"APPROVED FOR RELEASE: 08/26/2000 CIA-RDP86-00513R001653530003-5

STRIZHEVSKIY, S.S.

Planning and financial control should be improved in telecommunication enterprises. Vest. sviazi 23 no.3:17-19 Mr '63. (MIRA 16:3)

1. Starshiy ekonomist Ministerstva finansov RSFSR.
(Telecommunication—Accounting)

APPROVED FOR RELEASE: 08/26/2000 CIA-RDP86-00513R001653530003-5"

"APPROVED FOR RELEASE: 08/26/2000 CIA-RDP86-00513R001653530003-5

STRIZHEVSKIY, S.YA.

Obledenenie samoletov v polete. (Tekhnika vosdushnogo flota, 1938, no. 4, p. 29-44, bibliography)
Title tr.: Formation of ice on aircraft in flight.

TL504.T4 1938

SO: Aeronautical Sciences and Aviation in the Soviet Union, Library of Congress, 1955.

APPROVED FOR RELEASE: 08/26/2000 CIA-RDP86-00513R001653530003-5"

"APPROVED FOR RELEASE: 08/26/2000 CIA-RDP86-00513R001653530003-5

MARTYNOV, A.K.; OSTOSLAVSKIY, I.V., prof., retsenzent; BURAGO, G.F., prof., retsenzent; ZAKS, N.A., dotsent, retsenzent; STRIZHEVSKIY, S.Ya., dotsent, retsenzent; KOTLYAR, Ya.M., red.; ZUDAKIN, I.M., tekhn.red.

[Experimental aerodynamics] Eksperimental'naia aerodinamika. Moskva, Gos.izd-vo obor.promyshl., 1950. 475 p. (MIRA 13:7)

(Aerodynamics)

APPROVED FOR RELEASE: 08/26/2000 CIA-RDP86-00513R001653530003-5"

"APPROVED FOR RELEASE: 08/26/2000 CIA-RDP86-00513R001653530003-5

STRIZHEVSKII, S. YA.

STRIZHEVSKII, S. YA.

Nikolai Egorovich Zhukovskii--osnovopolozhnik sovremennoi aviatsionnoi nauki. Stenogramma publichnoi lektsii. Moskva, Pravda, 1951. 28 p.
Title tr.: Nikolai Egorovich Zhukovskii, the founder of modern aeronautical sciences.

TL540.Z45S8

SO: Aeronautical Sciences and Aviation in the Soviet Union, Library of Congress, 1955.

APPROVED FOR RELEASE: 08/26/2000 CIA-RDP86-00513R001653530003-5"

"APPROVED FOR RELEASE: 08/26/2000 CIA-RDP86-00513R001653530003-5

YUR'YEV, Boris Nikolayevich, akademik; STRIZHEVSKIY, S.Ya., kand. tekhn. nauk, retsenzent; ZAYTSEVA, K.Ya., inzh., red.; PETROVA, I.A., red.izd-va; ZUDAKIN, I.M., tekhn. red.

[Aerodynamic analysis of helicopters] Aerodinamicheskii raschet vertoletov. Moskva, Oborongiz, 1956. 959 p. (MIRA 16:9)

(Helicopters--Design and construction)

APPROVED FOR RELEASE: 08/26/2000 CIA-RDP86-00513R001653530003-5"

"APPROVED FOR RELEASE: 08/26/2000 CIA-RDP86-00513R001653530003-5

ZAKHARIN, Veniamin Aleksandrovich, kand. tekhn. nauk; KANEVSKAYA, M.D., red.; STRIZHEVSKIY, S.Ya., red.; KOROLEV, A.V., tekhn. red.

[Aviation with vertical take-off] Aviatsiia vertikal'nogo vzleta. Moskva, Izd-vo DOSAAF, 1961. 69 p. (MIRA 15:4)
(Vertically rising airplanes)

APPROVED FOR RELEASE: 08/26/2000 CIA-RDP86-00513R001653530003-5"

"APPROVED FOR RELEASE: 08/26/2000 CIA-RDP86-00513R001653530003-5

STRIZHEVSKIY, Semen Yakovlevich, kand. tekhn. nauk; TURCHIN , P.Ye., red.; KHOTIMSKIY, P.M., red.; ROZHKO, K.M., red.l-leksikograf; PLAKSHE, L.Yu., tekhn. red.

[French-Russian dictionary of aviation and technical terms] Frantsuzsko-russkii aviatsionno-tekhnicheskii slovar'. Moskva, Fizmatgiz, 1963. 578 p. (MIRA 17:2)

APPROVED FOR RELEASE: 08/26/2000 CIA-RDP86-00513R001653530003-5"

"APPROVED FOR RELEASE: 08/26/2000 CIA-RDP86-00513R001653530003-5

IZAKSON, Aleksandr Mikhaylovich; MIL', M.L., doktor tekhn. nauk, retsenzent; STRIZHEVSKIY, S.Ya., kand. tekhn. nauk, dots., retsenzent; SHAVROV, V.B., kand. tekhn. nauk, retsenzent; GIL'BERG, L.A., red.

[Soviet helicopter industry] Sovetskoe vertoletostroenie. Moskva, Mashinostroenie, 1964. 310 p. (MIRA 17:6)

APPROVED FOR RELEASE: 08/26/2000 CIA-RDP86-00513R001653530003-5"

"APPROVED FOR RELEASE: 08/26/2000 CIA-RDP86-00513R001653530003-5

STRIZHEVSKIY, Sh.P.

At a leading railroad district in Transbaikalia. Avtom., telem. i sviaz' 6 no.9:21-24 S '62. (MIRA 15:9)

1. Nachal'nik Borzinskoy distantsii signalizatsii i svyazi Zabaykal'skoy dorogi.
(Transbaikalia--Railroads--Signaling)

APPROVED FOR RELEASE: 08/26/2000 CIA-RDP86-00513R001653530003-5"

"APPROVED FOR RELEASE: 08/26/2000 CIA-RDP86-00513R001653530003-5

STRIZHEVSKIY, Sh.P.

Connection of selective networks in the automatic telephone exchanges of district-wide communication systems. Avtom., telem. i sviaz' 7 no.7:32-34 Jl '63. (MIRA 16:10)

1. Nachal'nik Borzinskoy distantsii signalizatsii i svyazi Zabaykal'skoy dorogi.

APPROVED FOR RELEASE: 08/26/2000 CIA-RDP86-00513R001653530003-5"

"APPROVED FOR RELEASE: 08/26/2000 CIA-RDP86-00513R001653530003-5

SKRAMTAYEVA, G.A., inzh., ispolnyayushchiy obyazannosti starshego nauchnogo sotrudnika. Prinimali uchastiye: KIR'YANOV, A.P.; FINKEL'SHTEYN, Ya.B.; NOSOV, F.P.. STRIZHEVSKIY, V.I., kand.tekhn.nauk, nauchnyy red.; CHABROV, I.M., red.

[Method for applying cement coatings in insulating steel pipes to be used in trenchless and jacketless pipelaying; scientific report] Tekhnologiia naneseniia tsementnoi izoliatsii na stal'nye truby dlia bestranshеinoi besfutliarnoi prokladki truboprovodov; nauchnoe soobshchenie. Moskva, Otdel nauchno-tekhn.informatsii Akad.koomun. khoz., 1959. 18 p. (MIRA 13:6)

1. Glavnyy mekhanik Upravleniya po stroitel'stvu podzemnykh sooruzheniy Glavmosstroya (for Kir'yanov). 2. Nachal'nik Proizvodstvenno-tekhnicheskogo otdela (for Finkel'shteyn). 3. Glavnyy inzhener trubozagotovitel'nogo zavoda tresta "Mospodzemstroysnab" (for Nosov).
(Protective coatings) (Pipelines)

APPROVED FOR RELEASE: 08/26/2000 CIA-RDP86-00513R001653530003-5"

"APPROVED FOR RELEASE: 08/26/2000 CIA-RDP86-00513R001653530003-5

STRIZHEVSKIY, V.L. [Stryzhevs'kyi, V.L.]

