-2-1780

Translation from: Referativnyy zhurnal, Geologiya, 1957, Nr 2, p 91 (USSR)

AUTHORS: Florinskaya, V. A., Pechenkina, R. S.

TITLE: The Spectrum of Simpler Glasses in the Infrared Region and Its Relation to the Structure of the Glass (Spektry prosteyshikh stekol v infrakrasnoy oblasti i svyaz' ikh so strukturoy stekla)

PERIODICAL: V sb: Stroyeniye stekla, Moscow-Leningrad, AN SSSR, 1955, pp 70-95

ABSTRACT: The investigation of spectra for structure and transmission in the infrared and ultraviolet regions was made on various modifications of silica, fused quartz glass, lead and sodium silicate glasses. The transmission spectra (with absorption bands of about 9μ and 12μ to 13μ) were preliminarily obtained for different modifications of silica to obtain supporting

Card 1/4

The Spectrum of Simpler Glasses (Cont.)

points during the investigation of the glasses. The transmission spectra in the region of 11μ to 13.5μ were obtained for quartz glasses of various manufacturers and the results were compared with the spectrum of quartz for the same region. The series of curves on the whole show that the destruction of the quartz lattice, even when the mineral is held for a long time at very high temperatures, takes place with great difficulty. This circumstance makes it very difficult to decipher the structure of quartz glass. Furthermore, inasmuch as the glass preserves remains of the crystalline modification, corresponding polymorphous transformations should occur within it. The presence of the group Si-O-H, giving absorption bands at 10.6μ and 10.8μ, and also local strains, complicate the structure of quartz. The authors believe, in contrast to the general views, that cristobalite structure is not typical of quartz glass. This conclusion is based on X-ray studies. In lead glasses with 35 and 50 percent PbO, transmission spectra were obtained for films and points from powder layers of crystallized glasses in the region of 11μ to

Card 2/4

The Spectrum of Simpler Glasses (Cont.)

13.5μ ; transmission spectra were obtained for films of glass with 50 percent PbO and a layer of crystallized glass of the same composition in the region of 7μ to 13μ ; and reflection spectra were also obtained of initial and crystallized glass with 50 percent PbO. On the basis of comparison and consideration of the spectral curves, the authors conclude that glass contains groups of orderly arranged atoms, crystallites combined in sizes greater than 10 A to 12 A. The crystallites are bound in layers having unordered structure. In the structural development in lead silicate glass, various modifications of silica and lead silicates of different compositions participated. In this process an ion of lead was the central bonding ion, similar to cations in "island" silicates. The structure of sodium silicate glass was studied in its relationship to the composition and heat of treatment. The results led the authors to conclude that the distribution of atoms in glass is not completely unordered, even as the same fact had been earlier noted in the structure of quartz and lead glasses. In formulating general conclusions on the structure of

The Spectrum of Simpler Glasses (Cont.)

silicate glass, the authors remark on the advantages of the infrared method of structural analyses, by which the composition of the glass may be traced from melt to solid state and to crystallization. Various modifications of silica, silicates of definite chemical combination, and mixed-crystal silicates are present in complex and inhomogeneous micro-structures in glass. Zones with ordered structure are present in glass as crystallites surrounded by transitional regions with unordered zones, and vice-versa. The preparation for the formation of crystallites begins in the melt at temperatures above the liquidus line. The basic structural units of SiO_2 (SiO_4 tetrahedra) have variable atomic spacings between the atoms of silicon and oxygen. The average spacing between these atoms is smallest in quartz glass and largest in glasses with "island" structure.

A. A. L.

Card 4/4

USSR/Chemical Technology. Chemical Products and their Application. J-12
Glass. Ceramics. Building Materials.

Abs Jour: Referat Zh.-Kh., No 8, 1957, 27614

Author : V.A. Florinskaya.
Inst :
Title : To the Question Concerning the Presence of Sodium Bisilicate in Sodium-Silica Glasses.

Orig Pub: vSb: Stroyeniye stekla. M.-L., AN SSSR, 1955, 325-326

Abstract: Basing on many experimental data, the author proves that there is a certain chemical compound - sodium bisilicate - in glass with 33.3% of Na_2O. See also RZhKhim, 1957, 5166, 5169, 5182 and 8954.

Card : 1/1 -13-

USSR/Chemical Technology. Chemical Products and their Application. J-12
Glass. Ceramics. Building Materials.

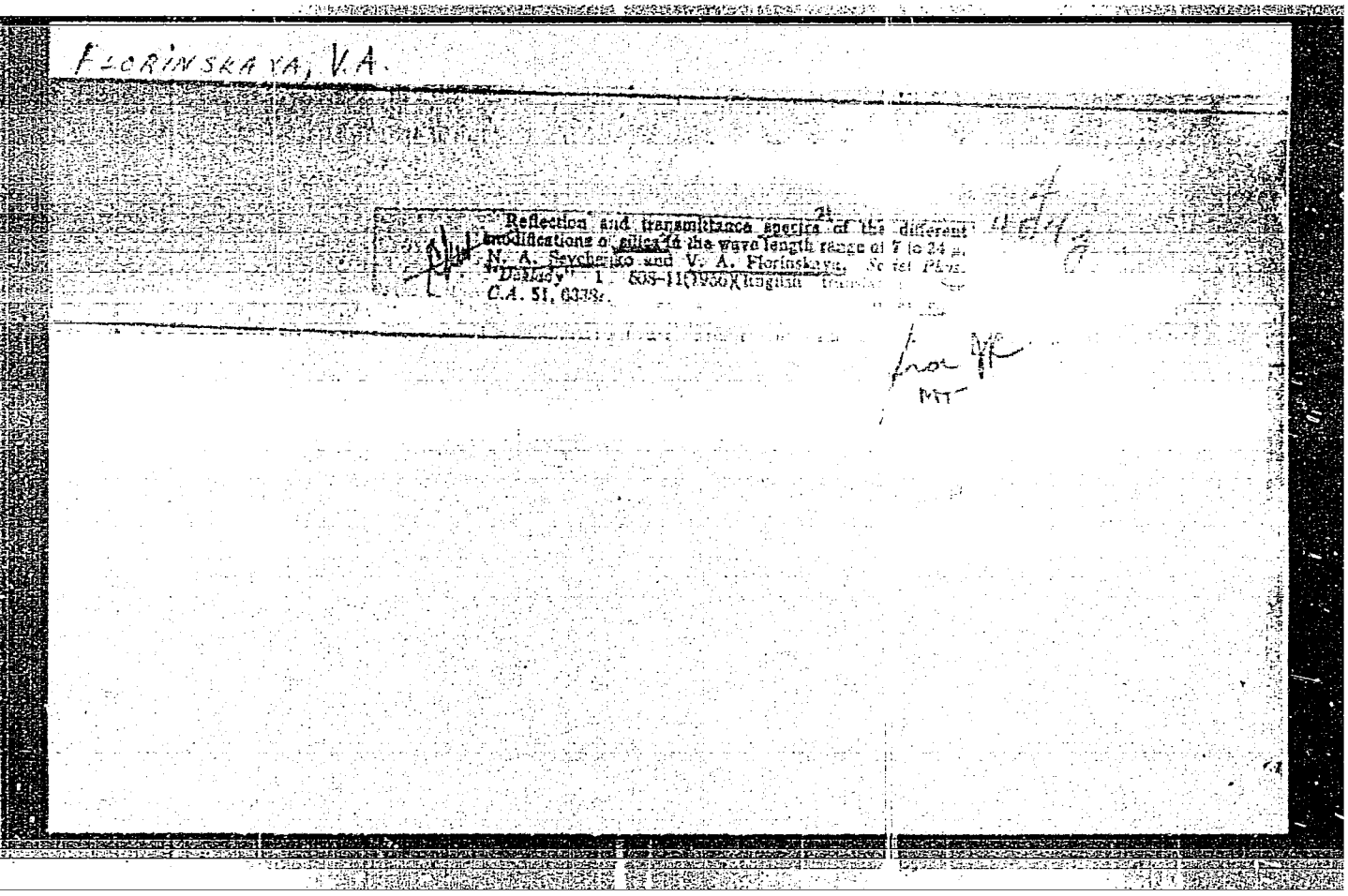
Abs Jour: Referat Zh.-Kh., No 8, 1957, 27620

Author : V.A. Florinskaya.
Inst :
Title : Reply to Ye. F. Gross.

Orig Pub: vSb: Stroyeniye stekla. M.-L., AN SSSR, 1955, 328-332.

Abstract: The author objects to the assertion of Ye.F. Gross that the correspondence of basic lines in a vibration spectrum of glass and of a silicate of the same composition does not infer the presence of regions of orderly distribution of crystallite atoms in glass. The author emphasizes the importance of the thermal past of glass of the same composition, which is not always taken into consideration by the investigators. See also RZhKhim, 1956, 75665; 1957, 3652, 5166, 5169, 5182 and 8954.

Card : 1/1 -19-



FLORINSKAYA, V.A.

Reflection and transmittance spectra of the different
modifications of silica in the wave length range of 7 to 24 μ.
N. A. Saycheniko and V. A. Florinskaya. Soviet Phys.
Doklady 1 505-11(1956)(English
C.A. 51, 6338.

from MIT

Florinskaya, V.A.

USSR/Optics - Physical Optics. K-5

Abs Jour : Referat Zhur - Fizika, No 5, 1957, 12890

Author : Florinskaya, V.A., Pechenkina, A.S.
Inst : -
Title : Infrared Spectra of Sodium-Silicate Glass and Their Connection with the Structure.

