"APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R000412020013-8

LANDA, Stanislav; ELIASEK, Jaroslav

Polarography of some halogen derivatives of phenols. Sbor.pal.vod. VSChT 1958:7-19. (KRAI 9:4)

1. Katedra synthetickych pohonnych latek, Vysoka skola chemicko-technologicka, Praha.
(Polarograph and polarography) (Halogens) (Phenols)

APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R000412020013-8"

"APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R000412020013-8

LANDA, Stanislav, prof., inz., dr., doktor chemickych ved; ELIASEK, Jaroslav

Biological degradation of bivalent phenols. Sbor pal vod VSChT no.3, part 1:35-53 '59.

1. Katedra syntetickych pohonnych latek Vysoke skoly chemicko-technologicke, Praha.

APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R000412020013-8"

"APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R000412020013-8

ELIASEK, Jaroslav; BRODSKY, Artur; CECH, Jan; RICHTEROVA, Vera

Contribution to the determination of the chemical demand of oxygen by potassium permanganate. Sbor pal vod VSChT 4 no.1:179-198 '60. (EEAI 10:9)

1. Katedra tepelne techniky, Vysoke skoly chemicko-technologicke a Vyvojove stredisko upravy prumyslovych vod, CKD Dukla.

(Oxygen) (Potassium permanganate)

APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R000412020013-8"

"APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R000412020013-8

MACHACEK, František; ELIASEK, Jaroslav

Second shift on worksites and its conditions. Letecky obzor 6 no.4:114-115, 122 Ap '62.

APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R000412020013-8"

"APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R000412020013-8

ELIASEK, J; JUNGWIRT, A. CZECHOSLOVAKIA

Institute of Heat Technics of the Czech Higher School of Chemistry, Prague (for both)

Prague, Collection of Czechoslovak Chemical Communications, Vol 8, 1963, pp 2163-2170

"Report on the Chlorinization Mechanism of Phenols in Water Solution."

APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R000412020013-8"

"APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R000412020013-8

WURM, Boleslav; CERNY, Zdenek, inz.; NOSEK, Bohuslav; FOLDINA, Josef; STURMA, Jan; ELIASEK, Jaroslav

Socialist pledge of organizers. Podnik organizace 17 no.2:54-56 F '63.

1. Ministerstvo vseobecneho strojirenstvi, organizacni stredisko 02 (for Wurm, Cerny and Nosek). 2. Tatra, n.p., Koprivnice (for Foldina). 3. Metalis, n.p., Nejdek (for Sturma). 4. Ceske zavody motocyklove, Strakonice (for Eliasek).

APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R000412020013-8"

"APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R000412020013-8

KARAS, F., prof. inz. DrSc.; ELIASEK, J., doc.inz.; DLUHOS, J., inz.

Volatile substances for alkalization of high-pressure steam conduits in electric power plants. Energetika Cz 14 no.11:566-568 N '64.

1. Chair of Power Engineering of the Higher School of Chemical Technology, Prague (for Karas and Eliasek). 2. Elektrarny CKR, Ostrava (for Dluhos).

APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R000412020013-8"

"APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R000412020013-8

ELIASHBERG, Amaliya Yakovlevna; BARANOVA, Inna Petrovna; MEL'TSER, Yevgeniya Mikhaylovna, kand.filol.nauk; RUBTSOVA, Nina Nikolayevna; GRABOVSKIY-ZKONOPNITS, V.A., kand.tekhn.nauk, red.; YEVSYUKOV, Yu.M., red.; BRUDNO, K.F., tekhn.red.

[English-Russian dictionary of terms used in the woodpulp and paper industries] Anglo-russkii slovar' po tselliulozno-bumazhnomu proizvodstvu. Pod red. V.A.Grabovskogo-Zkonopnits. Moskva, Gos. izd-vo fiziko-matem.lit-ry, 1958. 263 p. (MIRA 12:4)

(English language--Dictionaries--Russian)
(Paper industry--Dictionaries) (Woodpulp industry--Dictionaries)

APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R000412020013-8"

"APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R000412020013-8

MEL'TSER, Ye.M., kand.filologicheskikh nauk; ELIASHBERG, A.Ya., starshiy prepodavatel'; ANDRONNIKOVA, Ye.M., prepodavatel'

Analyzing the terminology of the pulp and paper industry; from English and German sources. Trudy LTITSBP no.8:200-208 '61. (MIRA 16:9)

(Paper industry--Terminology)

APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R000412020013-8"

"APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R000412020013-8

MEL'TSER, Ye.M., kand. filol. nauk; ~~ELIASHBERG, A.Ya.;~~
GRABOVSKIY-ZKONOPNITS, V.A., kand. tekhn. nauk, red.

[Russian-English-German-French dictionary of wood technology; paper and timber] Lesotekhnicheskii russko-anglo-nemetsko-frantsuzskii slovar'; po bumage i lesu. Pod red. V.A. Grabovskogo-Zkonopnits. Moskva, Lesnaia prom., 1964. 423 p. (MIRA 17:9)

APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R000412020013-8"

"APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R000412020013-8

ELIASHBERG, G.A.

Low-temperature heat capacity of metals. Zhur. eksp. i teor. fiz. 43 no.3:1105-1107 '62. (MIRA 15:10)

1. Fiziko-tekhnicheskiy institut imeni A.F.Ioffe AN SSSR.
(Metals—Thermal properties) (Superconductivity)

APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R000412020013-8"

"APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R000412020013-8

ELIASBERG, G.B. (Leningrad)

Use of a bridge-type reversive transistor amplifier for analyzing the control network of a d.c. motor. Avtom. i telem. 22 no.9:1229-1234 S '61. (MIRA 14:9)
(Electric motors, Direct current)
(Transistor amplifiers)

APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R000412020013-8"

"APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R000412020013-8

Eliashberg, G.M.

USSR / Optics K

Abs Jour: Referat Zhur-Fizika, 1957, No 4, 10371

Author : Eliashberg, G.M.
Inst : Not Given
Title : On the Law of Attenuation for Band Models of Crystal Phosphors.

Orig Pub: Optika i spektroskopiya, 1956, 1, No 2, 230-239

Abstract: It is shown that in the relation for the attenuation of phosphorescence, the band model can contribute more than usually assumed. At first a quantitative calculation is made of the attenuation under the assumption of the existence of two kinds of electron traps at different initial conditions of their filling. The law of attenuation, particularly at the initial stages, depends strongly on the initial distribution of the electrons over the traps. The known criterion, namely that is the probability of the secondary capture of electrons in all traps is considerably greater than the probability of their recombination than the attenuation behaves like a second order hyperbola, is not completely true. This criterion is

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"APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R000412020013-8

USSR / Optics K

Abs Jour: Referat Zhur-Fizika, 1957, No 4, 10371

correct, strictly speaking, only in the differential, i.e., the inequality indicated above should be satisfied not only for the sum of all levels, but also for each kind of levels individually. At the far stages there appears an asymptotic property of the attenuation curves and all these change into second-order hyperbolas. A case is possible, when the curves corresponding to differnt initial distribution of electrons over the levels first diverge over a limited interval of attenuation. Bibliography, 14 titles.

Card : 2/2

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"APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R000412020013-8

ELIASHBERG, G.M.

48-4-7/48

SUBJECT: USSR/Luminescence

AUTHOR: Eliashberg G.M.

TITLE: On the Law of Phosphorescence Decay of Crystallophosphors (O zakone zatukhaniya fosforestsentsii kristallofosforov)

PERIODICAL: Izvestiya Akademii Nauk SSSR, Seriya Fizicheskaya, 1957, Vol. 21, #4, pp 502-503 (USSR)

ABSTRACT: A series of basic regularities in phosphorescence, in particular, the shape of experimental decay curves, cannot be explained in the frame of the simplest zonal model theory.

The author developed a decay theory for zonal models with two types of capture levels, which was published in the magazine "Optika i spektr o skopiya", 1956, Vol 1, p 230.

Decay curves calculated in the cited work have a very complicated shape differing from that derived by Becquerrel.

All peculiarities in decay curves are connected with a redistribution of electrons between different capture levels, which occurs during decay.

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"APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R000412020013-8

48-4-7/48

TITLE: On the Law of Phosphorescence Decay of Crystallophosphors (O zakone zatukhaniya fosforestsentsii kristallofosforov)

The report was followed by a discussion.

The bibliography lists 5 references, 4 of which are Slavic (Russian)

INSTITUTION: "Krasnyy Khimik" Plant

PRESENTED BY:

SUBMITTED: No date indicated.

AVAILABLE: At the Library of Congress.

Card 2/2

APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R000412020013-8"

"APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R000412020013-8

ELIASHBERG, G.M.

51-4-1-9/26

AUTHOR: Eliashberg, G. M.

TITLE: Investigation of the Initial Stages of Luminescence Rise in the ZnS-Cu,Co Phosphor. (Issledovaniye nachal'nykh stadiy narastaniya svecheniya fosfora ZnS-Cu,Co.)