Absorption and radiation of light by a weakly perturbed system.
Ukr.fiz.zhur. 4 no.6:809-810 N-D '59. (MIRA 14:10)

1. Kiyevskiy gosudarstvennyy universitet im. T.G.Shevchenko.
(Light) (Absorption of light)

APPROVED FOR RELEASE: 08/26/2000 CIA-RDP86-00513R001653530003-5"

"APPROVED FOR RELEASE: 08/26/2000 CIA-RDP86-00513R001653530003-5

SOV/51-7-4-7/32

AUTHORS: Lisitsa, M.P. and Strizhevskiy, V.L.

TITLE: On the Temperature Dependence of the Vibrational Absorption Band Intensities in Gases in the Case of Fermi Resonance.

PERIODICAL: Optika i spektroskopiya, 1959, Vol 7, Nr 4, pp 478-481 (USSR)

ABSTRACT: Earlier studies of the temperature dependence of the intensities of two vibrations of gaseous carbon tetrachloride (Ref 1) confirmed qualitatively the correctness of Vol'kenshteyn, Yel'yashevich and Stepanov's theory (Ref 2). Complete quantitative agreement was not obtained: the theory predicted a faster rise of the integral absorption with increase of temperature than was found experimentally. Among many factors which may be responsible for this difference between theory and experiment the most important is the resonance interaction between vibrational levels $E^{o}_{\nu_1+\nu_3}$ and $E^{o}_{\nu_1+(\nu_1-\nu_4)}$ (the superscript o denotes unperturbed state). Transitions to these two levels produce bands of the vibrations studied. Allowance for this interaction was expected to produce quantitative agreement between theory and experiment. This was found to be true when the authors modified Vol'kenshteyn's et al theory by inclusion of the Fermi resonance, since this led to better agreement

Card 1/2

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"APPROVED FOR RELEASE: 08/26/2000 CIA-RDP86-00513R001653530003-5

On the Temperature Dependence of the Vibrational Absorption Band Intensities in Gases of Fermi Resonance

between the calculated and experimental values of integral absorption in the resonance doublet $\nu_1 + \nu_3$ and $\nu_1 + (\nu_1 + \nu_4)$ of carbon tetrachloride (table on p 481). The differences between the calculated and experimental values lay between 3.8 and 5.8%, i.e. within the experimental error, which was 10%. There are 1 table and 4 Soviet references.

SUBMITTED: February 17, 1959

Card 2/2

APPROVED FOR RELEASE: 08/26/2000 CIA-RDP86-00513R001653530003-5"

"APPROVED FOR RELEASE: 08/26/2000 CIA-RDP86-00513R001653530003-5

S/058/62/000/008/002/134
A061/A101

AUTHOR: Strizhevs'kiy, V. L.

TITLE: On one particular case of the time-dependent perturbation theory

PERIODICAL: Referativnyy zhurnal, Fizika, no. 8, 1962, 13, abstract 8A99 ("Visnyk Kyivs'k. un-tu", 1960 (1961), no. 3, ser. astron., fyz. ta khimiï, no. 2, 55 - 59, Ukrainian; summary in Russian)

TEXT: A particular case of the time-dependent perturbation theory is considered, when the wave functions of an unperturbed system are known only approximately, and the states, to which the system can pass over directly under the action of external perturbation, form a discrete spectrum (although each of these states lies in the continuous spectrum of the Hamiltonian of an isolated system). The case of a periodic perturbation, particularly of a monochromatic light wave, is investigated. Formulas determining the transition probabilities are obtained.

[Abstracter's note: Complete translation]

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APPROVED FOR RELEASE: 08/26/2000 CIA-RDP86-00513R001653530003-5"

"APPROVED FOR RELEASE: 08/26/2000 CIA-RDP86-00513R001653530003-5

PEKAR, S. I.; STRIZHEVSKIY, V. O.

Theory of the effect of temperature on the dispersion and exiton absorption of light in crystals. Fiz. tver. tela 2 no.5:894-897 My '60. (MIRA 13:10)

1. Kiyevskiy gosudarstvennyy universitet.
(Crystal optics)

APPROVED FOR RELEASE: 08/26/2000 CIA-RDP86-00513R001653530003-5"

"APPROVED FOR RELEASE: 08/26/2000 CIA-RDP86-00513R001653530003-5

82996
S/181/60/002/008/015/045
B006/B070

24,3900

AUTHOR: Strizhevskiy, V. L.

TITLE: Theory of Dispersion and Absorption of Light in Crystals

PERIODICAL: Fizika tverdogo tela, 1960, Vol. 2, No. 8, pp. 1806-1815

TEXT: Dispersion and absorption of light in crystals in the region of exciton absorption has been investigated many times previously. In this case the states, in which phototransition is permitted, form a discrete spectrum. In the present work, the opposite case is investigated in which such states form a continuous spectrum. Such a case is, for example, realized in the excitation of a localized exciton in a molecular crystal in which the exciton phonon coupling is not weak. In the first part of the paper, the interaction of a monochromatic electromagnetic wave with an ideal crystal is theoretically investigated, and some general relations are obtained. In the second part, the wave functions and the energy levels of a molecular crystal are investigated for the case of an arbitrary coupling between the lattice vibrations and

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"APPROVED FOR RELEASE: 08/26/2000 CIA-RDP86-00513R001653530003-5

Theory of Dispersion and Absorption of Light in Crystals

the inner excitations of the molecules when the crystal is in thermal equilibrium. Finally, in the third part, the dispersion and absorption of light is investigated for the case of the occurrence of excitons whose coupling with the lattice vibrations is not weak. The author calculates the specific dipole moment of the dielectric polarization and obtains formulas for the refractive index and the absorption coefficient of light. It is found that the calculation of the absorption coefficient as a quantity proportional to the phototransition probability, does not always lead to correct results. In the case of a molecular crystal considered, in which excitons are produced which have non-weak coupling with the phonons, the allowed phototransitions form a continuous energy spectrum, because, for every intramolecular transition lattice vibrations are simultaneously excited. The author thanks A. S. Davydov, S. I. Pekar, and M. P. Lisitsa for interest and discussions. There are 7 Soviet references.

ASSOCIATION: Kiyevskiy gosudarstvennyy universitet im. Shevchenko (Kiyev State University imeni Shevchenko)

APPROVED FOR RELEASE: 08/26/2000 CIA-RDP86-00513R001653530003-5"

"APPROVED FOR RELEASE: 08/26/2000 CIA-RDP86-00513R001653530003-5

Theory of Dispersion and Absorption of Light in Crystals

82996
S/181/60/002/008/015/045
B006/B070

SUBMITTED: December 26, 1959 .

Card 3/3

APPROVED FOR RELEASE: 08/26/2000 CIA-RDP86-00513R001653530003-5"

"APPROVED FOR RELEASE: 08/26/2000 CIA-RDP86-00513R001653530003-5

86805

S/185/60/005/001/004/018
A151/A029

24.6100 (1043, 1395, 1138)

AUTHORS: Lisitsya, M.P.; Strizhevskiy, V.L.

TITLE: On the Fermi Resonance in the Case of Carbon Tetrachloride

PERIODICAL: Ukrayins'kyy Fizychnyy Zhurnal, 1960, Vol. 5, No. 1, pp. 34 - 39

TEXT: The paper deals with the problem of the Fermi resonance in the case of carbon tetrachloride. Its aim is to show that for CCl_4 the existing theory is in a satisfactory agreement with the experimental data referring to the Fermi resonance. A comparison is made of the theory with the experiment for three Fermi resonant doublets of CCl_4. It was ascertained that in the case of gaseous CCl_4 the theoretical value of the splitting χ and the intensity ratios of the resonating components are in satisfactory agreement with the experimental data. A determination was also made of the distance Δ between the unperturbed levels, as well as of the unperturbed frequencies of the fundamental oscillations of molecules of gaseous and liquid CCl_4. The results of the experiment together with the unperturbed levels of an isolated molecule of CCl_4 are given in a table. A comparison of the frequencies shows that in case of the phase transition gas - liquid a general tendency appears toward a decrease of frequencies. This result is

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"APPROVED FOR RELEASE: 08/26/2000 CIA-RDP86-00513R001653530003-5

86805

S/185/60/005/001/004/018
A151/A029

On the Fermi Resonance in the Case of Carbon Tetrachloride

observed as a rule in all molecular compounds. The data of the table give a qualitative proof for the assumption that the maxima of the fundamental absorption bands shift in the case of the mentioned phase transition (see also Ref. 8). In closing, the suthors point out that the results obtained in this work prove that it is possible to do away with the nonharmonious members of the potential energy in the case when the Fermi resonant is absent. There is 1 table and 9 references: 8 Soviet and 1 German.