Orig Pub : Optika i spektroskopiya, 1956, 1, No 5, 690-709

Abstract : An investigation was made of the transmission spectra of sodium-silicate glass and of products of its crystallization in the infrared region. Powders of the investigated substance were prepared for measurement without access of air and moisture (in a hermetic chamber). Comparison of the spectral data with the electron-diffraction patterns and with crystal -optical analysis data has shown, that it is possible to follow the processes of the rearrangement of the crystalline silicates by their infrared spectra. In particular, two modifications of sodium bisilicate were

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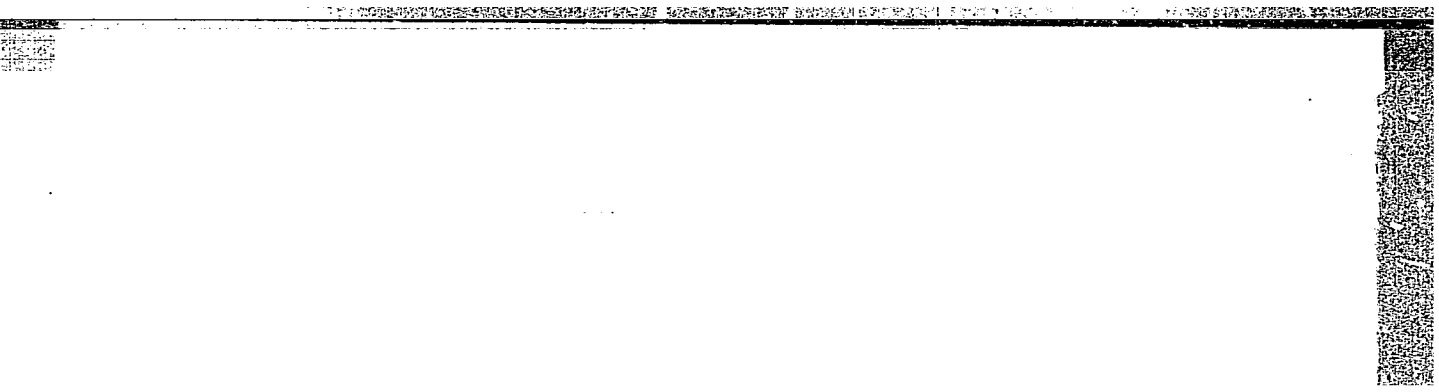
Abs Jour : Ref Zhur Fizika, No 5, 1957, 12890

observed from the change in the intensity of the absorption bands at 9.8 microns and 10.22 -- 10.25 microns. Spectra of the crystallization products of glass, containing 20% Na_2O and 55% Na_2O, studied in the range from 6 to 13 microns, indicate a greater variety in the crystalline phases, than would follow from the diagrams of state. A comparison is made of the spectra of glass of identical molecular composition of the systems Na_2O -- SiO_2 and PbO -- SiO_2, prepared under laboratory conditions and under semi-manufacturing conditions and blown into thin films. In all lead glass there is observed between 9 and 11 microns one absorption band, while in the case of sodium glass, containing from 33.3 to 50% Na_2O, there appeared two bands, this indicating the strong influence of the cation on the structure of the silicon-oxygen skeleton of the glass. The spectra of the glass are compared with the spectra of the crystalline silicates; the observed absorption bands

Abs Jour : Ref Zhur - Fizika, No 5, 1957, 12890

are interpreted as corresponding to groups that have a composition close to the composition of the corresponding compounds. Changes in the spectrum of a glass that has been heated for a long time at 620°, a change occurring prior to the occurrence of crystallization (which is monitored by means of electron diffraction), show that there are formed in the glass zones with an orderly placement of the atoms, i.e., crystallites. The observed degree of sharpness of the absorption bands can take place only in that case, if the dimensions of the crystallites are considerably greater than 10 -- 15 A and if they are shielded from the action of other structures. The crystallization of glass being after total formation of groups with ordered structure.



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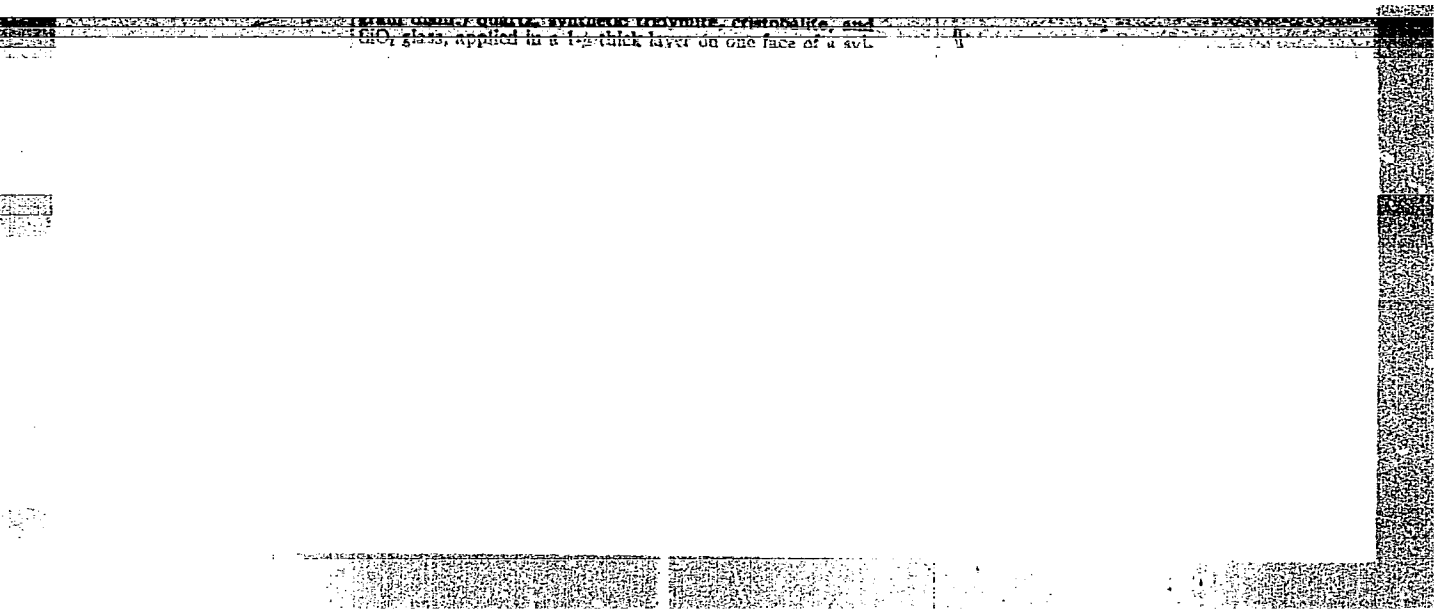

FLORINSKAYA, V. A.

51-6-7/26

AUTHOR: Florinskaya, V. A.

TITLE: Transmission Spectra of Natural Crystalline Lead Silicates and of Crystallisation Products of Two-component Lead-silicate Glasses in the Region 1-13μ. (Spektry propuskaniya yestestvennykh krystallicheskikh silikatov svintsa i produktov krystallizatsii dvukhkomponentnykh svintsovosilikatnykh stekol v oblasti 1-13μ.)

PERIODICAL: Optika i Spektroskopiya, 1957, Vol.II, Nr.6, pp. 724-737. (USSR)

ABSTRACT: Transmission spectra of the following powders were studied: alamosite ($PbOSiO_2$), barysilite ($3PbO.2SiO_2$), litharge (PbO) and crystallised SiO_2-PbO glasses which contained from 23 to 70 mol.% of PbO. The samples were prepared by depositing a very thin layer (of the order of 1μ) of powder on a KCl plate. Powder grains were of diameter smaller than 1μ. Transmission measurements were made with a Beckmann spectrophotometer. The results obtained are presented in eight figures and one table. Fig.1 shows the transmission spectra of alamosite,

Transmission Spectra of Natural Crystalline Lead Silicates and of Crystallisation Products of Two-component Lead-silicate Glasses.

barysilite and litharge. The spectra of glasses with 23 to 70% of PbO are given in Figs. 2, 3, 4, 5, 6 and 8 (after various thermal treatments), and 7 (one glass crystallised at temperatures from 455°C to 645°C). Fig.5 presents also transmission spectra for two other substances: zircon (Zr_2SiO_4) and willemite (Zn_2SiO_4).

The infrared transmission spectra of crystallisation products in glasses of the SiO_2-PbO system reveal the presence of some unknown compounds of lead or unknown modifications of recorded compounds. The author thanks Academician A. A. Lebedev and A. G. Vlasov for advice and help. Some of the glasses were presented by P. V. Bukarinova. There are 8 figures, 1 table and 18 references, 5 of which are Slavic.

SUBMITTED: October 11, 1956.

AVAILABLE: Library of Congress.

Card 2/2

FLORINSKAYA, V.A.

PRIKHOT'KO, A.F.

24(7) p.3 PHASE I BOOK EXPLOITATION SOV/1365

L'vov. Universytet

Materialy X Vsesoyuznogo soveshchaniya po spektroskopii. t. 1: Molekulyarnaya spektroskopiya (Papers of the 10th All-Union Conference on Spectroscopy. Vol. 1: Molecular Spectroscopy) [L'vov] Izd-vo L'vovskogo univ-ta, 1957. 499 p. 4,000 copies printed. (Series: Its: Fizychnyy zbirnyk, vyp. 3/8/)

Additional Sponsoring Agency: Akademiya nauk SSSR. Komissiya po spektroskopii. Ed.: Gazer, S.L.; Tech. Ed.: Saranyuk, T.V.; Editorial Board: Landsberg, G.S., Academician (Resp. Ed., Deceased), Neporent, B.S., Doctor of Physical and Mathematical Sciences, Fabelinskiy, I.L., Doctor of Physical and Mathematical Sciences, Fabrikant, V.A., Doctor of Physical and Mathematical Sciences, Kornitskiy, V.G., Candidate of Technical Sciences, Rayskiy, S.M., Candidate of Physical and Mathematical Sciences, Klimovskiy, L.K., Candidate of Physical and Mathematical Sciences, Miliyanchuk, V.S., Candidate of Physical and Mathematical Sciences, and Glauberman, A. Ya., Candidate of Physical and Mathematical Sciences.

Card 1/30

Card 2/30

AUTHORS: Sevchenko, N. A. and Florinskaya, V. A.

51-4-2-8/20

TITLE: Infrared Transmission Spectra of Porous and Quartz-like Glasses. (Infrakrasnyye spektry propuskaniya poristykh i kvartsoidnykh stekol.)