PERIODICAL: Optika i Spektroskopiya, 1958, Vol.IV, Nr.1, pp. 66-75. (USSR)

ABSTRACT: The author studied the initial stages of luminescence rise in the ZnS-Cu,Co phosphor in a wide range of excitation intensities and at various temperatures. The phosphor was a thin layer (4 mg/cm$^2$) deposited on an aluminium plate and excited with 313, 365, 405, and 436 mμ lines. Luminescence, after passing through a filter which absorbed the exciting light, fell on a photomultiplier ФЭУ -19. The majority of measurements were made on one sample of ZnS-Cu,Co with $3 \times 10^{-5}$ g/g of Cu and $10^{-6}$ g/g of Co. Before each

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measurement the phosphor was heated to about 200°C in order to de-excite it. Curves of luminescence rise of ZnS-Cu,Co on excitation by 365 mμ are shown in Fig.1. On increase of the intensity of excitation (curve 1) the length of the linear portion of the rise curve was found to have decreased in inverse proportion to the intensity of the exciting light E. Tangent of the angle of the slope of the rectilinear portion increases as $E^{1.6}$. Similar results are obtained for 313, 405 and 436 mμ. When temperature is increased from 20 to 100°C the rate of rise of luminescence increases, but the form of the rise curves in the initial stages remains practically unchanged. The initial stages of



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51-4-1-9/26

Investigation of the Initial Stages of Luminescence Rise in the ZnS-Cu,Co Phosphor.

the rise curves can thus be expressed in terms of one formula with a multiplier C which depends on temperature. Fig.3 shows overlapping of the rise curves obtained at various temperatures for two different intensities of excitation. Fig.4 shows dependence of C on temperature. Fig.5 represents the increase of light-sum at room temperature for two intensities of the exciting light of 365 mμ wavelength. The increase of light-sum with time is superlinear during the first 20-40 seconds. Dependence of the steady-state brightness and steady-state light-sum on the intensity of excitation at 85°C was also studied (Fig.7). The values of brightness or light-sum were regarded as steady-state when on doubling the duration of excitation the same

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51-4 -1-9/26

Investigation of the Initial Stages of Luminescence Rise in the ZnS-Cu,Co Phosphor.

values of brightness and light-sum were still obtained. From the results obtained the author makes the following conclusions: (1) Superlinearity in the initial stages of luminescence rise is related to the presence of a small number (about $10^{14}$ $cm^{-3}$) of very deep capture levels (T-traps) in the Zns-Cu,Co phosphor; (2) In the process of excitation almost all T-traps are filled, mainly by optical electrons; (3) For the intensities of excitation usually employed the light-sums may be stored for which the probability of re-combination of thermal electrons may be considerably greater than the probability of their capture. The author thanks V.V. Antonov-Romanovskiy, N.V. Fok and

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"APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R000412020013-8

51-4-1-9/26

Investigation of the Initial Stages of Luminescence Rise in the ZnS-Cu,Co Phosphor.

O.M. Posochinskaya for advice and help. There are 8 figures and 8 references, of which 6 are Russian, 1 Polish and 1 American.

ASSOCIATION: Laboratory for Light Sensitive Substances, "Red Chemist" Factory. (Laboratoriya svetosostavov, zavod "Krasnyy Khimik".)

SUBMITTED: March 1, 1957.

AVAILABLE: Library of Congress.

1. Phosphors-Luminescence 2. Phosphors-Excitation

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"APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R000412020013-8

82427

S/056/60/038/03/28/033
B006/B014

24.2140

AUTHOR: Eliashberg, G. M.

TITLE: Interactions of Electrons and Lattice Vibrations in a Superconductor

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1960, Vol. 38, No. 3, pp. 966-976

TEXT: Migdal (Ref. 1) suggested a method which may be used to solve the Dyson equation and to find the Green functions for electrons and phonons. This method is accurate up to $\lambda_0 h\omega_0/E_F$. Bogolyubov et al. (Ref. 4) demonstrated how it is possible to use Migdal's method for the development of the Green functions of superconductor electrons, which have already been calculated by Gor'kov (Ref. 5) for a model with simplified four-fermion interaction. It was the purpose of the present article to obtain Gor'kov-type equations for the Froehlich Hamiltonian. The author applied the perturbation theory. In zeroth approximation one obtains the Green functions for the "superconducting" ground state. The Hamiltonian, on which this investigation is based, reads as follows:

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82427

Interactions of Electrons and Lattice Vibrations in a Superconductor

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$H = \int d\vec{x} \left\{ \psi_\sigma^+(\vec{x}) \left[ H(\vec{x}) - \mu \right] \psi_\sigma(\vec{x}) + \psi_\sigma^+(\vec{x}) \psi_\sigma(\vec{x}) \varphi(\vec{x}) \right\} + H_{ph}$; $\psi_\sigma(\vec{x}) = V^{-1/2} \sum_k a_{\vec{k}\sigma} e^{i\vec{k}\vec{x}}$ ; $\varphi(\vec{x}) = V^{-1/2} \sum_{q<q_M} \alpha_q \left( b_{\vec{q}} + b_{-\vec{q}}^+ \right) e^{i\vec{q}\vec{x}}$ . Here, $H(\vec{x})$ denotes the single-electron Hamiltonian, $q_M$ the maximum phonon momentum. Without making the assumption that the interaction between electrons and phonons be small, the author derives expressions for the spectrum and studies the damping of excitations. Finally, he thanks L. E. Gurevich for his valuable advice and discussions. Landau is also mentioned in this article. There are 2 figures and 8 references, 7 of which are Soviet.

ASSOCIATION: Leningradskiy fiziko-tekhnicheskiy institut Akademii nauk SSSR (Leningrad Institute of Physics and Technology of the Academy of Sciences, USSR)

SUBMITTED: October 18, 1959

Card 2/2

APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R000412020013-8"

"APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R000412020013-8

86921

S/056/60/039/005/038/051
B006/B077

24.2140 (1158, 1160, 1495)

AUTHOR: Eliashberg, G. M.

TITLE: Temperature Green Function for Electrons in a Superconductor

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1960, Vol. 39, No. 5(11), pp. 1437 - 1441

TEXT: The excited electron spectra in superconductors are characterized by occurrence of an energy gap which actually appears at zero temperature only, but neglecting scattering at $T > 0$ it is possible to calculate the temperature function $\Delta(T)$. The scattering leads to a finite damping which vanishes at $T=0$ for a minimum energy $\Delta(0)$. At $T > 0$ the even excitations with an energy $\Delta(T)$ have finite lifetimes. The assumption of this gap is only justified if the damping can be compared to $\Delta(T)$. It is shown that the energy interval where the conception of the gap does not hold is very small. The best approach is calculating the Green function; L. P. Gor'kov made an analogous investigation, but without considering damping, based on a superconductor model with four-fermion interaction;

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"APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R000412020013-8

86921

Temperature Green Function for Electrons in a Superconductor

S/056/60/039/005/038/051
B006/B077

a model with electron-phonon interaction proved to be more suitable. The author calculated by the diagram technique the Green temperature functions in a superconductor at $T \neq 0$ and demonstrated an estimate of the region near the critical temperature for which the usual analysis using the temperature dependent gap in the excitation spectrum is no longer valid: $T_c - T \sim \frac{64\,\lambda_0^2}{(1-\lambda_0)^4}\left(\frac{T_c}{\omega_0}\right)^4 \approx \frac{0.4\,\lambda_0^2}{(1-\lambda_0)^4}\left(\frac{2\Delta(0)}{\omega_0}\right)^4$. The author thanks L. E. Gurevich for his interest; M. V. Buykov is mentioned. There are 7 references: 6 Soviet and 1 US.

ASSOCIATION: Leningradskiy fiziko-tekhnicheskiy institut Akademii nauk SSSR (Leningrad Institute of Physics and Technology of the Academy of Sciences USSR)

SUBMITTED: July 4, 1960

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24.6716

28762
S/056/61/041/003/015/020
B125/B102

AUTHORS: Perel', V. I., Eliashberg, G. M.