ASSOCIATION: Kyyivs'kyy dershavnyy universytet im. T.H. Shevchenka (Kiyev State University imeni T.H. Shevchenko).

SUBMITTED: July 1, 1959

Card 2/2

APPROVED FOR RELEASE: 08/26/2000 CIA-RDP86-00513R001653530003-5"

"APPROVED FOR RELEASE: 08/26/2000 CIA-RDP86-00513R001653530003-5

86815
S/185/60/005/001/015/018
A151/A029

9,4300 (3203,1043,1144)

AUTHOR: Strizhevskiy, V.L.

TITLE: On the Theory of the Temperature Dependence of Dispersion and Light Absorption in Molecular Crystals

PERIODICAL: Ukrayins'kyy Fizychnyy Zhurnal, 1960, Vol. 5, No. 1, pp. 120 - 122

TEXT: The general results pertaining to the temperature dependence of dispersion and the exciton light absorption in crystals (Refs. 1 and 2) are applied in a concrete case of molecular crystals with a weak exciton-phonon interaction. A number of formulae are given, from which a series of conclusions can be drawn (for more detailed data see Ref. 11). It follows, for instance, from Formulae (7) and (8) that μ (μ is the diffraction indicator) decreases with a rise in T (T is the temperature zone). In the case of ω, which is close to ω_0, $\varkappa$ ($\varkappa$ is the absorption coefficient) decreases when T is raised. Within the zone of the absorption band wings ($\omega \gg \omega_0$) $\varkappa \sim T$. The value g which exists in (10) depends upon ω, and therefore the shape of the absorption band is not reduced to the Lorenz', Gauss' shape or to any of the other widely known shapes. A complicated character of the dependence of $\varkappa$ upon ω, permits one to expect more than one max-

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"APPROVED FOR RELEASE: 08/26/2000 CIA-RDP86-00513R001653530003-5

86815
S/185/60/005/001/015/018
A151/A029

On the Theory of the Temperature Dependence of Dispersion and Light Absorption in Molecular Crystals

imum on the curve $\varkappa$ (also for cubic crystals). In the case of high temperatures the presence of at least two maxima might be expected: at $\omega<\omega_0$ and at $\omega>\omega_0$. As to the integral absorption intensity, it might be expected that the closer the shape of the absorption curve to Lorenz' shape, the less this absorption is dependent on the temperature. In the case of oscillation excitations (since the width of the zone is smaller than the marginal values of oscillation frequencies) the semi-widths for various absorption bands should be values of the same order. A detailed comparison of the theory with the experiment will be made in the papers to follow. In closing, the author expresses his gratitude to O.S. Davidov, S.I. Pekar and M.P. Lysytsya for their critical remarks and their attention to this work. There are 11 Soviet references.

ASSOCIATION: Kyyivs'kyy derzhavnyy universytet (Kiyev State University)

SUBMITTED: October 10, 1959

Card 2/2

APPROVED FOR RELEASE: 08/26/2000 CIA-RDP86-00513R001653530003-5"

"APPROVED FOR RELEASE: 08/26/2000 CIA-RDP86-00513R001653530003-5

KONDILENKO, I.I.; KOROTKOV, P.A.;STRIZHEVSKIY, V.L. [Stryzhevs'kyi, V.L.]

Indicatrix of the Raman scattering. Ukr. fiz. zhur. 5 no.1:122-124 Ja-F '60. (MIRA 14:6)

1. Kiyevskiy gosudarstvennyy universitet.
(Raman effect)

APPROVED FOR RELEASE: 08/26/2000 CIA-RDP86-00513R001653530003-5"

"APPROVED FOR RELEASE: 08/26/2000 CIA-RDP86-00513R001653530003-5

On the theory of temperature... S/185/60/005/002/019/022
D274/D304

instance with excitons of large radius), a simpler expression for γ is obtained. In the general case, the temperature dependence of γ can be found by specifying two more functions. There are 5 Soviet-bloc references.

ASSOCIATION: Kyyvs'kyy derzhavnyy universytet (Kiyev State University)

SUBMITTED: October 16, 1959

Card 3/3

APPROVED FOR RELEASE: 08/26/2000 CIA-RDP86-00513R001653530003-5"

"APPROVED FOR RELEASE: 08/26/2000 CIA-RDP86-00513R001653530003-5

25583

S/185/60/005/002/020/022
D274/D304

24.2120 (1160, 1163, 1482)

AUTHORS: Kondylenko, I.I., Korotkov, P.A. and Strizhevs'kyy, V.L.

TITLE: On the intensity of lines in Raman scattering

PERIODICAL: Ukrayins'kyy fizychnyy zhurnal, v. 5, no. 2, 1960, 279-281

TEXT: The article has two objects: 1) To obtain a formula for the frequency dependence of the intensity of lines (in gases), and to transform the obtained formula by means of the adiabatic approximation; 2) To experimentally study the frequency dependence of intensity of scattering and compare the results with theory. The author proceeds from the formula for the differential effective cross section of light quanta scattering, as given by W. Heitler (Ref. 1: Kvantovaya teoriya izlucheniya (Quantum Theory of Radiation), IIL, M., 1956) [Abstracter's note: Translation into Russian]. The formula for intensity obtained differs from that obtained earlier by Plachek. By taking the average with respect to the period of

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"APPROVED FOR RELEASE: 08/26/2000 CIA-RDP86-00513R001653530003-5

On the intensity of lines...

oscillation of light wave, the intensity is given by

$$I = \left(\frac{\omega^4}{2\pi c^3}\right) |P_1|^2, \qquad (2)$$

where

$$P = \alpha E_0, \alpha_{xy} = \frac{1}{\hbar} \sum_j \frac{\omega_{lj}\omega_{jm}}{\omega\omega_0} \left[\frac{(\hat{S}_y)_{lj}(\hat{S}_x)_{jm}}{\omega_{jl} - \omega_0} + \frac{(\hat{S}_x)_{lj}(\hat{S}_y)_{jm}}{\omega_{jm} + \omega_0} \right] \qquad (3)$$

where $2E_0$ is the amplitude of the electric wave vector. Eq. (3) can be transformed by the adiabatic approximation; the matrix elements of the operator $\hat{S}$ with respect to electron coordinates is expanded in powers of the displacement of nuclei from their equilibrium positions, whereas the frequencies are expanded in powers of ratios between differences of frequency-factors. After some transformations, a simplified formula is obtained for α. (α was assumed to be reduced to the principal axes). The obtained formula agrees with the results obtained by M.V. Vol'kenshteyn et al., in 1948 and 1949. An experimental study was made of the intensity of two lines of Raman scattering in liquid benzol. The method of measurement is described

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"APPROVED FOR RELEASE: 08/26/2000 CIA-RDP86-00513R001653530003-5

On the intensity of lines...

in references: I.I. Kondylenko and P.A. Korotkov (Ref. 6: UFZh, 3, 765, 1958). The results of the study are given in a table, which also contains (for comparison) theoretical data. There is good agreement between both. (A comparison with Plachek's formula shows discrepancies). A table is given which shows that intensity I vs. frequency ω might sometimes approximately be given by $I = \text{const } \omega^4$. Such a relationship apparently applies to the Raman spectrum of CCl_4, investigated by I.I. Kondylenko (Ref. 5: Naukovi zapysky Kyyvs'kogo derzh. un-tu, Zb. fiz. fak-tu, no. 10, v. 18, no. 3, 1959). There are 2 tables and 7 references: 6 Soviet-bloc and 1 non-Soviet-bloc.