PERIODICAL: Optika i Spektroskopiya, 1958, Vol.IV, Nr.2, pp.189-195 (USSR)

ABSTRACT: On treatment of glass with acids almost all of Na_2O and most of B_2O_3 are dissolved out. The remaining glass contains a high proportion of silicon, and is very porous. Heating of this porous glass to 750-900°C removes porosity and produces quartz-like glass, similar in properties to fused quartz. The present paper reports results of measurement of infra-red transmission of porous and quartz-like (quartzoid) glasses. Three porous and three quartzoid glasses were studied; they were prepared from the following sodium-borosilicate glasses (in molecular %): (1) 10 Na_2O, 30 B_2O_3 and 60 SiO_2; (2) 7 Na_2O, 23 B_2O_3 and 70 SiO_2; (3) 5 Na_2O, 20 B_2O_3 and 75 SiO_2. For briefness the glass

Card 1/4

Infrared Transmission Spectra of Porous and Quartz-like Glasses.

compositions will be denoted by: 10/30, 7/23 and 5/20. One untreated 10/30 sodium-borosilicate glass, and glasses of the system B_2O_3-SiO_2 containing from 0.5-75 mol.% of SiO_2 were also studied. Porous glasses were obtained by treatment with hydrochloric acid at 50°C. The samples were either thin layers of powders on KCl plates or thin films. Measurements were made using IKS-11 and Beckmann IR-2 spectrometers. At 1-15 μ a NaCl prism and at 15-24 μ a KBr prism were used. Fig.1 shows transmission spectra of sodium-borosilicate 10/30 glass. Curves I and II represent powders of transparent and opalescent glass. Spectrum of a film of the same glass is given by curve III. Fig.2 shows spectra of powders of porous glasses 10/30, 7/23, 5/20 and quartzoids obtained from them (curves II, IV, VI and I, III, V respectively). Fig.3 shows spectra of powders of quartzoid (curve 1) and porous (curve II) 7/23 glasses. Figs. 2 and 3 show that in all porous glasses and quartzoids very strong bands at 9 and 21-22 μ are observed, as well as medium-intensity bands at 7.2, 12.5 and 10.8 μ. In addition

Infrared Transmission Spectra of Porous and Quartz-like Glasses.

to these bands porous glasses exhibit also weak bands at 3 and 6.2 μ. The 9, 12.5 and 21-22 μ bands are due to silicon in porous glasses. The 10.8 μ band was also observed in amorphous silicic acid spectra; it is due to vibrations of Si-O-H groups. The latter conclusion agrees with Zhdanov's results (Ref.5) and those reported in Refs.6-8. Fig.4 shows transmission spectra of B_2O_3-SiO_2 glasses in the form of films containing 0.5 to 75% SiO_2. In all these glasses two bands are observed: at 9 and 7-8 μ. The 9 μ band coincides with the fundamental band of free silicon (Ref.3): the 7.2 μ band is due to boron. The authors thank Academician A.A. Lebedev and G.A. Vlasov for their help and advice. They also thank O.S. Molchanova, S.E. Krasikov and G.A. Kolykov for supplying the glasses and assistance in the work. There are 4 figures, 10 references of which 9 are Soviet and 1 English.

ASSOCIATION: State Optical Institute imeni S.I. Vavilov.
Card 3/4 (Gos. opticheskiy institut im. S.I. Vavilova.)

51-4-2-8/28

Infrared Transmission Spectra of Porous and Quartz-like Glasses.

SUBMITTED: April 9, 1957.

1. Porous glass-Infrared spectra 2. Glass-Infrared spectra
3. Infrared spectrum analyzers

Card 4/4

FLORINSKAYA, V.A.

51-4-2-19/28

AUTHORS: Sevchenko, N. A. and Florinskaya, V. A.

TITLE: Reflection Spectra of Crystalline Quartz Plates, Cut at Various Angles with Respect to the Optical Axis, in the 7-24 μ Wavelength Region. (Spektry otrazheniya plastinok kristallicheskogo kvartsa, vyrezannykh pod razlichnymi uglami otnositel'no opticheskoy osi, v oblasti dlin voln 7-24 μ.)

PERIODICAL: Optika i Spektroskopiya, 1958, Vol.IV, Nr.2, pp.261-264 (USSR)

ABSTRACT: The present paper reports on the reflection spectra of plane-parallel disks (1.5 mm thick) of crystalline α-quartz, cut at 0, 20, 45, 70, 80, 90° to the optical axis, in the 7-24 μ region. Reflection was measured on an IKS-11 spectrometer using rock-salt and potassium bromide prisms. A vacuum thermoelement with a Kozyrev amplifier was used as the receiver. Measurements were made in non-polarized light at an angle of incidence close to 25°. Reflection from samples was compared with reflection at an aluminium mirror. Scattered light was removed by means of thick plates of glass, and LiF placed in the light beam. Figs.1 and 2 show the

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Reflection Spectra of Crystalline Quartz Plates, Cut at Various Angles with Respect to the Optical Axis, in the 7-24 μ Wavelength Region.

reflection curves in the regions 7.5-16 and 17.5-24 μ respectively. In a table on p.264 the wavelengths of the reflection maxima are given for all the samples studied. A fundamental band, which is a doublet with maxima at 8.50 and 8.95 μ, was found to have practically the same position and intensity in all the crystals studied. The position of a second fundamental band at 12-13 μ (also a doublet) is the same for all cuts but its intensity varies considerably from sample to sample. Another band at 14.53 μ (characteristic of the quartz lattice) is found to have the same position in all curves of Fig.1 but its intensity varies with variation of the crystal cut. The angle of cut has the greatest effect on long-wavelength bands at 16-19.5 and 19.5-24 μ. The latter two bands change both their position and intensity with variation of the angle of cut of quartz crystals. The authors thank A.A. Lebedev and A.G. Vlasov for advice and help. There are 2 figures, 1 table and 6 references, of which 1 is Soviet,

51-4-2-19/28

Reflection Spectra of Crystalline Quartz Plates, Cut at Various Angles with Respect to the Optical Axis, in the 7-24 μ Wavelength Region.

1 Belgian, 2 German and 2 American.

ASSOCIATION: State Optical Institute imeni S.I. Vavilov.
(Gos. opticheskiy institut im. S.I. Vavilova.)

SUBMITTED: May 10, 1957.

1. Quartz crystals-Reflection spectra-Measurement 2. Spectrometers-Applications

Card 3/3

SOV/51-5-1-4/19

AUTHORS: Sevchenko, N.A. and Florinskaya, V.A.

TITLE: The Transmission Spectra of Quartz Glass in the Region 2-24 μ. (Spektry propuskaniya kvartsevogo stekla v oblasti 2-24 μ)

PERIODICAL: Optika i Spektroskopiya, 1958, Vol 5, Nr 1, pp 23-28 (USSR)

ABSTRACT: In the study of structure of vitreous silica the infrared spectra of silica were measured in the process of transition of the latter from its crystalline to glassy state. Quartz glasses were obtained by melting crystalline Brazil quartz under the same experimental conditions but at different temperatures of 1720-1740, 1750-1800, 1800, 1850 and 1900°C. There quartz glasses were prepared by N.F. Orlov in Professor V.V. Vargin's laboratory. The glass when molten was held at the highest temperature for 30-40 minutes and was not subjected to annealing after preparation. On melting of the Brazil quartz at 1720-1740°C and subsequent cooling a powder was obtained while in all the remaining cases quartz glasses were produced. Samples were in the form of layers of very fine powder on sylvite base. Transmission was measured in the region up to 13 μ using a Beckmann spectrophotometer with a NaCl prism. For measurements at 13-15 and 15-24 μ the IKS-11 spectrophotometer was used with NaCl and KBr prisms.

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The Transmission Spectra of Quartz Glass in the Region 2-24 μ.

The technique of measurements is described in greater detail in Refs 1 and 2. Figs 1-3 show the transmission spectra of powders in the region of the fundamental absorption bands of silicon at 11.5-13, 14-15, 18-24 μ. The curves in Figs 1-3 refer to the following substances: 1 - α-quartz; 2 - glass melted at 1720-1740°C; 3 - glass melted at 1750-1800°C; 4 - glass melted at 1800°C; 5 - glass melted at 1850°C; 6 - glass melted at 1900°C; 7 - glass produced by melting Aldan quartz at 1900°C; 8 - glass made by the Hereus Company in powder form; 9 - a film blown from the Hereus glass. Figs 4 and 5 show the transmission spectra of damaged quarts glass at 11-15 μ and of silica at 3 μ respectively. The quartz glass spectra were found to be complex because of incompleteness of destruction of the quartz lattice on melting. In spite of the fact that each glass was held at its maximum temperature for 30-40 minutes, the transmission spectra contained bands characteristic of the quartz lattice (doublet at 12-13 μ and bands at 14 and 19 μ). Other reasons for complexity

of the quartz or glass spectra advanced by the authors are the presence of polymorphic forms in the original crystalline quartz and the presence of Si-O-H groups in the glasses. The authors thank A.A. Lebedev and A.G. Vlasov for their advice. There are 5 figures and 6 references, 4 of which are Soviet, 1 Belgian and 1 German.

ASSOCIATION: Gosudarstvennyy opticheskiy Institut im. S.I. Vavilova (State Optical Institute imeni S.I. Vavilov)

SUBMITTED: June 28, 1957

Card 3/3 1. Quartz - Spectrographic analysis 2. Quartz - Thermal factors
3. Spectrophotometers - Applications

PHASE I BOOK EXPLOITATION SOV/5955

Vsesoyuznoye soveshchaniye po steklobraznomu sostoyaniyu. 3d, Leningrad, 1959.

Steklobraznoye sostoyaniye; trudy Tret'yego vsesoyuznogo soveshchaniya Leningrad, 16-20 noyabrya 1959 (Vitreous State; Transactions of the Third All-Union Conference on the Vitreous State, Held in Leningrad on November 16-20, 1959) Moscow, Izd-vo AN SSSR, 1960. 534 p. Errata slip inserted. 3,200 copies printed. (Series: Its: Trudy)

Sponsoring Agencies: Institut khimii silikatov Akademii nauk SSSR. Vsesoyuznoye khimicheskoye obshchestvo imeni D.I. Mendeleyeva and Gosudarstvennyy ordena Lenina opticheskiy institut imeni S.I. Vavilova.