TITLE: Absorption of electromagnetic waves in plasma

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 41, no. 3(9), 1961, 886-893

TEXT: The absorption coefficient for electromagnetic waves in high-temperature plasma is exactly calculated. The plasma investigated consists of singly ionized positive ions. To determine the absorption coefficient it is necessary to calculate the real part of the electronic conductivity of the plasma. The graph technique suggested by A. A. Abrikosov, L. P. Gor'kov, I. Ye. Dzyaloshinskiy (ZhETF, 36, 900, 1959) will furnish, for the function $G_{pp'}(\vec{k},\omega)$, which appears in the general expression $\sigma_{\mu\nu}(\vec{k},\omega) = \left(\frac{e\hbar}{m}\right)^2 \int p_\mu G_{pp'}(\vec{k},\omega) p'_\nu \frac{d^3p\, d^3p'}{(2\pi)^6}$ (1), the following relation:

$$G_{pp'}(\vec{k},\omega) = \left\{K^R_{pp'}(\vec{k},\omega) - K_{pp'}(\vec{k},0)\right\} / i\omega \quad (4);$$

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where

$$K^R_{pp'}(\mathbf{k},\ \omega) = \int_{-\infty}^{\infty} e^{i\omega\tau}\,\tilde{K}^R_{pp'}(\mathbf{k},\ \tau)\,d\tau, \tag{5}$$

$$K_{pp'}(\mathbf{k},\ \omega_n) = \frac{1}{2}\int_{-1/T}^{1/T} e^{\hbar\omega_n\lambda}\,\tilde{K}_{pp'}(\mathbf{k},\ \lambda)\,d\lambda, \quad \hbar\omega_n = 2\pi i n T, \quad n = 0, \pm 1 \ldots, \tag{6}$$

$$\tilde{K}^R_{pp'}(\mathbf{k},\tau) = \theta(\tau)\,\partial\tilde{G}_{pp'}(\mathbf{k},\ \tau)/\partial\tau = (i/\hbar)\langle[A_{p',k}(\tau),\ A_{p,-k}(0)]\rangle\,\theta(\tau), \tag{7}$$

$$\tilde{K}_{pp'}(\mathbf{k},\ \lambda) = \langle T_\lambda (A_{p',k})_\lambda (A_{p,-k})_0\rangle; \qquad (A)_\lambda = e^{\lambda H'} A e^{-\lambda H'}, \tag{8}$$

$\vec{k}$ wave vector of the electromagnetic wave, $\omega$ its frequency, $\vec{p}$, $\vec{p}'$ wave vectors of the electrons, e electron charge, m electron mass. $K_{pp'}(\vec{k},\omega_n)$ represents a sum of graphs, some of which are shown in Fig. 1. The graph 1a, for instance, denotes the conductivity without particle interaction. Because of the Coulomb divergence it is necessary to renormalize the



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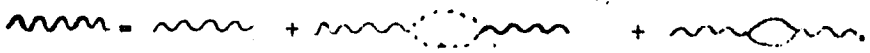
interaction, and the graphs 1б,в have to be replaced by those in Fig. 2. The bold-type wave line satisfies the equation



The graphs 2а,б,в furnish approximately the expressions for the real part of the conductivity

$$\mathrm{Re}\,\sigma(\omega) = \frac{e^2(2\pi)^{-4}}{3m^2\omega^2}\,\mathrm{sh}\frac{\hbar\omega}{2T}\int\gamma^2 d^3\gamma\int_{-\infty}^{\infty} d\alpha\left[\mathrm{sh}\frac{\alpha}{2T}\,\mathrm{sh}\frac{(\alpha+\hbar\omega)}{2T}\right]^{-1}\times \tag{18}$$

$$\times\{\mathrm{Im}\,[D_\gamma^R(\alpha)P_\gamma^R(\alpha)]\,\mathrm{Im}\,[D_\gamma^R(\alpha+\hbar\omega)\,P_\gamma'^R(\alpha+\hbar\omega)] -$$

$$-\,\mathrm{Im}\,[D_\gamma^R(\alpha+\hbar\omega)]\,\mathrm{Im}\,[D_\gamma^R(\alpha)\,P_\gamma^R(\alpha)\,P_\gamma'^R(\alpha)]\}.$$

and

$$Q = \left(\frac{2}{\pi}\right)^{1/2}\int_0^\infty \tau^3 d\tau e^{-\tau^2+\tau^4/4}\,\frac{(\tau^2+1)^2\exp(-\omega^{*2}/2\tau^2)}{[\tau^2+\varphi(\omega^*/\tau)]^2+[\psi(\omega^*/\tau)]^2}\times \tag{24}$$

$$\times\int_0^\infty e^{-z^2/2}\{[\tau^2+1+\varphi(z)]^2+[\psi(z)]^2\}^{-1}dz.$$



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were $\sigma(\omega) = \sigma_{xx}(\omega)$. The following dimensionless quantities are introduced: $x = (m/T)^{1/2}\alpha/\hbar\gamma$, $\tau = \gamma/\varkappa$, $\eta^2 = \hbar^2\varkappa^2/2mT$, $\varrho^2 = m/M$, $\omega^* = \omega/\omega_0$; ($\varkappa = (4\pi n_0 e^2/T)^{1/2}$ denotes the reciprocal Debye radius, $n_0$ the electron (ion) concentration, $\omega_0 = (4\pi n_0 e^2/m)^{1/2}$ the electronic plasma frequency). For the limiting case $\mathrm{Re}\,\sigma(\omega) = (n_0 e^2 m\omega^2)\nu(\omega)$, the effective frequency of collisions is given by $\nu(\omega) = \nu_0(2T/\hbar\omega)\,\mathrm{sh}(\hbar\omega/2T)\,Q(\omega)$, where $\nu_0 = \frac{2}{3}\pi(e^2/T)^2 n_0(8T/\pi m)^{1/2}$. A few special cases are treated. There are 4 figures and 7 references: 5 Soviet and 2 non-Soviet. The references to English-language publications reads as follows: Ref. 7: R. Wolf, Proc. Phys. Soc., A 67, 74, 1954; H. Fan, W. Spitzer, R. Collins. Phys. Rev., 101, 566, 1956.

ASSOCIATION: Leningradskiy fiziko-tekhnicheskiy institut Akademii nauk SSSR (Leningrad Physicotechnical Institute of the Academy of Sciences USSR)

SUBMITTED: April 8, 1961

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"APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R000412020013-8

ELIASHBERG, G.M.

Kinetic equation for a degenerated system of Fermi particles.
Zhur.eksp.i teor.fiz. 41 no.4:1241-1251 O '61. (MIRA 14:10)

1. Leningradskiy fiziko-tekhnicheskiy institut AN SSSR.
(Quantum field theory)

APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R000412020013-8"

"APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R000412020013-8

S/030/62/000/010/005/007
D204/D307

AUTHOR: Eliashberg, G. M.

TITLE: The problems of low temperature physics

PERIODICAL: Akademiya nauk SSSR. Vestnik, no. 10, 1962, 109-110

TEXT: A summary is given of the 9th Annual Conference for Low Temperature Physics, held under the chairmanship of N. Ye. Alekseyevskiy, in Leningrad, over the period June 26 - July 1, 1962, with the participation of Soviet, Hungarian, East German and Czech physicists. The following topics were discussed: 1) The properties of liquid He (V. P. Peshkov of the Institut fizicheskikh problem im. S. I. Vavilova (Institute of Physical Problems im. S. I. Vavilov), E. L. Andronikashvili, A. F. Andreyev, I. P. Ipatov, G. M. Eliashberg, and others); 2) Superconductivity and superconductors (N. V. Zavaritskiy, I. A. Privorotskiy and others); 3) The electronic spectra of metals (R. G. Min, M. S. Khaykin, N. Ye. Alekseyevskiy, Yu. P. Gaydukov, V. F. Gantmakher, A. A. Arbikosov, L.A. Fal'kovskiy and others); 4) Ferromagnetics and antiferromagnetics

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(R. A. Alikhanov and others); 5) Some properties of semiconductors (S. M. Ryvkin, V. P. Dobry, A. A. Kaplyanskiy, B. P. Zakharchenya, R. F. Kazarinov, V. G. Skobov and others). A special session was also held on the techniques for the production of low temperatures.



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24 1660

S/056/62/042/006/038/047
B104/B112

AUTHOR: Eliashberg, G. M.

TITLE: A microscopic theory of zero-sound attenuation in a Fermi liquid

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 42, no. 6, 1962, 1658-1666

TEXT: Equations for the scattering amplitude are derived which describe the oscillations of a Fermi liquid (zero sound) and allow for real collisions between excitations. This makes it possible to analyze the attenuation of zero sound within the framework of the microscopic theory of the Fermi liquid. The attenuation of Fermi excitations at $T \neq 0$ is also considered. There are 3 figures.

ASSOCIATION: Leningradskiy fiziko-tekhnicheskiy institut Akademii nauk SSSR (Leningrad Physicotechnical Institute of the Academy of Sciences USSR)

SUBMITTED: January 30, 1962

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"APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R000412020013-8

40436

S/056/62/043/003/054/063
B104/B102

AUTHOR: Eliashberg, G. M.

TITLE: Low-temperature specific heat of metals

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 43, no. 3(9), 1962, 1105-1107

TEXT: A simplified isotropic model of a metal is studied, wherein the electrons interact with the longitudinal phonons. The thermodynamic potential $\Omega(\mu,T)$ ($\mu$ = chemical potential) is calculated. It is shown that the expression for entropy contains a term $\beta T^3 \ln(\theta/T)$ which is directly related to the term $\epsilon^3 \ln\epsilon$ in the formula for the electron self-energy and to the electron-phonon interaction. In the superconducting state ($T \leqslant T_{cr}$) the formula for the specific heat does not contain this term. This explains the low specific heats of superconducting Nb and In.