ASSOCIATION: Kyyvs'kyy derzhavnyy universytet (Kiyev State University)

SUBMITTED: October 16, 1959

Card 3/3

APPROVED FOR RELEASE: 08/26/2000 CIA-RDP86-00513R001653530003-5"

"APPROVED FOR RELEASE: 08/26/2000 CIA-RDP86-00513R001653530003-5

S/051/60/008/02/005/036
E201/E391

AUTHOR: Strizhevskiy, V.L.

TITLE: The Effect of an Interaction with the Environment on the Fermi Resonance in Multi-atomic Molecules

PERIODICAL: Optika i spektroskopiya, 1960, Vol 8, Nr 2, pp 165 - 170 (USSR)

ABSTRACT: The effect of an interaction with the environment on the Fermi resonance in multi-atomic molecules is discussed by the author for pure substances and weak solutions. It is shown that interaction with the environment should always lead to partial equalization of the intensities of the resonating components. If a molecule with resonating levels is non-polar, then this equalization will be greater in a pure substance than in many solutions. The latter conclusion is well supported by experimental data. Acknowledgment is made to M.P. Lisitsa for his advice. There are 7 references, 6 of which are Soviet and 1 German.

SUBMITTED: March 18, 1959

Card 1/1

APPROVED FOR RELEASE: 08/26/2000 CIA-RDP86-00513R001653530003-5"

"APPROVED FOR RELEASE: 08/26/2000 CIA-RDP86-00513R001653530003-5

S/051/60/008/04/007/032
B201/B691

AUTHORS: Kondilenko, I.I. Korotkov, P.A. and Strizhevskiy, V.L.

TITLE: The Raman Scattering Indicatrix

PERIODICAL: Optika i spektroskopiya, 1960, Vol 8, Nr 4, pp 471-476 (USSR)

ABSTRACT: The authors give a simple and clear derivation of Plachek's formulae (Ref 2) which give the dependence of the intensity of Raman lines on the angle of observation φ and the degree of depolarization ρ. The authors measured the angular dependence of the Raman line intensities of carbon tetrachloride, benzene and chloroform. A cell, K, with the appropriate liquid was illuminated with two vertical mercury lamps PRK-4 (they are shown as L_1 and L_2 in Fig 2). Between the lamps and the cell diaphragms Д were placed; each of these diaphragms consisted of a set of metallic plates lying parallel to the direction of the light beam from a lamp to the cell. The scattered light was recorded by means of a photoelectric spectrometer DFS-4. The lamps, the diaphragms and the cell were fixed to the same base which could be rotated about a vertical axis. The lamp-diaphragm-cell system was rotated and the angle of rotation measured by means of a special goniometer. Simple graphical calculations showed that in such

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"APPROVED FOR RELEASE: 08/26/2000 CIA-RDP86-00513R001653530003-5

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E201/E691

The Raman Scattering Indicatrix

rotation the volume of the liquid which takes part in scattering remains practically constant. Consequently the change in the intensity of scattered light can only be due to the angular dependence suggested by Plachek. The results obtained are listed in a table on p 474 and the effect of variation of the observation angle φ on the Raman spectrum of CCl_4 is shown in Fig 3. The results obtained agreed satisfactorily with Plachek's theory. There are 3 figures, 1 table and 6 references, 4 of which are Soviet, 1 English and 1 German.

SUBMITTED: June 29, 1959

Card 2/2

APPROVED FOR RELEASE: 08/26/2000 CIA-RDP86-00513R001653530003-5"

"APPROVED FOR RELEASE: 08/26/2000 CIA-RDP86-00513R001653530003-5

S/051/60/008/005/005/027
E201/E491

AUTHOR: Strizhevskiy, V.L.

TITLE: The Temperature Dependence of Dispersion and Absorption of Light in Molecular Crystals. I. Theory

PERIODICAL: Optika i spektroskopiya, 1960, Vol.8, No.5, pp.623-628

TEXT: Pekar (Ref.1 and 2) described a general method for calculation of dispersion and absorption of light in crystals in the exciton-absorption region at temperatures close to the absolute zero. This calculation was generalized by Pekar and Strizhevskiy (Ref.3) to non-zero temperatures. The present paper applies the results obtained in these three papers to a molecular crystal with weak exciton-phonon coupling and it deals chiefly with the temperature dependence of dispersion and absorption of light. Expressions are derived which give the temperature dependence of the refractive index and the absorption coefficient. Qualitative conclusions which follow from these formulae are discussed. The paper is entirely theoretical.
Acknowledgments are made to A.S.Davydov, S.I.Pekar and M.P.Lisitsa for their advice. There are 9 Soviet references.

SUBMITTED: September 25, 1959
Card 1/1

APPROVED FOR RELEASE: 08/26/2000 CIA-RDP86-00513R001653530003-5"

"APPROVED FOR RELEASE: 08/26/2000 CIA-RDP86-00513R001653530003-5

KONDILENKO, I.I.; KOROTKOV, P.A.; STRIZHEVSKIY, V.L.

Intensities of the lines of Raman spectra. Opt.i spektr. 9 no.1:26-33 Jl '60. (MIRA 13:7)
(Raman effect)

APPROVED FOR RELEASE: 08/26/2000 CIA-RDP86-00513R001653530003-5"

"APPROVED FOR RELEASE: 08/26/2000 CIA-RDP86-00513R001653530003-5

STRIZHEVSKIY, V. L., Cand Phys-Math Sci -- "Effect of the state of aggregation and temperature upon the spectra of molecular compounds." Kiev, 1961 (Joint Academic Council of Instructors of Math, Phys, and Metal Phys, Acad Sci UkSSR). (KL, 4-61, 185)

APPROVED FOR RELEASE: 08/26/2000 CIA-RDP86-00513R001653530003-5"

"APPROVED FOR RELEASE: 08/26/2000 CIA-RDP86-00513R001653530003-5

29683
S/181/61/003/010/005/036
B102/B108

24,7100 (1142, 1153, 1160)

AUTHOR: Strizhevskiy, V. L.

TITLE: Theory of Raman scattering of light in a crystalline medium

PERIODICAL: Fizika tverdogo tela, v. 3, no. 10, 1961, 2929-2938

TEXT: Scattering of light in a condensed medium can be studied theoretically in second-quantization representation of the electromagnetic waves by two different methods. The one employs the direct diagonalization of the total Hamiltonian of the system, the other, which is used here, is based on a phenomenological description of the properties of the scattering medium by means of the tensor of the dielectric constant, ε. Its shortcomings are due to the fact that ε is an unknown function of the other parameters of the medium. The author simplified this method, applying a new procedure of quantization and a different potential calibration than usually. An anisotropic non-magnetic crystal which interacts with the electromagnetic field of light is considered:

$$\vec{E} = -\frac{1}{c}\frac{d\vec{A}}{dt} - \nabla\varphi, \quad \vec{H} = \operatorname{curl}\vec{A}, \quad \operatorname{div}\vec{A} = 0, \quad W = -\frac{1}{c}\int \vec{j}\vec{A}dv;$$

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Theory of Raman scattering of light...

W describes the interaction between field and particles. Since the interaction problem is a self-consistent one and the field may be assumed as being smooth, W may be approximated by $\overline{W} = -\frac{1}{c}\int \vec{j}\vec{A}dv$, $\vec{j} = \sigma\vec{E}_{\perp}$ denotes the mean field-induced current density. In this way the exact Hamiltonian $\hat{H} = H_o+U+W$ is obtained in macroscopic approximation. For this approximate Hamiltonian the steady state is described in second-quantization representation of the electromagnetic field. The terms eliminated in the transition to the approximate Hamiltonian describe the microscopic inhomogeneities due to the motion of the crystal particles, and are responsible for the scattering of light. In the second part of the paper Raman scattering of light is considered in second perturbation-theoretical approximation. $W - \overline{W}$ is the characteristic perturbation with

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Theory of Raman scattering of light...

$$W=-\frac{1}{c}\int \mathbf{j}(\mathbf{r})\,\mathbf{A}(\mathbf{r})\,dv,\quad \mathbf{j}(\mathbf{r})=\sum_{\kappa}\frac{e_\kappa \mathbf{p}_\kappa}{m_\kappa}\,\frac{D_{\Delta v}(\mathbf{r}-\mathbf{r}_\kappa)}{\Delta v},\quad \mathbf{p}_\kappa=-i\hbar\nabla_{\mathbf{r}_\kappa}. \qquad (27)$$