Editorial Board: A.I. Avgustinik, V.P. Barzakovskiy, M.A. Bezborodov, O.K. Botvinkin, V.V.Vargin, A.G. Vlasov, K.S. Yevstrop'yev, A.A. Lebedev, M.A. Matveyev, V.S. Molchanov, R.L. Myuller, Ye.A. Poray-Koshits, Chairman, N.A. Toropov, V.A. Florinskaya, A.K. Yakhkind; Ed. of Publishing House: I.V. Suvorov; Tech. Ed.: V.T. Bochever.

PURPOSE: This book is intended for researchers in the science and technology of glasses.

COVERAGE: The book contains the reports and discussions of the Third All-Union Conference on the Vitreous State, held in Leningrad on November 16-19, 1959. They deal with the methods and results of studying the structure of glasses, the relation between the structure and properties of glasses, the nature of the chemical bond and glass structure, and the crystallochemistry of glass. Fused silica, mechanism of vitrification, optical properties and glass structure, and the electrical properties of glasses are also discussed. A number of the reports deal with the dependence of glass properties on composition, the tinting of glasses and radiation effects, and mechanical, technical, and chemical properties of glasses. Other papers treat glass semiconductors and soda borosilicate glasses. The Conference was attended by more than 300 delegates from Soviet and East German scientific organizations. Among the participants in the discussions were N.V. Solomin, Ye. V. Kuvshinskiy, Yu.A. Gastev, V.P. Pryanishnikov, Yu. Ya. Gotlib, O.P. Mchedlov-Petrosyan, G.P. Mikhaylov, S.M. Petrov, A.N. Lazarev, D.I. Levin, A.V. Shatilov, N.T. Ploshchinskiy, A.Ya. Kuznetsov, E.V. Degtyareva, G.V. Byurganovskaya, A.A. Kalenov, M.M. Skornyakov, P.Ya. Bokin, E.K. Keller, Ya.A. Kuznetsov, V.P. Pozdnev, R.S. Shevelevich, Z.G. Pinsker, and O.S. Molchanova. The final session of the Conference was addressed by Professor I.I. Kitaygorodskiy, Honored Scientist and Engineer, Doctor of Technical Sciences. The following institutes were cited for their contribution to the development of glass science and technology: Gosudarstvennyy opticheskiy institut (State Optical Institute); Institut khimii silikatov AN SSSR (Institute of Silicate Chemistry, AS USSR), Fizicheskiy institut AN SSSR (Physics Institute AS USSR), Fiziko-tekhnicheskiy institut AN SSSR (Physicotechnical Institute AS USSR), Institut fiziki AN BSSR, Minsk (Institute of Physics, Academy of Sciences, Belorusskaya SSR, Minsk), Laboratory of Physical Chemistry of Silicates of the Institut obshchey i neorganicheskoy khimii AN BSSR, Minsk (Institute of General and Inorganic Chemistry, Academy of Sciences, Belorusskaya SSR, Minsk), Institut vysokomolekulyarnykh soyedineniy AN SSSR (Institute of High Molecular Compounds, AS USSR), Gosudarstvennyy institut stekla (State Institute for Glass), Gosudarstvennyy institut steklovolokna (State Institute for Glass Fibers), Gosudarstvennyy institut elektrotekhnicheskogo stekla (State Institute for Electrical Glass), Sibirskiy fiziko-technicheskiy institut, Tomsk (Siberian Physicotechnical Institute, Tomsk), Leningradskiy gosudarstvennyy universitet (Leningrad State University), Moskovskiy khimiko-tekhnologicheskiy institut (Moscow Institute of Chemical Technology), Leningradskiy tekhnologicheskiy institut im. Lensoveta (Leningrad Technological Institut imeni Lensovet), Belorusskiy politekhnicheskiy institut Minsk (Belorussian Polytechnic Institute, Minsk), Novocherkasskiy politekhnicheskiy institut (Novocherkassk Polytechnic Institute), and Sverdlovskiy politekhnicheskiy institut (Sverdlovsk Polytechnic Institute). The Conference was sponsored by the Institute of Silicate Chemistry AS USSR (Acting Director - A.S. Gotlib), the Vsesoyuznoye khimicheskoye obshchestvo im. D.I. Mendeleyeva (All-Union Chemical Society imeni D.I. Mendeleyev), and the Gosudarstvennyy ordena Lenina opticheskiy institut imeni S.I. Vavilova (State "Order of Lenin" Optical Institute imeni S.I. Vavilov). The 15 resolutions of the Conference include recommendations to organize a Center for the purpose of coordinating the research on glass, to publish a new periodical under the title "Fizika i khimiya stekla" (Physics and Chemistry of Glass), and to join the International Committee on Glass. The Conference thanks A.A. Lebedev, Academician, Professor, and Chairman of the Organization Committee; Ye.A. Poray-Koshits, Doctor of Physics and Mathematics, Member of the Organizational Committee; and R.L. Myuller, Doctor of Chemical Sciences, Member of the Organizational Committee. The editorial board thanks G.M. Bartenev, M.V. Vol'kenshteyn, L.I. Demkina, D.P. Dobychin, S.K. Dubrovo, V.A. Ioffe, and B.T. Kolomiyets. References accompany individual reports.

Florinskaya, V.A.

AUTHOR: Syritskaya, Z. M. S/072/60/000/03/021/023 B005/B008

TITLE: 3rd All-Union Conference on the Vitreous State

PERIODICAL: Steklo i keramika, 1960, Nr 3, pp 43-46 (USSR)

ABSTRACT: The 3rd All-Union Conference on the Vitreous State was held in Leningrad at the end of 1959. It was organized by the Institut khimii silikatov AN SSSR (Institute of the Chemistry of Silicates AS USSR), Vsesoyuznoye khimicheskoye obshchestvo imeni D. I. Mendeleyeva (All-Union Chemical Society imeni D. I. Mendeleyev) and Gosudarstvennyy opticheskiy institut imeni S. I. Vavilova (State Optical Institute imeni S. I. Vavilov). More than 100 reports on the structure of glass, investigation methods of the vitreous state, the mechanism of vitrification and physicochemical and technical properties of glasses were delivered. The Conference was opened by Academician A. A. Lebedev. Fundamental investigation methods and results concerning the glass structure were discussed at the 1st meeting. Academician A. A. Lebedev reported on possibilities and results of optical methods, Ye. A. Poray-Koshits on the diffraction method, K. S. Yevstrop'yev on general problems concerning structure and properties of glasses. The 2nd meeting produced 5 reports on the problem of the vitreous state: R. L. Myuller, "Chemical Peculiarities of Polymeric Vitreous Materials and the

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Nature of Vitrification"; N. A. Goryunova and B. T. Kolomiyets, "On the Problems of Conformities of the Vitrification"; V. V. Tarasov, "Glass as a Polymer"; A. N. Denval'ter, "Theory of Glass Structure"; A. G. Vlasov, "Natural Oscillations of the Glass Lattice". The 3rd meeting produced 9 reports on investigation results of silicate melts and on problems of the mechanism of vitrification: A. I. Avgustinik, "On the Problem of the Formation of the Crystalline Phase From the Silicate Melt"; O. K. Botvinkin, "Process of Vitrification and the Structure of Glass"; B. M. Lepinskikh, O. A. Yesin and V. I. Musikhin, "On the Structure of Melts"; Y. S. Sryvalkin and O. A. Yesin, "Thermodynamic Properties of the Silicate Systems $FeO - CaO - SiO_2$ and $CaO - Al_2O_3 - SiO_2$"; G. M. Bartenev, "Mechanical and Structural Vitrification"; M. V. Vol'kenshteyn, "Mechanism of Vitrification". At the 4th meeting, 13 reports dealt with problems of the glass structure and optical investigation methods: V. A. Florinskaya, "Infrared Reflection Spectra of Sodium Silicate Glasses and Their Relations to the Structure"; Ya. S. Bobovich and T. P. Tulub, "Smekal-Raman Dispersion of Light and the Structure of Some Silicate Glasses"; V. A. Kolesova, "Investigation of the Vibrational Spectra of Aluminosilicate Glasses"; N. N. Sobolev reported on the work of the Fizicheskiy Institut AN SSSR (Institute of Physics AS USSR) with

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glasses from one component, with the help of infrared spectrophotometry and the Smekal-Raman dispersion; T. A. Sidorov reported on the molecular structure and the properties of the crystalline quartz; S. M. Brekhovskikh and V. P. Cheremisinov reported on structural investigations of lead- and bismuthborate glasses with the aid of infrared spectroscopy; A. G. Vlasov, "The Quantitative Relation of the Orderly and Irregular Phase in Glass"; G. O. Bagdyk'yants and A. G. Alekseyev, "Electronographic Investigation of the Structure of Glasses"; N. A. Voyshvillo, "On the Structure of a Sodium-boron-silicate Glass Submitted to Enduring Thermal Treatment"; N. S. Andreyev, V. I. Aver'yanov, N. A. Voyshvillo, "Structural Interpretation of the Anormal Dispersion of the Visible Light in Sodium-boron-silicate Glasses". At the 5th meeting, 9 reports dealt with the investigation results of sodium-boron-silicate glasses. A. A. Appen and Gan' Fu-Si, "Boron and Alumoboron Anomaly of the Properties of Silicate Glasses"; Ye. Y. Galant, "On the Coordination Numbers of Aluminum and Boron in Some Glasses"; S. P. Zhdanov reported on structural changes in boron-silicate glasses; Ye. A. Poray-Koshits and S. P. Zhdanov reported on some controversial problems concerning the structure of boron-silicate glasses and their porous products; Ye. A. Poray-Koshits and N. S. Andreyev, "Submicroscopic Inhomogeneities in the Structure of Complex Glasses". The 15 reports at

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(23)

FLORINSKAYA, V.A.; PECHENKINA, R.S.