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Low-temperature specific heat of metals

S/056/62/043/003/054/063
B104/B102

ASSOCIATION: Fiziko-tekhnicheskiy institut im. A. F. Ioffe Akademii nauk SSSR (Physicotechnical Institute imeni A. F. Ioffe of the Academy of Sciences USSR)

SUBMITTED: June 9, 1962

Card 2/2

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"APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R000412020013-8

43372
S/056/62/043/005/033/058
B102/B104

AUTHORS: Ipatova, I. P., Eliashberg, G. M.

TITLE: Spin waves and paramagnetic relaxation in a Fermi fluid

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 43, no. 5(11), 1962, 1795 - 1803

TEXT: The temperature dependence of the paramagnetic relaxation time of liquid $He^3$ is investigated only at $T > 1^oK$ (Phys. Rev. 115, 1478, 1959) where the effects of degeneracy are still so small that the classical theory can be applied. At $T < 0.1^oK$ liquid $He^3$ can be considered already as a Fermi fluid. For this case paramagnetic relaxation is investigated on the basis of the microscopic theory of a Fermi fluid. The system considered is assumed to be in a constant magnetic field $H_z$ and in a weak alternating field $H_+ = H_x + iH_y$. The transverse and longitudinal susceptibilities as well as the corresponding relaxation times

$$\chi_t(\omega) = \chi \frac{\omega_0}{\omega_0 - \omega - i/T_2}, \qquad \chi_l(\omega) = \chi \frac{i}{T_1} \frac{1}{\omega + i/T_1}. \qquad T_2 = \alpha\mu T^{-2}[1 + (\omega_0/2\pi T)^2]^{-1}, \quad T_1 = \alpha\mu/T^2$$

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are calculated in second-quantization representation and the excitation of spin waves is studied by means of the graph technique. $\chi$ is the statistical susceptibility, $\mu$ the chemical potential, T the temperature, $\omega_0 = \beta H_z$, $\beta$ - gyromagnetic ratio, $\alpha \sim (\mu a^3/\beta^2)^2 \sim 10^{14}$, a - interatomic distance, $\hbar = 1$. Since the relaxation times are very large (at $T \sim 0.01°K$, $T_1 \sim 10^6 - 10^7$ sec) the lifetimes of excited waves are very short with respect to the relaxation times, and the absorption band is strongly smeared out near the frequency $\gamma H$, where $\gamma = \beta(1+Z/4)^{-1}$, Z is the zeroth spherical harmonic of the exchange part of the dimensionless correlation function. It is demonstrated that the application of a magnetic field to a Fermi fluid leads to resonances in the frequency dependence of $\chi_t$ i.e. to spin waves with a dispersion law $\omega = \omega_0 + bk^2$, where $b \sim v^2/\omega_0$, which are extinguished with $k \to 0$ if magnetic interactions are neglected. This type of damping is associated with interactions that lead to nonconservation of spin. It is shown that the equations given for $\chi_t(\omega)$ and $\chi_l(\omega)$ are obtained from the microscopic theory with $\omega \to \omega_0$ and $\omega \to 0$, respectively. $T_1$



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tends to infinity with $\omega \to 0$. There are 5 figures.

ASSOCIATION: Fiziko-tekhnicheskiy institut im. A. F. Ioffe Akademii nauk SSSR (Physicotechnical Institute imeni A. F. Ioffe of the Academy of Sciences USSR)

SUBMITTED: May 24, 1962



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"APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R000412020013-8

BRESLER, M.S.; KOGAN, A.V.; SHALYT, S.S.; ELIASHBERG, G.M.

All-Union Conference on low temperature physics. Usp. fiz. nauk 80 no.2:331-337 Je '63. (MIRA 16:9)
(Low temperature research)

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"APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R000412020013-8

S/181/60/002/010/002/051
B019/B070

AUTHORS: Stekhanov, A. I., Eli.shberg, M. B.

TITLE: Raman Effect of Light on Compound Crystals of Alkali Halide Salts

PERIODICAL: Fizika tverdogo tela, 1960, Vol. 2, No. 10, pp. 2354-2355

TEXT: A study of the Raman effect of the second crder is made for KBr and mixed crystals of KBr.KCl in three ratios of composition (80% KBr + 20% KCl, 40% KBr + 60% KCl, and 20% KBr + 80% KCl). The 2537-A Hg-line was used for the study, and the spectrum was photographed with a Zeiss quartz spectrograph. From the spectra of KBr and the mixed crystal with the composition 80% KBr + 20% KCl (Figs. 1,2), it is seen that these possess a complicated continuous structure with pronounced intensity peaks. In comparison to the pure crystal, the spectrum of the mixed crystal has a less pronounced peak and a larger width. These properties of the mixed crystal show an increase with increasing content of KCl. The feature of the KBr spectrum is, however, retained. From this it may be surmised that the scattering of light from the alkali halide salts

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Raman Effect of Light on Compound Crystals of Alkali Halide Salts

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B019/B070

is due principally to the electron shells of the halides. From studies of heated crystals, it was found that an increase of temperature affects the intensity distribution in the spectrum of the mixed crystals only slightly, and, further, that the intensity distribution has the same form in the spectra of both components of polarized light. The results obtained help to clarify some properties of the elastic scattered spectra of the crystals studied. The continuous character of the Raman effect certainly indicates a quasicontinuous character of the elastic scattering spectrum. On transition from one mixed crystal to another, there is a gradual change in the Raman spectrum; on transition from a pure KBr crystal to a mixed crystal, the change is much stronger. In the opinion of the authors, this is connected with the appearance of defects in the mixed crystals. The central symmetry as well as the translational symmetry are perturbed in a mixed crystal. The perturbation of the former leads to a spectrum of the first order. From a comparison with the results of experiments with heated rock salt, the authors are convinced that in pure crystals the defects are accompanied by weakly bound electrons, and in mixed crystals they are dominated by electrons that are not weakly

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Raman Effect of Light on Compound Crystals of Alkali Halide Salts

S/181/60/002/010/002/051
B019/B070

bound. P. P. Pavinskiy is mentioned. There are 2 figures and 5 references: 4 Soviet and 1 German.

ASSOCIATION: Leningradskiy fiziko-tekhnicheskiy institut AN SSSR (Leningrad Institute of Physics and Technology of the AS USSR)

SUBMITTED: March 16, 1960

Card 3/3

APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R000412020013-8"

"APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R000412020013-8

STEKHANOV, A.I.; ELIASHBERG, M.B.

Second order Raman spectra of mixed crystals of alkali Halides.
Opt.i spektr. 10 no.3:348-353 Mr '61. (MIRA 14:8)
(Alkali metal halides--Spectra)

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"APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R000412020013-8

STEKHANOV, A.I.; GABRICHIDZE, Z.A.; ELIASHBERG, M.B.

Second order Raman effect at low temperatures. Fiz.tver.tela 3 no.5:1331-1334 My '61. (MIRA 14:6)

1. Fiziko-tekhnicheskiy institut imeni akademika A.F.Ioffe AN SSSR, Leningrad.

(Raman effect)

APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R000412020013-8"

"APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R000412020013-8

S/181/62/004/005/032/055
B108/B112

AUTHORS: Stekhanov, A. I., Korol'kov, A. P., and Eliashberg, M. B.

TITLE: Raman scattering in lithium chloride crystals

PERIODICAL: Fizika tverdogo tela, v. 4, no. 5, 1962, 1290 - 1292

TEXT: In this work the spectrum of Raman scattering in lithium chloride was obtained for the first time. The spectra excited at 370 and 770°K by the 2536.5 Å mercury resonance line are rather complex. In many respects the observed spectra are similar to those of NaCl. The LiCl spectrum is much larger than the spectra of the other alkali halide crystals. This is explained by the vibrations of the light $Li^+$ ions relative to the $Cl^-$ ions which are virtually at rest. In the frequency range 90 - 290 $cm^{-1}$ an abnormal first-order scattering due to lattice defects was observed. Calculations showed good agreement with the observed facts. There are 1 figure and 1 table.

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ASSOCIATION: Fiziko-tekhnicheskiy institut im. A. F. Ioffe AN SSSR (Physico-technical Institute imeni A. F. Ioffe AS USSR) Leningrad

SUBMITTED: January 6, 1962

Table: Frequencies (Ω) and relative intensities (I) of the peaks in the spectrum of Raman scattering in LiCl.

| Ω, cm⁻¹ | I | Ω, cm⁻¹ | I |
|---|---|---|---|
| 49 | 6 | 337 | 8 |
| 86 | 6 | 357 | 8 |
| 116 | 3 | 375 | 10 |
| 128 | 3 | 405 | 10 |
| 147 | 2 | 432 | 7 |
| 159 | 2 | 444 | 7 |
| 168 | 2 | 453 | 6 |
| 207 | 3 | 472 | 5 |
| 227 | 4 | 498 | 5 |
| 274 | 5 | 522 | 4 |
| 292 | 6 | 540 | 2 |
| 298 | 7 | 558 | 1 |
| 307 | 7 | 618 | 1 |

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"APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R000412020013-8

STEKHANOV, A.I.; ELIASHBERG, M.B.