$D_{\Delta v}(\vec{r})$ equals unity when $\vec{r}$ ends within the infinitely small volume Δv, and vanishes for all other cases. The transition probability per unit time is given by $w = \frac{2\pi}{\hbar}|K_{\gamma|\gamma_0}|^2 Q_\varepsilon$; γ and γ_0 indicate respective quantum numbers for the initial and the final state of the system, $Q_\varepsilon d\varepsilon$ is the number of final states in the energy interval $d\varepsilon$. The matrix element $K_{\gamma|\gamma_0}$ has the form

$$K_{\gamma|\gamma_0}=\frac{\pi\hbar}{c^2 k_0 k}\sqrt{\frac{\omega_{k_0 s'}\omega_{kf}}{v}}\sum_{f}\left[\frac{(j'_{k_0 s'})_{\xi'\xi_0}(j''_{kf})_{\xi\xi'}}{E_{f'}(k\xi_0+k_0)-E_{f_0}(k\xi_0)-\hbar\omega_{k_0 s'}}+\right. \qquad (34)$$

$$\left.+\frac{(j'_{kf})_{\xi'\xi_0}(j''_{k_0 s'})_{\xi\xi'}}{E_{f'}(k\xi_0-k)-E_{f_0}(k\xi_0)+\hbar\omega_{kf}}\right],\quad j'_{k_0 s'}=\sqrt{V}\,(\mathbf{j}(0)\,\mathbf{e}_{k_0 s'}),$$

$$j''=V(\mathbf{j}(0)\,\mathbf{e}_{kf}).$$

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Theory of Raman scattering of light...

where $\vec{k}_\xi$ denotes one of the quantum numbers of the state ξ and f the remaining ones. For the probability of Raman scattering of a quantum $(\vec{k}_0 i)$ per unit time through the solid angle $d\Omega$,

$$w d\Omega = \frac{\omega_{kf}}{\omega_{k_0 i}} \frac{\sqrt{\varepsilon_{nf}}}{\varepsilon_{n_0 i} c^3} \left| \sum_{f'} \left[\frac{(j'_{k_0 i})_{\xi'\xi_0} (j''_{kf})_{\xi\xi'}}{E_{f'f_0}(k\xi_0) - \hbar\omega_{k_0 i}} + \frac{(j'_{kf})_{\xi'\xi_0} (j''_{k_0 i})_{\xi\xi'}}{E_{f'f_0}(k\xi_0) + \hbar\omega_{kf}} \right] \right|^2 d\Omega. \quad (36)$$

is given. The transversely polarized part of the scattered light is

$$I_{f\perp} = \left(\frac{\omega_{kf}}{\omega_{k_0 i}}\right)^2 \frac{1}{c^4} \sqrt{\frac{\varepsilon_{nf}}{\varepsilon_{n_0 i}}} \left| \sum_{f'} \left[\frac{(j'_{k_0 i})_{\xi'\xi_0} (j''_{kf})_{\xi\xi'}}{E_{f'f_0}(k\xi_0) - \hbar\omega_{k_0 i}} + \right. \right.$$

$$\left. \left. + \frac{(j'_{kf})_{\xi'\xi_0} (j''_{k_0 i})_{\xi\xi'}}{E_{f'f_0}(k\xi_0) + \hbar\omega_{kf}} \right] \right|^2 I_{0i\perp}. \quad (37).$$

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Theory of Raman scattering of light...

The intensity of scattered light per molecule (or per atom) is

$$I_{f\perp}=\frac{\omega_{k_0 f}^4}{2\pi c^3}\sqrt{\varepsilon_{\omega_f}}\,|P_f|^2,\quad \mathbf{P}=\alpha\mathbf{E}_{0\perp}, \tag{38}$$

$$\alpha_{xy}=\frac{V^{1/3}}{\omega_{k_0 f}\omega_{k_0 f}}\left(\frac{v_0}{\theta}\right)^{1/3}\sum_{f'}\left[\frac{(J_y(0))_{f_0 f'}(J_x(0))_{f' f}}{E_{f' f_0}(k_{f_0})-\hbar\omega_{k_0 f}}+\frac{(J_x(0))_{f_0 f'}(J_y(0))_{f' f}}{E_{f' f_0}(k_{f_0})+\hbar\omega_{k_0 f}}\right]. \tag{39}$$

From Eq. (37) it can be seen that the frequency dependence of the scattered light intensity is the same as that in the case of gases. These general formulas are applied to study light scattering in a molecular crystal with weak exciton-phonon coupling. The author thanks A. S. Davydov, S. I. Pekar, and I. I. Kondilenko for discussions. There are 9 references: 6 Soviet and 1 non-Soviet. The references to English-language publications read as follows: U. Fano. Phys. Rev. 103, 1202, 1956; C. A. Meed. Phys. Rev. 110, 359, 1958; J. M. Jauch, K. M. Watson. Phys. Rev., 74, 950, 1485, 1948; 75, 1249, 1949.

Card 5/6

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"APPROVED FOR RELEASE: 08/26/2000 CIA-RDP86-00513R001653530003-5

29683 S/181/61/003/010/005/036
B102/B108

Theory of Raman scattering of light...

ASSOCIATION: Kiyevskiy gosudarstvennyy universitet im. T. G. Shevchenko (Kiyev State University imeni T. G. Shevchenko)

SUBMITTED: February 13, 1961 (initially)
March 27, 1961 (after revision)

Card 6/6

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"APPROVED FOR RELEASE: 08/26/2000 CIA-RDP86-00513R001653530003-5

34436
S/185/61/006/006/014/030
D299/D304

24,3500(1137,1138)

AUTHORS: Kondilenko, I.I., Pohoryelov, V.Ye., and Stryzhevs'kyy, V.L.

TITLE: Study of intensity of overtone lines of Raman scattering

PERIODICAL: Ukrayins'kyy fizychnyy zhurnal, v. 6, no. 6, 1961, 785 - 788

TEXT: Theoretical and experimental studies are described of the intensity of Raman lines, corresponding to the first overtones of intramolecular vibrations. Particular attention is given to the dependence of the intensity of the scattered light on the frequency of the exciting light. First, the problem is considered theoretically. The tensor α for the intensity of the lines which correspond to the first overtones, is expressed by

$$(\alpha_{xy})_{\nu\nu\pm 2} = -\frac{e^2}{\hbar\omega\omega_0}\sum_j\left[\frac{2\omega'_{j0}}{\omega'^2_{j0}-\omega_0^2}A^{0j}_{xy} - 2\frac{\omega^2_{j0}+\omega_0^2}{(\omega'^2_{j0}-\omega_0^2)^2}B^{0j}_{xy} + \frac{(\omega'^2_{j0}+3\omega_0^2)}{(\omega'^2_{j0}-\omega_0^2)^3}C^{0j}_{xy}\right]Q^2_{\nu\nu\pm 2}, \quad (1)$$

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"APPROVED FOR RELEASE: 08/26/2000 CIA-RDP86-00513R001653530003-5

Study of intensity of overtone ...

(where A, B, C, E and d are given by formulas; the notations are adopted from the references). A comparison between formula (1) and the corresponding formula for the fundamental tones, shows that the frequency dependence of the overtone lines is greater than that of the fundamental lines. If the frequency of the exciting light approaches the absorption-band frequency, the intensity of the overtone lines increases in a greater measure than that of the fundamental lines. This was confirmed experimentally. It is noted that the stronger frequency-dependence of the intensity of overtone lines, is related to the quantity ω_o (as compared to ω'_{jo}) in the brackets of formula (1). Experimental results showed that ω_o cannot be neglected. A formula is obtained for the ratio between the intensities of the overtone- and fundamental lines. The experimental investigations were conducted by a method, described in the references. The apparatus included an automatic spectrometer (designed by the authors), a photomultiplier and the recording device ПСРИ-02 (PSRI-02). The integrated intensities of the overtone lines 1550cm^{-1} CCl_4, 796 cm^{-1} CS_2 and 1520 cm^{-1} $CHCl_3$ were determined. The results

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are listed in a table, together with the corresponding values for the fundamental lines. From the table it is evident that the theoretical predictions were corroborated by experiment. In the case of CCl_4 and $CHCl_3$, agreement between theory and experiment was both qualitative and quantitative, whereas in the case of CS_2, agreement was less satisfactory. There are 2 tables and 6 references: 5 Soviet bloc and 1 non-Soviet-bloc. The reference to the English-language publication reads as follows: E.D. Wilson, Astrophys. Journ. 69, 34, 1929.