Application of infrared spectroscopy to the study of the structure of silicates. Part 1: Reflection spectra of crystalline sodium silicates in the region of 7.5 to 15 . Zhur. strukt. khim. 1 no.1: 86-98 My-Je '60. (MIRA 13:8)

1. Gosudarstvennyy opticheskiy institut imeni S.I. Vavilova, Leningrad.

(Sodium silicate--Spectra)

30609
S/058/61/000/008/010/044
A058/A101

15.2120
9,4170 (1482)

AUTHOR: Florinskaya, V. A.

TITLE: Infrared reflection spectra of sodium silicate glasses and their connection with glass structure

PERIODICAL: Referativnyy zhurnal, Fizika, no. 8, 1961, 136, abstract 8V289 (V sb. "Stekloobrazn. sostoyaniya". M.-L., AS USSR, 1960, 177-194, disc. 238-242)

TEXT: The reflection spectra of specimens of glasses of the Na_2O - SiO_2 system containing different amounts of Na_2O were investigated after their heat treatment for 3,400 hours at 620°C. The transmission spectra of thin films (7 - 15 μ) of these glasses were also investigated. For the same glass composition the spectra differ markedly for specimens subjected to different heat treatment. It was shown that the process of crystallization of sodium disilicate from a glass composed of 33.3% Na_2O and 66.7% SiO_2 can be tracked in time and as a function of whether the crystallization rate is faster or slower than the rate of the chemical reaction that takes place owing to the diffusion of Na ions. Analogous data were obtained for a glass composed of 30% Na_2O and 70% SiO_2; in

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30609
S/058/61/000/008/010/044
A058/A101

Infrared reflection spectra of sodium silicate ...

some cases unknown sodium silicates crystallize out. Comparison of the spectra of glasses containing 50% Na_2O with the spectra of sodium metasilicate show that the basic part of the compound $Na_2O \cdot SiO_2$ in the glass is dissociated. The investigation substantiates the presence in the glass of zones with ordered arrangement of atoms (crystallites) and the inhomogeneity of the microstructure of the glass: the occurrence of regions with high SiO_2 content and others rich in Na.

O. Girin

[Abstracter's note: Complete translation]

Card 2/2

BELOV, N.V.; PRIKHOD'KO, N. Ye.; SIMONOV, V.I.; FLORINSKAYA, V.A.; MCHEDLOV-PETROSYAN, O.P.

Symposium on the study of silicates of monovalent and divalent cations. Zhur. prikl. khim. 33 no.11:2598-2600 N '60. (MIRA 14:4)

(Silicates--Congresses)

110

FLORINSKAYA, V.A.

PHASE I BOOK EXPLOITATION SOV/6181

Ural'skoye soveshchaniye po spektroskopii. 3d, Sverdlovsk, 1960. Materialy (Materials of the Third Ural Conference on Spectroscopy) Sverdlovsk, Metallurgizdat, 1962. 197 p. Errata slip inserted. 3000 copies printed.

Sponsoring Agencies: Institut fiziki metallov Akademii nauk SSSR. Komissiya po spektroskopii; and Ural'skiy dom tekhniki VSNTO.

Eds. (Title page): G. P. Skornyakov, A. B. Shayevich, and S. G. Bogomolov; Ed.: Gennadiy Pavlovich Skornyakov; Ed. of Publishing House: M. L. Kryzhova; Tech. Ed.: N. T. Mal'kova.

PURPOSE: The book, a collection of articles, is intended for staff members of spectral analysis laboratories in industry and scientific research organizations, as well as for students of related disciplines and for technologists utilizing analytical results.

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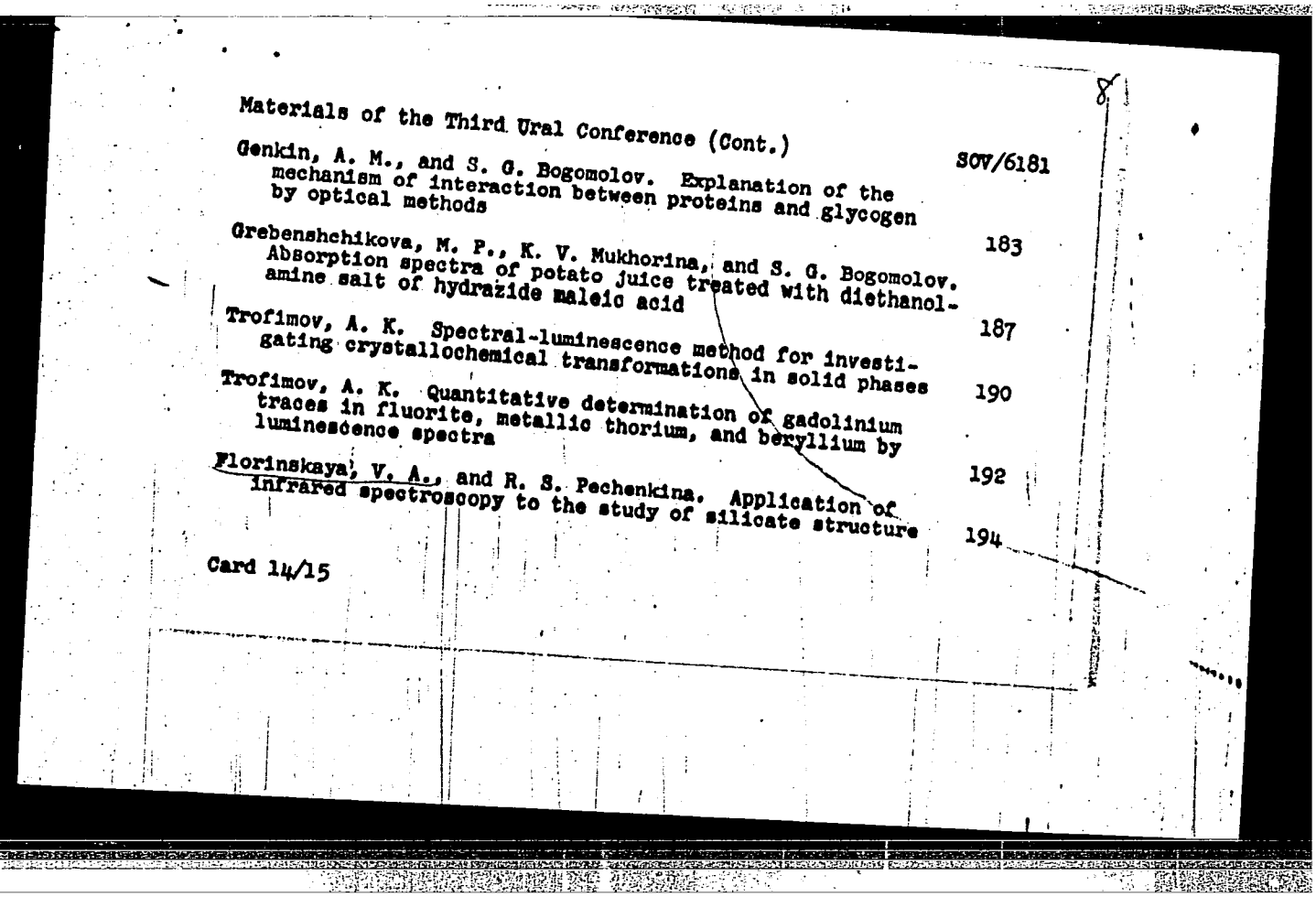
Materials of the Third Ural Conference (Cont.) SOV/6181

COVERAGE: The collection presents theoretical and practical problems of the application of atomic and molecular spectral analysis in controlling the chemical composition of various materials in ferrous and nonferrous metallurgy, geology, chemical industry, and medicine. The authors express their thanks to G. V. Chentsova for help in preparing the materials for the press. References follow the individual articles.

TABLE OF CONTENTS:



Materials of the Third Ural Conference (Cont.) SOV/6181

Card 14/15

S/076/62/036/008/002/011
B101/B144

AUTHORS: Florinskaya, V. A., and Pechenkina, R. S. (Leningrad)

TITLE: Studies of crystallization products from quartz glass. I. Infrared spectroscopy

PERIODICAL: Zhurnal fizicheskoy khimii, v. 36, no. 8, 1962, 1687 - 1689

TEXT: IR reflection spectra of quartz glasses from the Heraeus firm were studied in the range 7 - 15μ after devitrification of the glasses by heating to 620 - 1425°C (for methods see Optika i spektroskopiya, 1, 261, 1958). Results: (1) The crystalline film forming at 620°C consists mainly of quartz, probably of β-quartz or a mixture of α- and β-quartz. (2) Above 900°C a mixture of cristobalite and some other unknown SiO_2 modifications is formed. (3) At 1380 - 1390°C, a SiO_2 modification is formed whose reflection maximum lies at 8.75μ. This SiO_2 modification was also observed in crystallized sodium silicate glass (12 - 14 mole% Na_2O).

There is 1 figure.

Card 1/2

S/076/62/036/008/002/011
B101/B144

Studies of crystallization...

SUBMITTED: October 24, 1960

Card 2/2

ACCESSION NR: AT4019293 S/0000/63/003/001/0090/0099

AUTHOR: Florinskaya, V. A.; Podushko, Ye. V.; Gonek, T. N.; Cherneva, E. F.

TITLE: Infrared spectra of glassy and crystallized silicates of the system lithium oxide-aluminum oxide-silicon dioxide $\pm$ TiO_2 and their relationship to the structure

SOURCE: Simpozium po stekloobraznomu sostoyaniyu. Leningrad, 1962. Stekloobraznoye sostoyaniye, vy*p. 1: Katalizirovannaya kristallizatsiya stekla (Vitreous state, no. 1: Catalyzing crystallization of glass). Trudy* simpoziuma, v. 3, no. 1. Moscow, Izd-vo AN SSSR, 1963, 90-99, insert between p. 90 and 91.