Observation of local vibrations in the Raman effect in crystals of potassium chloride with lithium impurity. Fiz. tver. tela 5 no.10:2985-2987 '63. (MIRA 16:11)

1. Fiziko-tekhnicheskiy institut im. A.F.Ioffe AN SSSR, g. Leningrad.

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L 02232-67 EWT(1)/EWT(m)/EWP(t)/ETI IJP(c) JD/JG

ACC NR: AR6013669 SOURCE CODE: UR/0058/65/000/010/E055/E055

63

B

AUTHOR: Stekhanov, A. I.; Eliashberg, M. B.

TITLE: Observation of local vibration in Raman scattering of a potassium chloride crystal with lithium impurity

SOURCE: Ref. zh. Fizika, Abs. 10E437

REF. SOURCE: Tr. Komis. po spektroskopii. AN SSSR, t. 3, vyp. 1, 1964, 567-573

TOPIC TAGS: potassium chloride, Raman scattering, crystal lattice defect, crystal lattice vibration, alkali halide, ir absorption, Raman spectrum, absorption spectrum

ABSTRACT: In defective crystal lattices, together with the spectrum of the natural oscillations, there can appear local oscillations near the impurity of the foreign atoms or vacancies. Even local oscillations were observed in alkali-halide crystals, active in the Raman spectrum. Odd local oscillations were investigated in IR absorption spectra of pure and mixed crystals of alkali-halide salts. The results obtained are compared with the theory of local oscillations in crystals. [Translation of abstract].

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CA

23

PROCESSES AND PROPERTIES IN EX

**Chemistry of sulfite cooking.** M. G. Eliashberg and M. F. Martuinov. *Materialni Viesoyuznoi Nauch.-Issledovatel. Inst. Bumazhnoi Tsellyulozhnoi Prom.* (*Trans. All-Union Sci. Research Inst. Paper Cellulose Ind.*) 1931, No. 4, 5-43.—The results of the uncompleted lab. exptl. examn. of the existing theories of the chemistry of wood pulping led to the following observations: The existing relation of color changes and fluorescence (on exposure to ultra-violet rays) of alk. liquors to the changes in their content of loosely bound $SO_2$ is also characteristic of cellulose. The concn. of H-ions in the liquor slightly decreases in the early part of cooking and then rapidly increases with the beginning of the formation of lignosulfonic acid. The soln. of wood is imperceptible at 100-10°, increases rapidly at 120-30° and is somewhat retarded toward the end of cooking. The change of the curve of ash content in cellulose progresses analogously to that of CaO but somewhat higher, the 2 values rising in the first stage of cooking, then for some time running parallel to the axis of abscissas and finally declining again. The curve of the change of ash content of liquor constantly declines and runs considerably higher than that of CaO. The curve of CaO content in the liquor changes analogously to the corresponding curve of cellulose but in the reverse direction. The S content in the undissolved residue changes in the process of cooking similarly to CaO content; viz., it increases at first, then for some time remains unchanged and finally decreases again, the max. being 1% S of the abs. dry wood. The lignin content in the undissolved residue is unchanged up to 130° and then is very rapidly decreased. In the course of cooking the S content in the undissolved residue is continuously increased in relation to the lignin content. The cellulose content remains const. during almost the entire cooking. Sugars, observed in the liquor in the first stage of cooking, are formed exclusively from hemicelluloses. The soln. of pentosans begins from the start, proceeding more energetically at 100-10° and becoming somewhat slower toward the end of cooking. At the final stage of cooking the hexosans go into soln. much faster than pentosans. The formation of reducing sugars in the liquor begins at 110-20°. The sugar formation in the liquor begins later and proceeds slower with a lower content of free $SO_2$. In the process of cooking the resin and fat contents of the undissolved residue are considerably reduced, in some cases the resin content being reduced by 60%. Hagglund's theory of sulfite cooking (Holzchem.) is considered as the most plausible but insufficient.

Chas. Blanc

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

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"APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R000412020013-8

**The influence of cooking with relief liquor on the color and other properties of (sulfite) pulp.** S. Fotiev, M. Eliashberg and M. Martuinov. *Bumashnaya Prom* 10, No. 4, 34-45(1931).—A discussion of the properties of pulp obtained by the Hiller method installed at the "Sokol" works (*Ibid* 9, Nos. 5-6(1930)). Chas. Blanc

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

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CA

23

**Refined cellulose in place of rags for production of high-grade paper.** S. Fotiev, M. Eliashberg and M. Martuinov. *Bumashnaya Prom.* 11, No. 3, 7-10(1932).—The exptl. work was begun with analysis of high-grade papers produced by the Brown Co. of U. S. A. Chas. Blanc

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

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1ST AND 2ND ORDERS

PROCESSES AND PROPERTIES INDEX

3RD AND 4TH ORDERS

CA

23

**Preparation of half-stuff by the Sudakov method.** M. ELIASHBERG. *Bumazhnaya Prom.* 11, No. 5, 21-5(1932); cf. Khazanov and Strunnikov, C. A. 26, 5418. The method of Sudakov is applied successfully to leafy wood. CHAS. BLANC

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

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Cd

18

**Preparation of bleaching solutions from chloride of lime.** M. G. Iliashberg. *Leningrad Oblastnoe Nauch. Inzhenerno-Tekh. Obshchestvo Tsellyulozno - Bumazhnoi Prom. (Leningrad Dist. Sci. Eng.-Tech. Soc. Cellulose Paper Ind.), Problems of Rationalisation of Cellulose-Paper Production* 1934, 82-118.—No direct cause could be found for the difference in the speed and degree of pptn. and clarification of solns. of com. $Ca(ClO)_2$ of different sources. The speed of pptn. of solns. of $Ca(ClO)_2$ is different for every different com. product and is a sp. characteristic of a given product. The higher the content of active $Cl_2$ in the $Ca(ClO)_2$, the faster the clarification of its solns. The effect of dispersion of $Ca(ClO)_2$ on the pptn. speed of its solns. is unequal for different com. products. The speed of pptn. is generally increased with the rising temp. of $Ca(ClO)_2$ solns., though it was decreased by raising the temp. to 20° for 1 grade of $Ca(ClO)_2$ and to 25° for another. The higher the concn. of solns., the slower the pptn. An addn. of an inert material (sand) retards the pptn. speed of cold solns., that of min. quantities of $Al_2O_3$ accelerates the pptn. of cold solns., while the addn. of 120 mg. of $Al_2O_3$ per l. of cold soln. and 25 mg. per l. of warm soln. (30-5°) retards the process of clarification. Chas. Blanc

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

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"APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R000412020013-8

23

Can pulp suitable for viscose and medium grades of printing paper be produced in one cooking operation? M. G. Eliashberg.—*Bumashnaya Prom.* 14, No. 9, 17-27 (1935); cf. Kardakov, *C. A.* 29, 4937[9].—For the production of pulp with least possibly damaged fiber suitable for reworking into viscose, wood is pulped with an acid of rather high combined CaO (0.95-1%). Since the color of pulp for viscose rayon production is not important and the greater part of lignin is removed in the initial stage of bleaching, the bleaching of viscose pulp should be carefully done and the pulp only partially bleached. The method of producing a pulp for viscose results in a durable stock contg. considerable amts. of carbohydrates that is suitable for the production of medium grades of printing paper. It is, however, considered that production of pulp for viscose and printing paper in one pulping operation or in the same production unit is impractical, because of the difference of the subsequent treatments of the 2 kinds of pulp. Some of the more important features are the necessity of a sep. bleaching, because a whiter pulp is required for the production of paper. The presence of carbohydrates in viscose pulp is undesirable and should be limited to a max. of 6-7% pentosans. In printing paper a higher content of carbohydrates is desirable; it is obtained by the use of a higher combined acid and by a milder pulping.

Chas. Blanc

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

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"APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R000412020013-8

en

23

**Preparation of strong and "superstrong" cooking acid.** M. G. Eliashberg. *Bumashnaya Prom.* 17, No. 10, 8-14; No. 11, 6-13(1939). **Strong cooking acid for sulfite pulping.** K. V. Khodakov. *Ibid.* 14-15. A discussion of the methods and installations for the production and recovery of strong $SO_2$ solns. and their uses in sulfite pulping, based chiefly on foreign practice. Chas. Blanc

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

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CA

13

New pulp-producing plants of the Karelian-Finnish Soviet Socialistic Republic. M. G. Blinshberg. *Bumazhnaya Prom.* 1940, No. 11, 16-23; *Khim. Referat. Zhur.* 4, No. 7-8, 117(1941).—The tech. processes and the equipment of 5 pulp-paper plants, whose tech. methods differ from those of other plants, are described. W. R. Henn

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R000412020013-8"

"APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R000412020013-8

ELIASHBERG, M. G.