ASSOCIATION: Kyyivs'kyy derzhuniversytet im. T.H. Shevchenka (Kyiv State University im. T.H. Shevchenko)

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"APPROVED FOR RELEASE: 08/26/2000 CIA-RDP86-00513R001653530003-5

S/051/61/010/001/004/017
E201/E491

AUTHORS: Lisitsa, M.P. and Strizhevskiy, V.L.

TITLE: The Temperature Dependence of the Intensities of Vibrational Absorption Bands in Gases

PERIODICAL: Optika i spektroskopiya, 1961, Vol.10, No.1, pp.48-54

TEXT: The authors consider theoretical aspects of the temperature dependence of the integrated intensities of vibrational absorption bands of gases. Apart from the "Boltsmann factor" (Ref.4), the authors consider the effect of anharmonicity of internal molecular vibrations and the effect of light emission on the intensity of vibrational bands. Formulae are derived which give the temperature dependence of the integrated absorption. The new formulae differ somewhat from the usual expression. Comparison of the available experimental data on carbon tetrachloride, bromoform, chloroform and other molecules (Ref.1 to 3) with the new formulae showed fairly good agreement but further work is necessary for reliable conclusions. There are 15 references: 14 Soviet and 1 non-Soviet (translated

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E201/E491

The Temperature Dependence of the Intensities of Vibrational Absorption Bands in Gases

into Russian).

SUBMITTED: March 30, 1960

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"APPROVED FOR RELEASE: 08/26/2000 CIA-RDP86-00513R001653530003-5

KONDILENKO, I.I.; KOROTKOV, P.A.; STRIZHEVSKIY, V.L.

Studying the indicatrix of the Raman effect. Opt. i spektr. 11 no.2:169-174 Ag '61. (MIRA 14:8)
(Raman effect)

APPROVED FOR RELEASE: 08/26/2000 CIA-RDP86-00513R001653530003-5"

"APPROVED FOR RELEASE: 08/26/2000 CIA-RDP86-00513R001653530003-5

KONDILENKO, I.I.; STRIZHEVSKIY, V.L.

Frequency dependency of the line intensities in Raman spectra. Opt. i spektr. 11 no.2:262-263 Ag '61. (MIRA 14:8)
(Raman effect)

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38910
S/181/62/004/006/016/051
B125/B104

24 7000
24.4400

AUTHOR: Strizhevskiy, V. L.

TITLE: Quantization of an electromagnetic field in a crystal medium with dispersion

PERIODICAL: Fizika tverdogo tela, v. 4, no. 6, 1962, 1492-1495

TEXT: The author generalizes his method of quantizing an electromagnetic field in a non-gyrotropic crystal medium (V. L. Strizhevskiy, FTT, 3, 2937, 1961) for the case of spatial and frequency dispersion of the real dielectric constant tensor. Absorption is neglected. Diagonalization of the Hamiltonian $H^0 = H_0 + U + \underline{W}$ and expansion of the vector potential into Fourier series leads to the Fresnel equation of crystal optics. When dispersion of the dielectric constant tensor is taken into account, solution of the Fresnel equation yields several values $\omega_{\vec{k}i}$ ($i = 1,2,\ldots$) for each wave vector $\vec{k}$. After the respective Fourier expansion is substituted in

$$U + W = \frac{1}{4\pi}\int\int \mathbf{E}_\perp \epsilon \mathbf{E}_\perp \, dv dt + \frac{1}{8\pi}\int \mathbf{H}^2 dv, \qquad (3)$$

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Quantization of an...

and integration is accomplished over space and time, new harmonic variables give the expression

$$\mathbf{A}=\sum_{kf}\sqrt{\frac{4\pi\omega_{kf}}{Vk}\left(\frac{\partial\omega_{kf}}{\partial k}\right)_0}\,\mathbf{e}_{kf}(q_{kf}A_k+q^*_{kf}A^*_k). \qquad (12)$$

for the vector potential. When there is no dispersion this expression will coincide with that obtained by the author's previous method. The vector potential (12) implies the generalized formulas

$$i_{f\perp}=\frac{\omega^4_{kf}}{2\pi c^3}\sqrt{\varepsilon_{0f}}\,|P_f|^2,\quad \mathbf{P}=\alpha E_{0f\perp}, \qquad (13)$$

and

$$a_{xy}=\frac{V^{2/3}}{\omega_{k_0f}\omega_{kf}}\left(\frac{v_0}{\theta}\right)^{1/3}\left(\frac{\sqrt{\varepsilon_{0f}}}{c}\left(\frac{\partial\omega_{k_0f}}{\partial k_0}\right)_{k_0}\right)^{1/3}\sum_{f'}\left[\frac{(j_y(0))_{\xi_0\xi'}(j_x(0))_{\xi'\xi}}{E_{f'f_0}(k\xi_0)-\hbar\omega_{k_0f}}+\right.$$

$$\left.+\frac{(j_x(0))_{\xi_0\xi'}(j_y(0))_{\xi'\xi}}{E_{f'f_0}(k\xi_0)+\hbar\omega_{kf}}\right]. \qquad (14)$$

for the intensity of scattered light with a given polarization per molecule or per atom.

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B125/B104

Quantization of an...

ASSOCIATION: Kiyevskiy gosudarstvennyy universitet im. T.G. Shevchenko (Kiyev State University imeni T. G. Shevchenko)

SUBMITTED: January 22, 1962

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"APPROVED FOR RELEASE: 08/26/2000 CIA-RDP86-00513R001653530003-5

S/185/62/007/007/005/010
I048/I248

AUTHORS: Bobich, I.L., Kondilenko, I.I., and Strizhevskiy, V.L.

TITLE: Investigation of the scattering power of molecules in the liquid state during Raman scattering of light

PERIODICAL: Ukrayins'kyy fizychnyy zhurnal, v.7, no.7, 1962, 742-748

TEXT: The relationship $K = \frac{I}{C}$, where I is the intensity of the scattered light and C the molar concentration of the scattering substance in the medium was studied using CCl_4, toluene, methanol, 1,2-dichloroethane, and the methyl esters of boric,

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"APPROVED FOR RELEASE: 08/26/2000 CIA-RDP86-00513R001653530003-5

S/185/62/007/007/005/010
I048/I248

Investigation of the ...

acetic, and formic acids as the scattering substances and various organic substances as the solvent medium. Fermi-resonance and resonance-free lines were studied by I.L. Babich et al.'s method [4] (Opt i spektr. 9, 677, 1962). K decreased with increasing C in the following systems: CCl_4-benzene (459 cm^{-1}), CCl_4-toluene (459 cm^{-1}), methanol-chloroform (2994 cm^{-1} and 2832 cm^{-1}), 1,2 -dichloroethane-chloroform (2957 cm^{-1} and 2870 cm^{-1}); K was practically independent of C in the systems: CCl_4-chloroform (459 cm^{-1}) and toluene-benzene (at $C < 8$ moles/l., 786 cm^{-1}); K increased with increasing C in the systems CCl_4-methanol (459 cm^{-1}), toluene -CCl_4 (1004 cm^{-1}). K is independent of C when both components have similar molecular structures. The ratio I_1/I_2, where I_1 is the overtone and I_2 the fundamental intensity in the Fermi resonance lines

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I048/I248

Investigation of the...

increased with C in methanol-chloroform, methanol-CCl_4, methanol-H_2O, chloroform-methanol, and methyl borate-CCl_4 systems. Here I_1/I_2 (I_{2938}/I_{2838}) was > 1 within the C range $\sim$ 2 - 12 moles/l, which is the first such case reported. I_1/I_2 increases steadily with increasing C and, in the pure substances, the components of the Fermi resonance splitting become almost identical. The ratio I_1/I_2 decreased with increasing C in solutions methyl formate, methyl acetate, and 1,2-dichloroethane. There are 5 figures.