TOPIC TAGS: glass, silicate, crystallization, glass structure, infrared spectrum, infrared spectroscopy, lithium oxide, aluminum oxide, titanium dioxide, spodumene

ABSTRACT: Infrared spectra of glass 13 with TiO_2 were determined over a range of 7-14 microns, along with the spectra of several natural minerals. The effects of variations in thermal treatment on the spectral properties and structure were investigated. The results show that transparent crystalline glass containing titanium with a composition close to spodumene has essentially the same crystal structure as found in pure crystallized spodumene glass. These crystals are formed below 800C. Loss of transparency in crystalline glass of the same or very similar composition is caused by the different

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ACCESSION NR: AT4019293

appearance of crystalline phases and by the larger dimensions of the crystals which are formed. The temperature conditions during the crystallization of glass and the addition of oxides can affect the composition of the crystalline phases. Glass crystallization is preceded by a period of latent structurization. Orig. art. has: 8 figures.

ASSOCIATION: None

SUBMITTED: 17May63 DATE ACQ: 21Nov63 ENCL: 00

SUB CODE: MT, OP NO REF SOV: 000 OTHER: 000

2/2

Card

FLORINSKAYA, V.A.; PECHENKINA, R.S. [deceased]

Infrared spectra of crystalline and vitreous silicates of the system Na_2O - SiO_2 in the region up to 25 microns. Zhur.strukt. khim. 4 no.6:850-860 N-D '63. (MIRA 17:4)

1. Gosudarstvennyy opticheskiy institut imeni S.I.Vavilova, Leningrad.

CHERNEVA, E.F.; FLORINSKAYA, V.A.; PODUSHKO, Ye.V.

Infrared reflection spectra of the crystallization products of glasses of the Li_2O- SiO_2 system in the 7,7 - 14 μ region. Zhur. fiz. khim. 37 no.11:2556-2560 N'63. (MIRA 17:2)

ALEKSEYEV, A.G.; VARGIN, V.V.; VERTSNER, V.N.; KIND, N.Ye.; KONDRAT'YEV, Yu.N.; PODUSHKO, Ye.V.; SEREBRYAKOVA, M.V.; TIKHOMIROV, G.P.; TUDOROVSKAYA, N.A.; FLORINSKAYA, V.A.; LIBERMAN, N.R., red.

[Controlled catalyzed crystallization of glasses of the lithium aluminosilicate system] Kataliziruvannaia reguliruemaia kristallizatsiia stekol litievoaliumosilikatnoi sistemy. Leningrad, Khimiia. Pt.1. 1964. 119 p. (MIRA 18:4)

FLORINSKAYA, V. A.

"Investigation of glass structure by various physical methods.

report submitted for 4th All-Union Conf on Structure of Glass, Leningrad 16-21 Mar 64.

Optical Inst, Leningrad.

FLORINSKAYA, V.A.; CHERNEVA, E.F.; KOROL'KOVA, I.N.; SKAVRONSKAYA, I.F.

Crystallization of sodium silicate glasses at high temperatures. Zhur. fiz. khim. 38 no.2:472-477 F '64.
(MIRA 17:8)

[illegible] EWT(m)/EWP(e) [illegible]

ACCESSION NR: AP4047636 [illegible]

AUTHOR: Chernyeva, E. F., Florinskaya, V. A.

TITLE: Raman spectra of certain crystalline [illegible] silicates

SOURCE: Zhurnal strukturnoy khimii, v. 5, no. 5, 1964, 707-713

TOPIC TAGS: Li_2O-SiO_2 system, IR spectrum, crystalline [illegible] silicate, vitreous silicate, lithium silicate, lithium bisilicate

ABSTRACT: The structures of the crystalline and vitreous silicates of the Li_2O-[illegible]em and the processes taking place during [illegible] are studied by spectral [illegible] Raman examination [illegible] vitreous silicate glass was [illegible] and high alkaline silicates. Crystals [illegible]

ACCESSION NR: AP4047636

... the original glass precipitated as the first crystalline ... The ... bisilicate formation reaction was ... it was ... of solid phase reaction through a ... stages, ... precipitated high-silica and high-alkali crystals. This se- ... plex processes occurred simultaneously even in the simple silicate glass. Orig. art. has: 4 figures

ASSOCIATION: Gosudarstvenny*y opticheskiy institut im. S. I. Vavilova (State Optical Institute)

SUBMITTED: 27Jul63 ENCL: 00

SUB CODE: SS, OP NO REF SOV: 001 OTHER: 001

Card 2/2

ACCESSION NR: AP5006704 S/0076/65/039/002/0500/0508

AUTHOR: Cherneva, E. F.; Florinskaya, V. A.

TITLE: A study of the crystallization of lithium disilicate glass over a wide temperature interval

SOURCE: Zhurnal fizicheskoy khimii, v. 39, no. 2, 1965, 500-508

TOPIC TAGS: lithium disilicate, glass crystallization, glass crystal precipitation, solid phase reaction, lithium glass, infrared spectroscopy

ABSTRACT: Infrared spectroscopy represents the most efficient method for studying glass crystallization. The authors used this technique to study the crystallization of lithium disilicate over the 509-834 and [illegible] ranges. The temperature of $Li_2O{\cdot}2SiO_2$ [illegible] long-day processing [illegible] the melt is nonhomogeneous, containing [illegible] with highly [illegible] and highly alkaline silicates. The [illegible] glass

L 35066-65

ACCESSION NR: AP5006704

is highly ordered. The actual formation of crystalline lithium disilicate occurs via a solid phase reaction between the primary precipitated crystals. This reaction proceeds through several intermediate steps. Orig. art. has: 9 figures.

ASSOCIATION: None

SUBMITTED: 08Apr64 ENCL: 00 SUB CODE: MT

NO REF SOV: 004 OTHER: 002

Card 2/2

L 11840-66 EWT(1)/EWT(m)/EWP(e)/T/EWP(b) IJP(c) GS/WH

ACC NR: AT6000470 SOURCE CODE: UR/0000/65/000/000/0013/0022

AUTHOR: Florinskaya, V. A.

ORG: None

TITLE: Study of glass structure by various physical methods

SOURCE: Vsesoyuznoye soveshchaniye po stekloobraznomu sostoyaniyu. 4th, Leningrad, 1964. Stekloobraznoye sostoyaniye (Vitreous state); trudy soveshchaniya. Leningrad, Izd-vo Nauka, 1965, 13-22

TOPIC TAGS: silicate glass, IR analysis, glass property, IR spectroscopy, optic glass, crystal

ABSTRACT: The structure of glass was studied by infrared spectroscopy in the following directions: (1) Study of infrared spectra of various types of crystalline and amorphous silica and their changes with time; (2) study of the dependence of the structure of the simplest and multicomponent glasses on the composition of the systems Li_2O-SiO_2, Na_2O-SiO_2, K_2O-SiO_2, B_2O_3-SiO_2, PbO-SiO_2, Na_2O-SiO_2-TiO_2; Na_2O-SiO_2-PbO, Li_2O-SiO_2-Al_2O_3-TiO_2, and also optical crowns and flints; (3) study of the "life" of crystalline and vitreous silicates: (a) when the charge changes into the melt; (b) in the melt; (c) in monolithic glasses;

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L 11840-66

ACC NR: AT6000470

(d) during crystallization over a wide temperature range starting near the liquidus and ending in the annealing region; (e) in the crystallization products (processes of polymorphic transformations, solid-phase reactions, decomposition processes). In the latter case, the thermal treatment of the devitrified samples lasted up to 140 days. The process of annealing of optical glasses was also studied. The conclusions reached on the basis of the infrared analysis concerning the structure of alkali metal silicate glasses were confirmed by studying their various physical properties. It was found that (1) the structure of simple and complex glasses is inhomogeneous, and (2) the inhomogeneity of the glasses is due to the inhomogeneity of the melt. The frequently observed exact coincidence of the peaks in the spectra of the glass and of the crystals precipitated as primary phases indicates that within the regions of local inhomogeneity the atoms are arranged in approximately the same fashion as in the corresponding crystals. Orig. art. has: 5 figures.

SUB CODE: 11, 20 / SUBM DATE: 22May65 / ORIG REF: 010 / OTH REF: 001

Card 2/2 HW

L 12125-66 EWP(e)/EWT(m)/EWP(b) GS/WH

ACC NR: AT6000492 SOURCE CODE: UR/0000/65/000/000/0200/0207

AUTHOR: Cherneva, E. F.; Florinskaya, V. A.

ORG: None

TITLE: Infrared spectra of lithia-silica glasses and their relation to the structure

SOURCE: Vsesoyuznoye soveshchaniye po stekloobraznomu sostoyaniyu. 4th, Leningrad, 1964. Stekloobraznoye sostoyaniye (Vitreous state); trudy soveshchaniya. Leningrad, Izd-vo Nauka, 1965, 200-207

TOPIC TAGS: lithium glass, crystallization, silicate glass

ABSTRACT: The structure of glasses containing 20 to 45 mole % Li_2O was investigated by means of transmission and reflection IR spectra. To demonstrate the inhomogeneity of the structure of lithia glasses, the authors consider the following transition process: charge → melt → glass → crystal, using lithiumdisilica glass as an example. Samples were withdrawn at various stages of this process and were subjected to infrared analysis, from which the reactions and transformations taking place, particularly those associated with crystallization, were deduced. It is concluded that high-silica and high-alkali silicates, the nature of which thus far remains unknown, participate in the formation of the structure of lithium-silica glasses. Orig. art. has: 5 figures.

SUB CODE: 07, 11 / SUBM DATE: 22May65 / ORIG REF: 001 / OTH REF: 001

Card 1/1 HW

VELIKOVSKAYA, E.M.; VEYMARN, A.B.; VERGUNOV, G.P.; APRODOV, V.A.; LYUSTIKH, Ye.N.; LIPOVETSKIY, I.A.; ROMASHOV, A.N.; FEL'DMAN, V.I.; SAVOCHKINA, Ye.N.; GEND'ER, V.Ye.; ROMENSON, B.M.; DOBROKHOTOVA, Ye.S.; LYUBIMOVA, L.V.; KHMARA, A.Ya.; VESELOVSKAYA, M.M.; KUDRIN, L.N.; CHERNIKOV, O.A.; SOROKIN, V.S.; IL'IN, A.N.; FIOROVSKAYA, V.N.; ZEZIN, R.B.; TEPLITSKAYA, T.A.; BRUSILOVSKIY, S.A.; KISSIN, I.G.; CHIZHOVA, N.I.; PAVLOVA, O.P.; SHUTOV, Yu.I.