The boiling of sulphite pulp 3. perer. izd. Moskva, Gosbumizdat, 1944. 88p.

Cyr.4 TS4

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1ST AND 2ND ORDERS

PROCESSES AND PROPERTIES INDEX

CA

23

**Use of oxygen in the production of sulfite pulp.** M. G. Eliashberg (Lesotekhnicheskaya Akademiyaim. Kirova). *Kislorod* 1944, No. 4, 38-50.—The use of O in the burning of pyrite or S would permit the production of 100% $SO_2$. In using O, the temp. must be kept sufficiently low to prevent formation of $SO_3$. A Freeman burner or some such app. is needed for this purpose. The availability of concd. $H_2SO_4$ would greatly cheapen and increase the production of sulfite pulp. M. Hosch

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1ST AND 2ND ORDERS

PROCESSES AND PROPERTIES INDEX

3RD AND 4TH ORDERS

CA

18

New methods in the preparation of concentrated sulfurous acid. M. G. Blinshberg. *Humashnaya Prom.* 10, No. 1/2, 8-22(1945).—A review of methods practiced in Canada, U.S.A., and U.S.S.R. M. Hosch

COMMON ELEMENTS

MATERIALS INDEX

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1ST AND 2ND ORDERS

PROCESSES AND PROPERTIES INDEX

23

CA

Technical problems of pulp production. M. G. Eliashberg. *Bumashnaya Prom.* 21, No. 5/6, 9-14(1946). Recent advances in the technology of pulp production are reviewed. Improved equipment, e.g., decorticators using water jets, continuous automatic conveying, chipping machines, etc., saves labor and reduces production cost. Pulp mills are being equipped with $SO_2$-generating plants. Also pulp mills are assocd. or combined with industries which utilize their waste products, e.g., metallurgical plants utilizing pyrite cinder and with industries whose by-products are utilized in pulp mills, e.g., naval stores. The problem demanding urgent attention is the conversion of pulping from an intermittent into a continuous process.

M. Hosch

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CA

23

**Sulfur consumption in the manufacture of sulfite pulp**

M. G. Eliashberg, *Bumash. Prom.* 22, No. 3, 17-21 (1947).—The use of strong cooking acid can lower S consumption below that encountered in the use of weak acid. In a series of Swedish and Finnish factories using cooking acids contg. 6-7% total $SO_2$, S consumption of 65-68 kg./ton of air-dry pulp was encountered. By using cooking acid with a higher $SO_2$ content, the temp. of the cooking process can be lowered and S consumption decreased. The basic conditions for lowering S consumption in sulfite cooking are: use of the max. concn. of chips in the digester, forced liquor circulation, and evacuation of air from the digester before introduction of acid; use of the lowest possible cooking temp.; and use of the min. content of base in the cooking acid. By application of these principles to pulping, as well as by careful elimination of losses in the acid-recovery system, S consumption can be reduced to 40-45 kg./ton of air-dry pulp. 16 references.

Marshall Sittig

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

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ELIASHBERG, M.G.

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USSR/Wood Products Industry 4412.0700 Sep/Oct 1947

"Technical Re-equipment of the Cellulose and Paper Industry During Thirty Years," M. G. Eliashberg, V. I. Malyutin, 3 pp

"Bum Prom" Vol XXII, No 6

Describes briefly mechanization of lumber yards. Discusses progress in preparation of sulfite and sulfate acids and types of boilers currently used for the purpose. Mentions Balakhansiy Combine (manufactures newsprint), Kama Combine (typing and writing paper), and Balakhanskiy Cardboard Factory.

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CA

25

**Changes in pulp and liquor during sulfite digestion with strong acid.** M. O. Elhashberg. *Humash. Prom.* 23, No. 2, 9-21(1948).—A comprehensive comparison is made of published data by Hägglund on digestion with acid (I) contg. 4% total $SO_2$ and 1% CaO with a series of expts. by E: using acid (II) of 2.6–3.0% total $SO_2$ content and 0.9% CaO content in sealed tubes, and using strong acids of 15% total $SO_2$ content and (III) no base, (IV) 0.9% CaO, (V) 0.25% $(NH_4)_2O$, and (VI) 0.82% $(NH_4)_2O$ in autoclaves. All strong acid runs were made with a 3-hr. heating period followed by a const. temp. of 100°. The following table shows variation in pulp properties for each of the different cooking liquors after various cooking times in hrs. All figures are in g./100 g. bone-dry wood.

| | Yield | | | Lignin | | | Pentosans | | |
|---|---|---|---|---|---|---|---|---|---|
| Cooking time | 3 | 5 | 7 | 3 | 5 | 7 | 3 | 5 | 7 |
| I | 96 | 97 | 95 | 28 | 27 | 25 | 8 | 7 | 6 |
| II | 99 | 97 | 90 | 28 | 28 | 27 | 11 | 10 | 8 |
| III | 87 | 67 | 57 | 24 | 18 | 8 | 8 | 4 | 3 |
| IV | 92 | 76 | 64 | 26 | 19 | 13 | 10 | 6 | 5 |
| V | 97 | 77 | 63 | 28 | 21 | 12 | 10 | 7 | 5 |
| VI | 95 | 83 | 74 | 27 | 22 | 17 | 11 | 8 | 6 |

Marshall Sittig

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C.A.

New developments in sulfite cooking. M. G. Elkashberg.
*Bumash. Prom.* 25, No. 3, 6-9(1950).—A review.
Marshall Sittig

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ELYASHBERG, M. G.

"How to obtain a strong boiling mixture,"1952.

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"APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R000412020013-8

1. ELYASHBERG, M. G.

2. USSR (600)

3. Wood Pulp Industry

4. Ways of increasing productivity in digester units of sulfite pulp mills. Bum.prom. 27 No. 5 - 1952.

9. Monthly List of Russian Acessions, Library of Congress, February, 1953. Unclassified.

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"APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R000412020013-8

ELIASHBERG. M.G.

384 Obobshcheniye peredovogo opyta sui'fittsellyuloznyukh zavodov. L., 1954. 73s. s chert. 20sm. (M-vo bumazhnoy i derevoobrabatyuayushchey prom-sti SSSR. Tsentr. naudr-issled. in-t tsellyuloznoy i bumazanoy prom-sti TSIIB). 2.000 ekz. Bespl.-sost. ukazan na oborote nr.l.- (54-55519) p 661.713

SO: Knizhaya, Letopis, Vol. 1, 1955

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"APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R000412020013-8

ELIASHBERG M. G.

MEOS, A.I., professor, doktor tekhnicheskikh nauk; ELIASHBERG, M.G., dotsent, kandidat tekhnicheskikh nauk.

Valuable contribution to the literature on pulp chemistry. Bum. prom. 29 no.10:31 O '54. (MLRA 7:11)
(Wood pulp)

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"APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R000412020013-8

ELIASHBERG, M.G.

ALEKSEYEV, A.A., inzhener, redaktor; ASHKENAZI, K.M., doktor tekhnicheskikh nauk, redaktor; GRABOVSKIY, V.A., kandidat tekhnicheskikh nauk, redaktor; GORBACHEV, A.N., kandidat tekhnicheskikh nauk, redaktor; IVANOV, S.N., kandidat tekhnicheskikh nauk, redaktor; LAPIN, P.S., kandidat tekhnicheskikh nauk, redaktor; NEPENIN, N.N., doktor tekhnicheskikh nauk, redaktor; PUZYREV, S.A., kandidat tekhnicheskikh nauk, redaktor; RYUKHIN, N.V., kandidat tekhnicheskikh nauk, redaktor; FLYATE, D.M., kandidat tekhnicheskikh nauk, redaktor; SHAPIRO, A.D., kandidat tekhnicheskikh nauk, redaktor; ELIASHBERG, M.G., kandidat tekhnicheskikh nauk, redaktor; KHUDYAKOVA, A.V., redaktor; VOLKHOVER, R.S., tekhnicheskiy redaktor.

[Paper maker's handbook] Spravochnik bumazhnika (tekhnologa) Moskva, Goslesbumizdat. Vol. 1 1955. 790 p. (MLRA 8:10)
(Paper industry)

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"APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R000412020013-8

ELIASHBERG, M. G.

"Sulfonation and Thickening of Lignin During the Process of Sulfite Pulping," paper delivered at the Conference on Chemistry and Technology of Lignin, 4-6 June 1956.