ASSOCIATION: Kievskiy universitet (The University of Kiev)

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"APPROVED FOR RELEASE: 08/26/2000 CIA-RDP86-00513R001653530003-5

42766
S/185/62/007/010/008/020
D234/D308

AUTHORS: Lysytsya, M. P., Stryzhevs'kyy, V. L. and Khalimonova, I. M.

TITLE: Temperature dependence of the intensities of vibrational absorption bands of molecular liquids

PERIODICAL: Ukrayins'kyy fizychnyy zhurnal, v. 7, no. 10, 1962, 1090-1099

TEXT: Measurements were made in the whole temperature range where liquid phase exists, for fundamental vibrational bands and their combinations. The liquids were CCl_4, hexaethyldisiloxane, octamethyltrisiloxane, toluene, chlorobenzene, nitrobenzene, aniline and bromobenzene. The intensity of any absorption band varies according to

$$S_T = S_0 + \alpha(T - T_0), \quad (1)$$

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Temperature dependence of ...

the temperature coefficient being negative. For the first overtones of the vibrations, the integral absorption does not depend on temperature. Theoretical calculation (using the Frank-Condon principle) gives

$$\alpha \approx \frac{k}{2} \sum_{qj} \omega \frac{1}{2} \frac{\partial^2 S(0)}{\partial Q^2_{qj}} \qquad (16)$$

and the sign of α is estimated to be negative. There are 4 figures.

ASSOCIATION: Kyyivs'kyy derzhuniversytet; Instytut napivprovidnykiv AN URSR (Kiev State University; Institute of Semiconductors, AS UkrSSR)

SUBMITTED: February 24, 1962

Card 2/2

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"APPROVED FOR RELEASE: 08/26/2000 CIA-RDP86-00513R001653530003-5

S/051/62/013/005/004/017
E039/E420

AUTHORS: Babich, I.L., Kondilenko, I.I., Strizhevskiy, V.L.

TITLE: Intermolecular interaction and Fermi resonance in Raman spectra

PERIODICAL: Optika i spektroskopiya, v.13, no.5, 1962, 642-648

TEXT: There has been no systematic study of this problem to date; hence a theoretical study is made and compared with experimental data. The effect of the interaction of molecules with the surrounding medium is investigated by examining the Fermi resonance lines in Raman spectra of different concentrations of methanol in water, chloroform and carbon tetrachloride. As CCl_4 has resonance lines these are also studied. It is shown that the concentration dependence of the intensities of the components of the Fermi resonance doublet are different. The ratio of intensities of the 2944 and 2832 cm^{-1} lines increases with concentration up to $\sim$ 5 to 10 moles/litre and then remains substantially constant. The potential energy of interacting molecules is examined assuming dipole-dipole interactions (valid only if size of molecules is small compared with distance between

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them). A divergence from this approximation is expected when the interaction of separate elements of a molecule begin to play a significant role. The magnitude of this effect is indicated by the change in optical activity of the molecules when in solution due to strong interactions and the formation of associations. In the case when intermolecular interactions are absent resonance still occurs due to intramolecular effects. This effect contributes to the levelling off of the intensity ratio of the Fermi lines. As this ratio is shown to be 0.4 to 0.8 experimentally the resonance of isolated molecules is not small. In view of the simplifying assumptions made in the theory the agreement with experiment is only qualitative. There are 3 figures.

SUBMITTED: September 21, 1961

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"APPROVED FOR RELEASE: 08/26/2000 CIA-RDP86-00513R001653530003-5

S/051/62/013/005/005/017
E039/E420

AUTHORS: Kondilenko, I.I., Pogorelov, V.Ye., Strizhevskiy, V.L.

TITLE: Intensity of harmonics of Raman lines

PERIODICAL: Optika i spektroskopiya, v.13, no.5, 1962, 649-654

TEXT: This subject has received little attention in the past and the aim of this work is to make a theoretical and experimental study of second order lines corresponding to the first harmonic of the intramolecular oscillations. In the first part of the paper some general questions on the theory of combination scattering are answered; in the second and third parts the theory of the intensity of the harmonic lines and the comparison of theory and experiment are given. Experimental results are obtained showing the dependence of the intensity of the harmonic lines on the frequency of the exciting light. The experimental method, which involves the use of an automatic spectrometer, is as described in an earlier paper (I.I. Kondilenko and I.L. Babich. Mater. X Vsesoyuzn. Soveshch. po spektrosk. (Data of the 10th All-Union Conference on Spectroscopy) v.1, 218. Izd. L'vovsk. un-ta, 1957). The harmonic lines examined are 1550 cm^{-1} CCl_4, 1520 cm^{-1} $CHCl_3$

Card 1/2

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and 769 cm^{-1} CS_2. For comparison the intensities of the fundamental lines 313 cm^{-1} CCl_4, 762^{-1} $CHCl_3$ and 656 cm^{-1} CS_2 are given. It is shown that the harmonic lines exhibit a much faster increase in intensity with the frequency of the exciting light than the corresponding fundamental lines. This fact is in agreement with the theory. In the case of CCl_4 and $CHCl_3$ the agreement is quantitative as well as qualitative. With CS_2 the agreement is not good because the frequency of the exciting light is near the CS_2 absorption band. There are 2 tables.

SUBMITTED: September 21, 1961

Card 2/2

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"APPROVED FOR RELEASE: 08/26/2000 CIA-RDP86-00513R001653530003-5

S/020/62/145/006/008/015
B181/B102

AUTHORS: Lisitsa, M. P., Strizhevskiy, V. L., and Khalimonova, I. N.

TITLE: Anomalous intensity-distribution of vibration bands from Fermi resonance

PERIODICAL: Akademiya nauk SSSR. Doklady, v. 145, no. 6, 1962, 1262-1264

TEXT: The Fermi resonance in absorption spectra of multiatomic molecules was studied theoretically, paying special attention to intermolecular interaction (A. S. Davydov, Teoriya pogloshcheniya sveta v molekulyarnykh kristallakh - Theory of light absorption in molecular crystals - Kiyev, 1951). It has been found that the doublet lines must be polarized at right angles to one another. Measurements made in polycrystalline layers of CCl_4 showed that both lines are polarized equally. Absorption in the region of vibration from plane deformation of the symmetry B_1 with the complex term of the same symmetry were studied in the case of liquid and crystalline iodobenzene and chlorobenzene. The intensity ratio of the two doublet lines $I_{\nu'}/I_{\nu}$ is almost 1 for CCl_4, for the liquid benzenes < 0.1,

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for iodobenzene crystal (T = -35 to -167°) about 10, and for crystallized chlorobenzene about 1. The anomalous intensity ratio can be explained by the results arrived at in an earlier paper (V. L. Strizhevskiy, Optika i spektroskopiya, 8, 165, 1960). If v and v' are resonance terms and if $I_{v'}/I_v > 1$, then the condition $\frac{2L_{vv'}}{\delta} < -\frac{k^2-1}{k}\frac{\delta}{|\delta|}$, $k \gg 1$; (1) is obtained where $L_{vv'}$ is the matrix element of the vibration energy transfer from molecule to molecule, δ is the "natural" distance of the splitting components $k = p^o_{ov}/p^o_{ov'}$, p^o_{ov} and $p^o_{ov'}$ are the matrix elements of the dipole moment for the corresponding transitions. If $L_{vv'} < 0$ and $\delta > 0$, then $\sqrt{\left(\frac{\varkappa}{\delta}\right)^2 - 1} > \frac{k^2-1}{k}$ (2) is obtained from (1) where $\varkappa$ is the distance of the doublet maxima. From (1) and (2) it follows that a migration of the vibration excitation in the crystal, which makes intermolecular resonance possible, is the cause of the anomalous intensity ratio. There are 3 figures.

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Anomalous intensity-distribution... S/020/62/145/006/008/015
B181/B102

ASSOCIATION: Kiyevskiy gosudarstvennyy universitet im. T. G. Shevchenko (Kiyev State University imeni T. G. Shevchenko)

PRESENTED: April 13, 1962, by I. V. Obreimov, Academician

SUBMITTED: April 10, 1962

Card 3/3

APPROVED FOR RELEASE: 08/26/2000 CIA-RDP86-00513R001653530003-5"

"APPROVED FOR RELEASE: 08/26/2000 CIA-RDP86-00513R001653530003-5

ACCESSION NO: AP4002276 S/0139/63/000/005/0113/0117

AUTHORS: Verlan, E. M.; Strizhevskiy, V. L.