Supplements. Biul. MOIP. Otd. geol. 39 no.4:155 Jl-Ag '64.
(MIRA 17:10)

FLORINSKAYA, Z.A., kandidat ziziko-matematicheskikh nauk.

Automatic control of electrified dredges. Trudy GIIVT no.12: 75-88 '54. (MLRA 10:2)

(Dredging machinery)

FLORINSKAYA, Z.A., dots., kand. fiz.-matem. nauk; TSVETKOV, N.P., red.

[Hydrostatic equations in engineering problems; a practical manual for students in mechanics and operations courses] Uravneniia gidrostatiki v tekhnicheskikh zadachakh; uchebno-metodicheskoe posobie dlia studentov mekhanicheskoi i ekspluatatsionnoi spetsial'nostei. Gor'kii, Gor'kovskii in-t inzhenerov vodnogo transp., 1963. 49 p. (MIRA 17:9)

PERINSKIY, A.B., inzh.

Precise synchronization unit using transistors.
Izv.vys. ucheb. zav.; energ. 5 no. 8:98-100 Ag '62.
(MIRA 17:7)

1. Moskovskiy ordena Lenina energeticheskiy institut.
Predstavlena kafedroy avtomatika i telemekhaniki.

L 31142-66 EWT(1)/EWA(h)

ACC NR: AP6011548 SOURCE CODE: UR/0105/66/000/004/0090/0091

AUTHOR: Florinskiy, A. B. (Moscow)

ORG: none

TITLE: Three-phase ring-type phase detector

SOURCE: Elektrichestvo, no. 4, 1966, 90-91

TOPIC TAGS: signal detector, phase detector

ABSTRACT: A circuit for a 3-phase ring-type phase detector is suggested (see Fig. 1). It is designed along the lines of the conventional single-phase ring-type detector and is claimed to have these advantages: lower output-voltage ripple, higher transfer factor, greater output power, lower internal resistance; in addition, with a low-resistance or inductive load, the output-voltage d-c component vs. phase-shift angle curve is tooth-shaped and linear in a wide range which is

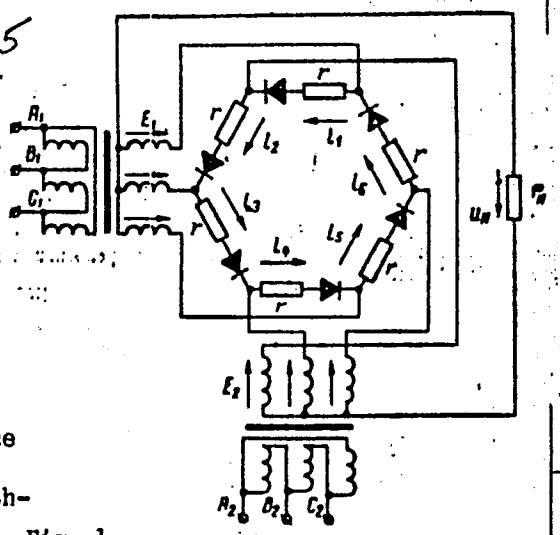


Fig. 1.
Three-phase ring-type phase detector

Card 1/2

UDC: 621.317.742

L 31142-66

ACC NR: AP6011548 O

important for many applications. The phase-shift values at which the d-c component is zero are tabulated. One of possible applications: an automatic synchronizer with constant lead time for power-supply systems. Orig. art. has: 2 figures, 6 formulas, and 1 table. [03]

SUB CODE: 09 / SUBM DATE: 10Apr65 / ORIG REF: 005/ ATD PRESS: 4239

Card 2/2 LC

FLORINSKIY, Aleksandr Vasil'yevich; TSYPKIN, I.S., redaktor; SENCHILO, K.K., tekhnicheskiy redaktor

[New techniques used in laboratory research] Novye tekhnicheskie priemy laboratornykh issledovanii. Moskva, Gos. izd-vo med. lit-ry, Medgiz, 1954. 85 p. [Microfilm] (MLRA 8:2)
(Pathological laboratories)

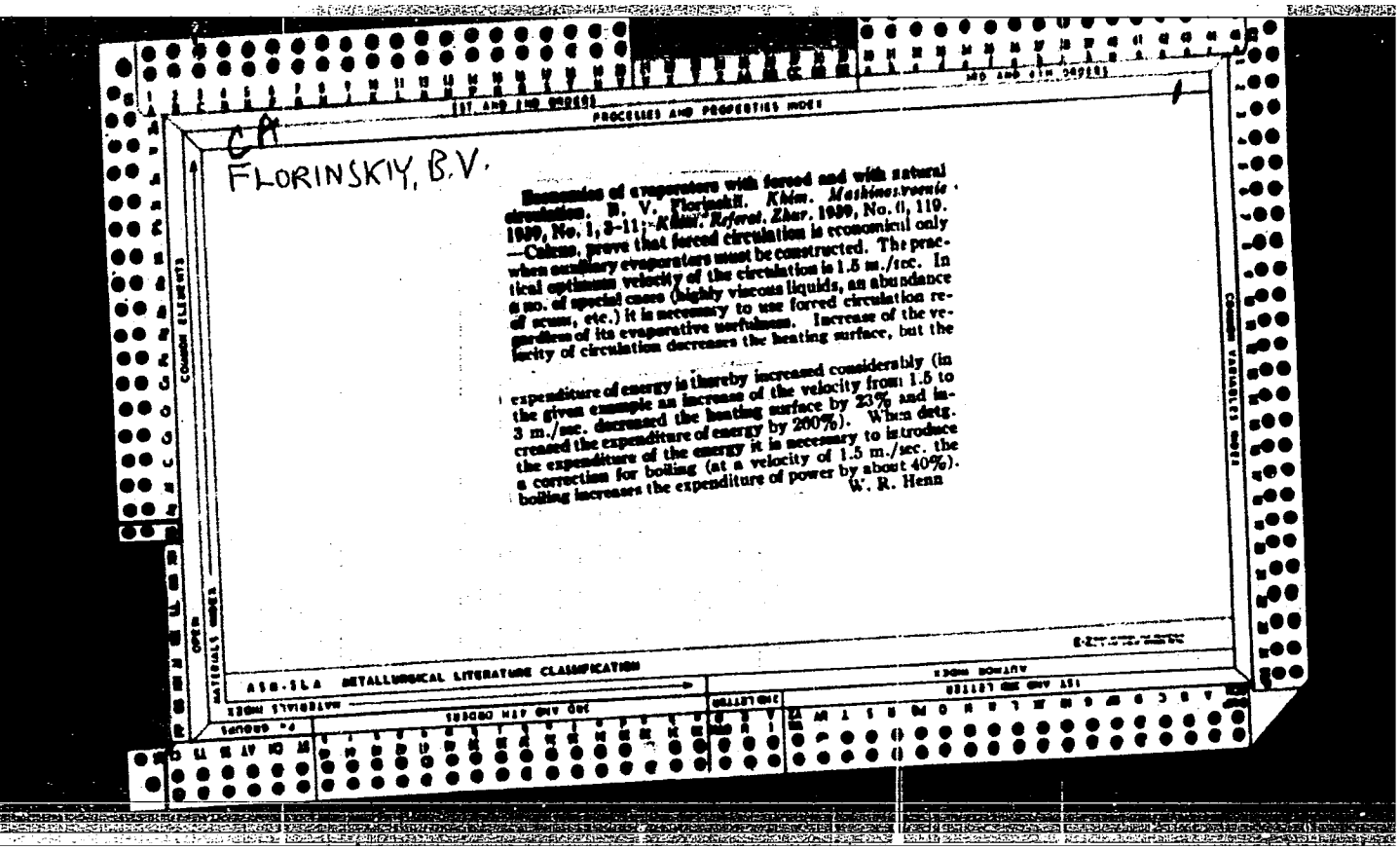
FLORINSKIY, A.V.

Rapid method for determining the amount of urobilin in urine.
Lab.delo 4 no.5:51-53 S-O '58 (MIRA 11:11)

1. Iz Verkhne-Kubanskogo leprozoriya (glavnyy vrach L.N. Kasparov)
(UROBILINS)
(URINE--ANALYSIS AND PATHOGLOGY)

FLORINSKIY, A.V.

Advice on the use of our apparatus. Veterinariia 35 no.11:67-71 N '58. (MIRA 11:11)
(Veterinary laboratories--Equipment and supplies)



CA

FLORINSKIY, B.V.

Economics of evaporators with forced and with natural circulation. B. V. Florinskii. *Khim. Mashinostroenie* 1939, No. 1, 8-11; *Khim. Referat. Zhur.* 1939, No. 6, 119.—Calcns. prove that forced circulation is economical only when auxiliary evaporators must be constructed. The practical optimum velocity of the circulation is 1.5 m./sec. In a no. of special cases (highly viscous liquids, an abundance of scum, etc.) it is necessary to use forced circulation regardless of its evaporative usefulness. Increase of the velocity of circulation decreases the heating surface, but the expenditure of energy is thereby increased considerably (in the given example an increase of the velocity from 1.5 to 3 m./sec. decreased the heating surface by 23% and increased the expenditure of energy by 200%). When detg. the expenditure of the energy it is necessary to introduce a correction for boiling (at a velocity of 1.5 m./sec. the boiling increases the expenditure of power by about 40%).

W. R. Henn

FLORINSKIY, B.V.

SOV/89-5-3-2/15

AUTHORS: Dollezhal', N. A., Krasin, A. K., Aleshchenkov, P. I., Grigor'yants, A. N., Florinskiy, B. V., Minashin, M. Ye., Yemel'yanov, I. Ya., Kugushev, N. M., Sharapov, V. N., Mityayev, Yu. I., Galanin, A. N.