Leningrad Order of Lenin Acad. for Wood Technology im. S.M.Kirov

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various amts. of wood dissolve during prehydrolysis (0, 10, 20, and 30%). If after sulfi[illegible] pulping was 4.4, 4.0, 3.6, and 2.4%; and the $SO_4^{--}$ co[illegible]ent of the spent liquor in g./l. was 1.3, 1.5, 1.8, and 2.5. In a study of the effect of the S content of the lignin on [illegible]lfonation, a, b, and c were washed 5 times at 100° with [illegible]$_2O$, dried at 50°, and sulfonated several times by heating [illegible]hrs. at 100° in cooking acid contg. 6.5% total $SO_2$ and [illegible]% $Na_2O$. If from a was 3.6 and 4.8% after 1 and 2 s[illegible]onations; from b was 3.9, 4.4, and 5.3 after 1, 2, and 3 s[illegible]fonations; from c 2.8, 4.9, 4.7, and 5.1 after 1, 2, 3, a[illegible] 4 sulfonations; corresponding values for the $SO_4^{--}$ in [illegible]e spent liquor was 0.2 and 0.4 for a; 0.3, 0.5, and 0.8 for b [illegible] and 0.4, 0.7, 1.3, and 2.1 for c. Sulfonation velocities de[illegible]rease in the following order of reaction vessels: bronze (B)-stainless steel(SS)-glass. Values for percentage total $SO_2$ and combined as CaO, max. cooking temp., total cooking time (hrs.), percentage as-blown yield, percentage screening, and Rad[illegible]

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ELIASHBERG, M.G.; PARFENOVA, A.I.; TIKHOMIROVA, Ye.V.

New data on the theory of sulfite wood pulp cooking and their practical significance. Bum.prom. 30 no.10 no.10:5-7 O '55. (MLRA 9:1)

1.TSentral'nyy nauchno-issledovatel'skiy institut bumagi.
(Wood pulp)

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ELIASHBERG, M.G.

New data on the sulfite process theory and their significance for practical purposes. Bum.prom. 31 no.1:8-10 Ja '56. (MLRA 9:5)

1. TSentral'nyy nauchno-issledovatel'skiy institut bumagi.
(Woodpulp industry) (Sulfites)

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"APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R000412020013-8

ELIASHBERG, M.G.; TSYPKINA, M.N.; KHRISTYUK, I.A.

New data on the theory of the sulfite process and its practical significance. Bum.prom.31 no.3:13-16 Mr '56. (MIRA 9:7)

1.TSentral'nyy nauchno-issledovatel'skiy institut tsellyuloznoy i bumazhnoy promyshlennosti.
(Woodpulp) (Sulfite liquor)

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ELIASHBERG, M.G.

ALEKSEYEV, A.A., inzhener, redaktor: ASHKENAZI, K.M., doktor tekhnicheskikh nauk, redaktor; GRABOVSKIY V.A., kandidat tekhnicheskikh nauk, redaktor; GORBACHEV, A.N., kandidat tekhnicheskikh nauk, redaktor; IVANOV, S.N., kandidat tekhnicheskikh nauk, redaktor; LARIN, P.S., kandidat tekhnicheskikh nauk, redaktor; NEPENIN, N.N., doktor tekhnicheskikh nauk, redaktor; PUZYREV, S.A., kandidat tekhnicheskikh nauk, redaktor; RYUKHIN, N.V., kandidat tekhnicheskikh nauk, redaktor; FLYATE, D.M., kandidat tekhnicheskikh nauk, redaktor; SHAPIRO, A D., kandidat tekhnicheskikh nauk, redaktor; ELIASHBERG, M.G., kandidat tekhnicheskikh nauk, redaktor; PUZYREV, S.A., redaktor; RYUKHIN, N.V., redaktor; KHUDYAKOVA, A.V., redaktor izdatel'stva; KARASIK, N.P. tekhnicheskiy redaktor

[Paper maker's manual] Spravochnik bumazhnika; tekhnologa. Moskva, Goslesbumizdat. Vol. 2, book 2. 1957. 433 p. (MLRA 10:4)

1 Leningrad. TSentral'nyy nauchno-issledovatel'skiy institut tsellyuloznoy i bumazhnoy promyshlennosti.
(Paper industry)

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ELIASHBERG, M.G., kand.tekhn.nauk

New developments in the theory of sulfite cooking of woodpulp. [Trudy] NTO bum.i der.prom. no.8:96-122 '59. (MIRA 16:2)

(Woodpulp)

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15:9530

SOV/63-4-6-2/37

AUTHORS: Eliashberg, M. G., Nepenin, Yu. N., Akim, L. Ye. (Candidates of Technical Sciences)

TITLE: Modern Methods of Preparing Ligneous Cellulose for Chemical Processing

PERIODICAL: Khimicheskaya nauka i promyshlennost', 1959, Vol 4, Nr 6, pp 698-705 (USSR)

ABSTRACT: This is a review of Soviet and foreign literature on the preparation of bleached cellulose for the artificial fibers, plastics, and explosives industries. GOST-5982-59 and 9104-59 norms of sulfite bleached cellulose for the manufacture of rayon staple fiber, yarn, and cord, and Swedish characteristics of high-strength cord are given in tables. Sulfite and sulfate digestion is described in detail. Sulfite-alkali, nitric acid, and other methods are briefly mentioned. Optimal conditions for sulfite digestions are as follows: temperature raised to 105-110° C within 3 to 4 hr and maintained for 1 to 2 hr; then raised to 140-142° C within 3 to 4 hr,

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Modern Methods of Preparing Ligneous Cellulose for Chemical Processing

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In recent times, calcium bisulfite was replaced with ammonium, sodium or magnesium bisulfites, which remain stable and penetrate the wood much better than calcium bisulfite. Unbleached sulfite cellulose (viscose grade) obtained in about 50% yield (based on wood chips) contained about 1% residual lignin, 3 to 4% pentosans, and 89 to 90% α-cellulose, the mean degree of polymerization was 700 to 1,300. The degree of polymerization and the content of hemicellulose is regulated by the acidity of the liquor and the end temperature of the digestion. The acidity can be raised by removal of a part of the alkali; this reduces the amount of calcium bisulfite in the digester and increases the hydrolytic action of the liquor (Ye. A. Kuznetsov, New Technology of Sulfite Cellulose Manufacture--Novaya tekhnika v proizvodstve sul'fitnoy tsellyulozy--Goslesbumizdat, 1956, p 25). Sulfate digestion is conducted at higher temperatures than the sulfite process and takes less time; the temperature is raised to 168-174° C within 2 to 3 hr and is maintained at this level for 1 to 2 hr. The yield is

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Modern Methods of Preparing Ligneous Cellulose for Chemical Processing

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about 40 to 42% based on wood chips. The total content of pentosans in unbleached sulfate cellulose obtained from coniferous wood reached 8 to 10%. The quality of the sulfate cellulose can be improved considerably by a preliminary hydrolysis of the wood by means of mineral acid solution, water (the formic and acetic acids formed in the wood during the cooking are here the hydrolytic catalysts), or steam. All of the plants producing tire cord cellulose use the preliminary water hydrolysis. The temperature varies from 140 to 180° C, the time of reaction, from 20 min to 3 hr. Sulfite-sulfate digestion used in the Finnish Rauma-Rapola plant (Finnish Patent 27478, June 30, 1955) is described. This method yields viscose cellulose of high mechanical quality with 96 to 98% α-cellulose content. Nitric acid digestion gives high-quality cellulose from deciduous trees; e.g., beech wood. This method is not used widely, as the problem of the nitric acid regeneration is not as yet solved satisfactorily. Hydrotropic digestion by means of sodium xylenesulphonate and other hydrotropic solutions is not as yet used in the manufacture of chemical

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Modern Methods of Preparing Ligneous Cellulose for Chemical Processing

SOV/[illegible]/37

cellulose. It was tried successfully on aspen wood (V. S. Gromov, P. N. Odintsov, Mash. prom., 1957, Nr 6). Optimal conditions: 11-12 hr cooking at 150° C; yield 52% based on wood; 89-93% α-cellulose; 0.01% ashes. The liquor can be reused 6 to 7 times; excess lignin (10% based on wood) is then separated, and the purified liquor used again. The mechanical purification and screening of the unbleached cellulose is described. The separation of 18.5% fine fibers raised the α-cellulose content from 87.5% to 89.2%, lowered the lignin content from 3.07% to 0.47%, that of pentosans from 6.54% to 4.26%, and that of resins and ashes from 1.9[illegible]% to 0.71%. The continuous bleaching of sulfite viscose cellulose is described in detail. The process consists of seven stages; namely: chlorination I; chlorination II; refining; wash; hypochlorite bleaching I; hypochlorite bleaching II; acidification. Recently, one or two stages of bleaching with $ClO_2$ follow the hypochlorite bleaching II when cellulose with a small lignin content is processed, and a

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maximum bleaching effect (without damaging the fiber) is required. The refining (caustic extraction) is done with 0.5-1.0% NaOH at 95 to 140° C (hot refining) or 9-12% NaOH at normal temperature (cold refining). The content of resins and fats in bleached cellulose can be lowered considerably by adding surface active agents (OP-10, TMS, OP-7, and other) to the NaOH solution. The bleaching with sodium or potassium hypochlorite is conducted at pH = 9 to 10; t = 38 to 42° C; time of reaction 4 to 5 hr. Acidification is done with 1-2% sulfurous acid (by weight, based on the fiber); time of reaction, 50 to 60 min. Bleaching with $ClO_2$ is discussed. The bleaching can be made in basic, acid, or neutral medium. In an acid medium the oxidizing potential is fully utilized, according to the reaction:

$$ClO_2 + 4H^+ + 5e = Cl^- + 2H_2O.$$



In alkaline medium only part of the oxidizing potential

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is utilized:

$$ClO_2 + e \longrightarrow ClO_2^-$$

This last reaction proceeds energetically and shows a high bleaching effect, but it reduces the viscosity and the mechanical characteristics of the cellulose. However, by bleaching in alkaline medium at pH $\leqslant$ 10, one can omit the hypochlorite bleaching after the refining stage (Proceedings of the Leningrad Technological Institute of the Cellulose and Paper Industry--Trudy LTI cellyul. i bum. prom.--1955, Nr 3, p 3). There are 4 tables; 1 figure; and 77 references, 12 U.S., 3 U.K., 11 Swedish, 2 Finnish, 2 Japanese, 1 Polish, 10 German, 36 Soviet. Recent U.S. and U.K. references are: Cabbot, Purves, U. a. F. Mag. of Canada, Nr 2 (1959); L. Joergensen, The Chemistry of Pulp Fibers (Symposium at Cambridge, September 1957); F. Walker, Paper Trade J., 140, Nr 36, 21 (1956); J. Evans, ibid., 133, Nr 31 (1954); W. Rapson, Paper Mill News, 78, Nr 13, 88 (1955).



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ELIASHBERG, M.G.; TSYPKINA, M.N.

Sulfite pulping with acid containing an ammonium base. Bum.prom. 34 no.12:2-6 D '59. (MIRA 13:4)

1. TSentral'nyy nauchno-issledovatel'skiy institut tsellyuloznoy i bumazhnoy promyshlennosti.
(Sulfite liquor) (Ammonium oxide)

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ELIASHBERG, M. G., Doc Tech Sci -- (diss) "Research into the field of the theory of sulfide digestion of cellulose." Leningrad, 1960. 24 pp; with graphs; (Ministry of Higher and Secondary Specialist Education RSFSR, Leningrad Order of Lenin Forestry Engineering Academy im S. M. Kirov); 200 copies; free; list of author's works on pp 23-24 (22 entries); (KL, 17-60, 150)

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ALEKSEYEV, A.A., inzh., red.; ASHKENAZI, K.M., doktor tekhn.nauk, red.; GRABOVSKIY, V.A., kand.tekhn.nauk, red.; GORBACHEV, A.N., kand.tekhn. nauk, red.; IVANOV, S.N., kand.tekhn.nauk, red.; LARIN, P.S., kand. tekhn.nauk, red.; NEPENIN, N.N., doktor tekhn.nauk, red.; PUZYREV, S.A., kand.tekhn.nauk, red.; RYUKHIN, N.V., kand.tekhn.nauk, red.; FLYATE, D.M., kand.tekhn.nauk, red.; SHAPIRO, A.D., kand.tekhn.nauk, red.; ~~ELIASHBERG, M.G.,~~ doktor tekhn.nauk, red.; KHUDYAKOVA, A.V., red.izd-va; SIDEL'NIKOVA, L.A., red.izd-va; LOBANKOVA, R.Ye., tekhn.red.

[Manual for paper industry technicians] Spravochnik bumazhnika; (tekhnologa). Moskva, Goslesbumizdat. Vol.3. 1961. 719 p. (MIRA 14:6)

1. Leningrad. TSentral'nyy nauchno-issledovatel'skiy institut tsellyuloznoy i bumazhnoy promyshlennosti.
(Paper products)

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ALEKSEYEV, A.A., inzh., red.; ASHKENAZI, K.M., doktor tekhn.nauk, red.; GRABOVSKIY, V.A., kand.tekhn.nauk, red.; GORBACHEV, A.N., kand.tekhn. nauk, red.; IVANOV, S.N., kand.tekhn.nauk, red.; LARIN, P.S., kand. tekhn.nauk, red.; NEPENIN, N.N., doktor tekhn.nauk, red.; PUZYREV, S.A., kand.tekhn.nauk, red.; RYUKHIN, N.V., kand.tekhn.nauk, red.; FLYATE, D.M., kand.tekhn.nauk, red.; SHAPIRO, A.D., kand.tekhn.nauk, red.; ELIASHBERG, M.G., doktor tekhn.nauk, red.; KHUDYAKOVA, A.V., red.izd-va; SIDEL'NIKOVA, L.A., red.izd-va; LOBANKOVA, R.Ye., tekhn.red.

[Manual for paper industry technicians] Spravochnik bumazhnika; (tekhnologa). Moskva, Goslesbumizdat. Vol.3. 1961. 719 p. (MIRA 14:6)

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24.6110 (1160, 1163, 1227)

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AUTHORS: Stekhanov, A. I., Gabrichidze, and Eliashberg, M. B.

TITLE: Raman scattering of second order to low temperatures

PERIODICAL: Fizika tverdogo tela, v. 3, no. 5, 1961, 1331-1334

TEXT: The object of the present work was to extend the study of Raman scattering to temperatures lower than those hitherto used. Large homogeneous crystals were grown from a melt of KI, 7×7×50 mm samples of this crystal were cooled in a vacuum chamber with liquid nitrogen. The Raman spectrum was excited by the 2537-A resonance line of Hg and photorecorded by means of a quartz spectrograph which had a dispersion of 8 A/mm in this spectral range. The recording required 15 hr at room temperature and 50 hr at lower temperatures. The figure shows the microphotographs of the Raman spectra at 300°K (a) and 77°K (b). It was found that the Raman spectrum of the second order of KI is continuous. At low temperatures the condition $kT < \hbar\omega$ was satisfied, as $\omega_{max} = \frac{1}{2}\Omega_{max}$ was equal to 170 cm$^{-1}$. The expected difference in the distribution of Stokes frequencies at 300 and 77°K did not

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appear. The explanation is that the strongly temperature dependent difference frequencies in Raman spectrum lie near the Rayleigh line. The difference frequencies in the high frequency part of the spectrum are only slightly temperature dependent, because one of the two frequency components is small. The small frequencies satisfy the condition $kT > \hbar\omega$ also at 77°K. Therefore, it is assumed that the observed second order spectrum of the KI crystal consists of sum and difference frequencies whose temperature can be approximately described by the temperature factor $Q^{(1)}$ of the spectrum of the first order. For the Stokes frequencies one obtains then $Q_S^{(1)} = 1/\left[1 - \exp(-\hbar\Omega/kT)\right]$, and for the anti-stokes frequencies $Q_A^{(1)} = 1/\left[\exp(\hbar\Omega/kT) - 1\right]$, the lattice being in good agreement with the theory. The ultraviolet irradiation of the KI resulted in an intensive coloring of the crystal on account of the formation of F-centers in the lattice. The unchanged Raman spectrum of KI in the range of lower frequencies showed, however, no first-order scattering. From this it is concluded that the power of scattering of the F-centers in alkali halide crystals is insufficient. The most important conclusion is that the Raman spectrum of



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second order is continuous, which is in agreement with the crystal theory of Born. The interpretation of C. V. Raman and R. S. Krishnan (Refs. 9, 10, see below) assuming a discreteness of the spectrum of the second order could not be confirmed. There are 1 figure and 10 references: 6 Soviet-bloc and 4 non-Soviet-bloc. The 3 references to English-language publications read as follows: C. V. Raman, Proc. Ind. Acad. Sci., A26, 339-398, 1947; R. S. Krishnan, Proc. Ind. Acad. Sci., A18, 298, 1943; R. S. Krishnan, Nature, 159, 266, 1947.

ASSOCIATION: Fiziko-tekhnicheskiy institut imeni akad. A. F. Ioffe, AN SSSR, Leningrad (Institute of Physics and Technology imeni Academician A. F. Ioffe, AS USSR, Leningrad)

SUBMITTED: December 1, 1960

Figure. Microphotographs of the Raman spectra of the second order of KI crystal.
Legend: a) 300°K, б) 77°K.



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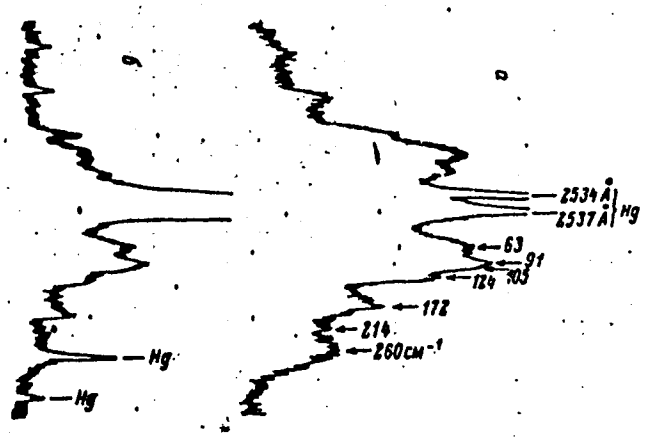


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