TITLE: A Uranium-Graphite Reactor With Superheating of Steam of High Pressure. I (Uran-grafitovyy reaktor s peregrevom para vysokogo davleniya)

PERIODICAL: Atomnaya energiya, 1958, Vol. 5, Nr 3, pp. 223-233 (USSR)

ABSTRACT: The 400 MW plant is equipped with 4 uranium-graphite reactors. A reactor and a steam turbine of 100 MW together form a closed block. A number of investigations was carried out for the purpose of checking the individual parts of this block. The following results were obtained:
1) With a thermal flux of $\sim 1.10^6$ kcal/m^2h the steam content by weight at the outlet attains a value of up to 20%.

2) Several hundred hours' uninterrupted operation of a channel in the boiling stage did not disrupt the channel.

3) The activity of the steam condenser was found to be 10 times

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lower than that of the water in the separator.
4) If the content of steam in the steam-water mixture attains 15 - 20%, a pulsation of the consumption of the mixture occurs. From the moment at which the steam mixture passes from the separator into the turbine, pulsation stops and does not occur again in the course of a further increase of the steam phase.
5) During the initial development of the waterlevel in the separator the temperature in the fuel channels fluctuates considerably. As soon as stable conditions are established, these fluctuations cease.
6) The steam-water mixture was not found to be delayed in any of the channels.

From a plurality of varieties the best scheme for the production of superheated steam was selected (see figures). The turbogenerator BK-100 operates with a steam of 90 atm and a temperature of 480 - 535° C.

The following are the physical characteristics of the reactor:

Thermal output	285 MW
Electrical output	100 MW
Average cycle	730 days
Uranium charge	90 tons

A Uranium-Graphite Reactor With Superheating of Steam of High Pressure. I

Uranium enrichment at the beginning of a cycle	1,3 %
Uranium enrichment at the end of a cycle	1,03 %
Breeding ratio at the beginning of a cycle	65 %
Breeding ratio at the end of a cycle	55 %
Amount of U-235 burned-up during a cycle	243 kg
Amount of Pu-239 burned-up during a cycle	55 kg
Amount of Pu-239 and Pu-241 at the end of a cycle	132 kg
Excess reactivity for temperature effect	0,040
Excess reactivity for poisoning	0,015
Excess reactivity for the fuel burn-up and long-lived fission fragments	0,025
Total excess reactivity	0,080

There are 8 figures.

Card 3/3

FLORINSKIY, B.V.

SOV/89-5-3-3/15

AUTHORS: Dollezhal', N. A., Krasin, A. K., Aleshchenkov, P. I., Grigoryants, A. N., Florinskiy, B. V., Minashin, M. Ye., Yemel'yanov, I. Ya., Kugushev, N. M., Sharapov, V. N., Mityayev, Yu. I., Galanin, A. N.

TITLE: A Uranium-Graphite Reactor With Superheating of Steam of High Pressure. II (Uran-grafitovyy reaktor s peregrevom para vysokogo davleniya) (Continued from abstract 2/15)

PERIODICAL: Atomnaya energiya, 1958, Vol. 5, Nr 3, pp. 233-244 (USSR)

ABSTRACT: The graphite mantle of the reactor (diameter 9,6 m, height 9 m) is built into a cylindrical steel container. The container is filled with nitrogen in order to prevent burn-up of the graphite. The active zone of the reactor has a diameter of 7,2 m and a height of 6 m. As a lateral reflector graphite of 0,8 m thickness is used. Graphite of 1 m thickness is used as upper reflector, and above it a layer of cast iron having a thickness of 0,5 m is fitted. Together, these components serve as the main portion of the / upper biological shield. Graphite of 0,6 m thickness is used as lower reflector. In the graphite structure openings for 1154 channels are provided. 730 of them are provided with fuel ele-

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A Uranium-Graphite Reactor With Superheating of Steam of High Pressure.II

ments which are cooled by means of boiling water and contain up to 33% percentage by weight of steam at the output. 268 channels are cooled by steam which is heated up to the corresponding turbine temperature. Six channels contain the automatic regulating rods, 78 channels are provided for the compensation rods, and 16 for the shim rods. The ionization chambers and counting tubes are located in 36 channels. The fuel channels, the regulating- and shim rods as well as the arrangement of the channels in the active zone are shown in form of drawings. The circuit diagram for the reactor turbine shows the connection between the reactor, the two-stage turbine, two condensers, a system of additional heating of the feed-water, a de-aerator (6 atm), 2 preheaters (for high pressure), condensation- and feed pumps. The water is conveyed into the boiling channels by way of two centrifugal pumps. When entering these channels the water has a temperature of 300° C and a pressure of 155 atm. The mixture of steam and water formed in these channels reaches the separator, where steam and water are separated. From here the water is conveyed to the preheater of the steam generator (which consists of 2 parts), where it is cooled from the saturation temperature of 340° C (pressure in the sep-

A Uranium-Graphite Reactor With Superheating of Steam of High Pressure.II

erator 150 atm) down to 300° C. Heat is transferred to the feed-water of the secondary circuit. The water of this circuit is in the first section of the preheater brought from a temperature of 215° C to saturation temperature, which corresponds to a pressure of 110 atm. In the second part it is evaporized until the quantity of steam corresponding to weight attains 20%. The secondary steam produced in the steam generator is led in to the steam channels of the reactor, where it is heated up to a temperature of 510° C. The steam reaches the turbine with a pressure of 90 atm and a temperature of 500° C. The main building of the electric power plant consists of 4 parts arranged one behind the other, the machine hall, the operation rooms, the de-aerator, and the reactor hall. For an average cycle of 730 days it is shown by calculation that the cost of atomic kWh are equal to the kWh obtained by means of the usual fuels. Fuel costs amount to from 30 to 40% of the total costs. If the fuel channels and fuel elements operate in a stable manner, it can be proved that by a slight increase of the degree of enrichment in uranium the average cycle can be increased, which leads to a reduction of costs. There are 9 figures and 1 table.

Card 3/4

21(9)
AUTHOR: Florinskiy, B. V.

SOV/89-5-5-3/27

TITLE: The Calculation of the Valves Controlling the Consumption of the Coolant in the Channels of a Nuclear Reactor (Raschet ventiley, reguliruyushchikh raskhod teplonositelya v kanalakh yadernogo reaktora)

PERIODICAL: Atomnaya energiya, 1958, Vol 5, Nr 5, pp 526-532 (USSR)

ABSTRACT: It is a characteristic feature of a valve that to every one of its positions there corresponds a certain flow resistance, and that only a certain quantity of liquid is able to pass through it according to the diameter of the opening. For the purpose of characterizing a valve, a family of curves with the abscissae Q (quantity of liquid passing through the valve) and Δp_v (hydraulic resistance of the liquid passing through the valve) is used. The function of the consumption of liquid in a loop provided with a valve depends not only on the size of the valve opening (this dependence is also called control curve), but also on the operational data of the loop. The operational data are:

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a) the dependence of the pressure head H on consumption Q.
b) the characteristic properties of the loop Q, Δp_K (Δp_K = hydraulic resistance of the tubes in the loop).
c) the interaction between the part of the loop dealt with and the remaining parts.

On the basis of an example (showing the primary loop of a reactor in which the coolant is conveyed by means of a pump into a collector, which feeds a number of parallel channels having one valve each. At the end of the channels the coolant is conveyed to a container in which it is collected, and from there it is again conveyed to the pumps) - it is shown how the control curves for the two quantities of liquid Q_i and Q_{max} which pass through the valves are plotted. The method developed for plotting the control curve can, in practice, be employed for the purpose of giving the disk of a valve such a shape that it will correspond exactly to one of the required control curves, i.e. that it corresponds to a certain desired control process. On the basis of two

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examples, which are given for a valve disk with and without tappet respectively, it is shown how the shape of the valve disk can be calculated. Only an approximate value is obtained by calculation, but, as was shown by an experimental checking, it sufficed in order to satisfy requirements.
It must be mentioned that the method developed is useful only if numerous similar and specially to be constructed valves are used and if the characteristic of the loop is known already beforehand. There are 12 figures, 1 table, and 1 reference, 1 of which is Soviet.

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FLORINSKIY, B.V.

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

Doklady sovetskikh uchenykh; yadernyye reaktory i yadernaya energetika. (Reports of Soviet Scientists; Nuclear Reactors and Nuclear Power) Moscow, Atomizdat, 1959. 707 p. (Series: Its: Trudy, vol. 2) Errata slip inserted. 8,000 copies printed.

General Eds.: N.A. Dollezhal, Corresponding Member, USSR Academy of Sciences, A.K. Krasin, Doctor of Physical and Mathematical Sciences, A.I. Leypunskiy, Member, Ukrainian SSR Academy of Sciences, I.I. Novikov, Corresponding Member, USSR Academy of Sciences, and V.S. Fursov, Doctor of Physical and Mathematical Sciences; Ed.: A.P. Alyab'yev; Tech. Ed.: Ye. I. Mazel'.

PURPOSE: This book is intended for scientists and engineers engaged in reactor designing, as well as for professors and students of higher technical schools where reactor design is taught.

COVERAGE: This is the second volume of a six-volume collection on the peaceful use of atomic energy. The six volumes contain the reports presented by Soviet scientists at the Second International Conference on Peaceful Uses of Atomic Energy, held from September 1 to 13, 1958 in Geneva. Volume 2 consists of three parts. The first is devoted to atomic power plants under construction in the Soviet Union; the second to experimental and research reactors, the experiments carried out on them, and the work to improve them; and the third, which is predominantly theoretical, to problems of nuclear reactor physics and construction engineering. Yu. I. Koryakin is the science editor of this volume. See SOV/2081 for titles of all volumes of the set. References appear at the end of the articles.

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Superheated high-pressure steam producing uranium - graphite reactor. Atom taj 2 no.1:1-47 Ja '59.

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[Theoretical and experimental study of contact heat transfer] Teoreticheskoe i eksperimental'noe issledovanie kontaktnogo teploombena. Moskva, Gos.kom-t po ispol'zovaniiu atomnoi energii, 1960. 53 p.
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