TITLE: Triple Fermi resonance in a carbon tetrachloride molecule

SOURCE: IVUZ. Fizika, no. 5, 1963, 113-117

TOPIC TAGS: carbon tetrachloride, Fermi resonance, oscillatory energy level interaction, resonance interaction, fundamental Fermi resonance doublet, degenerate resonance level, CCl_4 absorption band, oscillatory absorption band

ABSTRACT: A theoretical study has been made of the Fermi triple levels in carbon tetrachloride represented by $2\nu_3$; $\nu_1+\nu_3+\nu_4$ and $2(\nu_1+\nu_4)$. Of these ν_1 is fully symmetric, whereas ν_3 and ν_4 are triply degenerate. The wave function of the perturbation system is written as $\Psi^\alpha = C_1^\alpha \varphi^\alpha + C_2^\alpha \chi^\alpha + C_3^\alpha \tau^\alpha$.

The potential energy term is represented by a cubical function of the normal coordinates, and the system of linear homogeneous equations is given by

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ACCESSION NO: AP4002276

$$\sum_{\kappa=1}^{3}[(E^{\alpha}-E_{\kappa}^{0})\delta_{i\kappa}-V_{i\kappa}^{\alpha}]\,C_{\kappa}^{\alpha}=0;\ i=1,\ 2,\ 3$$

$$\alpha=A_1,\ E,\ F_2.$$

The solution of the characteristic equation then yields respectively 1590, 1566, and 1534 for the three energy levels considered. These results show reasonably good agreement with the experimental values reported by M. P. Lisitsa, V. N. Malinko (Opt. i spektr., 4, 455, 1958). "The authors are grateful to M. P. Lisitsa for evaluating the analysis." Orig. art. has: 11 equations and 1 table.

ASSOCIATION: Kiyevskiy gosuniversitet imeni T. G. Shevchenko (Kiyev State University)

SUBMITTED: 28Feb62 DATE ACQ: 02Dec63 ENCL: 00

SUB CODE: PH NO REF SOV: 008 OTHER: 001

Card 2/2

APPROVED FOR RELEASE: 08/26/2000 CIA-RDP86-00513R001653530003-5"

"APPROVED FOR RELEASE: 08/26/2000 CIA-RDP86-00513R001653530003-5

L 13355-63 EWT(1)/BDS/EEC(b)-2 AFFTC/ASD IJP(C)

ACCESSION NR: AP3001265 S/0181/63/005/006/1511/1513

56

55

AUTHOR: Strizhevskiy, V. L.

TITLE: Approximation of the polarizability theory during examination of combination scattering of light in crystals

SOURCE: Fizika tverdogo tela, v. 5, no. 6, 1963, 1511-1513

TOPIC TAGS: combination scattering, wave function, tensor of polarizability

ABSTRACT: This is a continuation of previous work (FTT, 3, 2929, 1961; 4, 1492, 1962). The tensor of combined scattering of light in a crystal derived in this previous work is here presented as a matrix element between initial and final vibration states, on the one hand, and some tensor depending only on the vibration coordinates, on the other. These tensors are represented in formulas (1) and (2). The author finds an analysis of the tensor of polarizability similar to that for gases. "E. M. Verlan participated in making the analyses of the present paper." Orig. art. has: 6 formulas.

Association: Kiev State University

Card 1/1

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"APPROVED FOR RELEASE: 08/26/2000 CIA-RDP86-00513R001653530003-5

L 18520-63 EWT(1)/BDS AFFTC/ASD/SSD

ACCESSION NR: AP3001277 S/0181/63/005/006/1595/1600

AUTHORS: Kondilenko, I.I.; Verlan, E.M.; Korotkov, P.A.; Strizhevskiy, V.L.

TITLE: Indicatrix of the combination scattering of light in a crystalline medium

SOURCE: Fizika tverdogo tela, v. 5, no. 6, 1963, 1595-1600

TOPIC TAGS: combination scattering, indicatrix, Si, O, optic axis, crystalline material

ABSTRACT: The authors have studied the conditions of dependence (of the indicatrix) of combination scattering of light in crystalline material both in theory and in experimental work. The theoretical expressions are derived from previous works (V. L. Strizhevskiy, FTT, 3, 2929, 1961, and FTT, 4, 1492, 1962). The experimental work is basically similar to previous work on liquids (I. I. Kondilenko, P.A. Korotkov, and V.L. Strizhevskiy, Opt. i. spektr., 11, 169, 1961). The authors obtained general formulas determining the indicatrix in any arbitrary crystal. Vibrations of 466 cm^{-1} in quartz were first used in experimental investigation of the indicatrix in a crystal in the angular interval of 40-140°. The experimental data agree with theory. The authors show that a study of the indicatrix of combination scattering may serve as a method of investigating oriented

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L 18580-63
ACCESSION NR: AP3001277

systems. To illustrate the method (with a few simplifying assumptions) they determined the angle formed by the Si-O bond with the optic axis. This value proved to be 55°, which corresponds satisfactorily with the actual value of 54°44'. There are disadvantages to the system, however, limiting its usefulness. Chief of these is the presence of parameters in the formulas that are unknowns--components of the tensor of combination scattering. Furthermore, the spectrum of combination scattering is not always capable of experimental observation. Orig. art. has: 1 figure, 1 table, and 13 formulas.

ASSOCIATION: Kiyevskiy gosudarstvenny*y universitet im. T.G. Shevchenko (Kiev State University)

SUBMITTED: 11Jan63 DATE ACQ: 01Jul63 ! UL: 00

SUB CODE: PH NO REF SOV: 009 OTHER: 001

Card 2/2

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"APPROVED FOR RELEASE: 08/26/2000 CIA-RDP86-00513R001653530003-5

L 33171-66 EWT(1) IJP(c) WW/GG

ACC NR: AR6016218 SOURCE CODE: UR/0058/65/000/011/D072/D072

57

AUTHOR: Strizhevskiy, V. L. B

TITLE: Contribution to the theory of nonlinear transformation of light by a medium

SOURCE: Ref. zh. Fizika, Abs. 11D563

REF SOURCE: Tr. Komis. po spektroskopii. AN SSSR, t. 3, vyp. 1, 1964, 400-404

TOPIC TAGS: light dispersion, piezoelectric property, tensor, light transmission, optic property, optic crystal

ABSTRACT: A theory is developed of nonlinear optical effects in a medium in which, under the influence of a monochromatic light wave of frequency ω_1, ω_2, ... penetrating from the outside, harmonics $2\omega_1$, $\omega_1 \pm \omega_2$, ... are produced. In a phenomenological analysis the phenomenon is described by a third-rank tensor β, with symmetry properties similar to those of the piezoelectric tensor. General formulas are obtained, which make it possible to calculate the intensities of the harmonics for an arbitrary crystal in the propagation direction of the light waves. A theory is also developed which makes it possible to relate the properties of the tensor β with the microparameters of this medium. The theory shows good agreement with the experimental data. [Translation of abstract]

SUB CODE: 20

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"APPROVED FOR RELEASE: 08/26/2000 CIA-RDP86-00513R001653530003-5

ACCESSION NR: AP4013494 S/0181/64/006/002/0393/0401

AUTHOR: Strizhevskiy, V. L.

TITLE: Theory of nonlinear transformation of light by matter

SOURCE: Fizika tverdogo tela, v. 6, no. 2, 1964, 393-401

TOPIC TAGS: light, light transformation, nonlinear light transformation, incident angle, dispersion, dispersion ratio, dielectric constant, anisotropic nonmagnetic dielectric, crystallographic analysis

ABSTRACT: The author has made a theoretical study of some aspects of nonlinear transformation of light by matter (such as ratio of the intensity of harmonics to the incident angle, ratio of the intensity to the crystal orientation. In a phenomenological examination, he has shown the general dispersion ratio for the tensor of nonlinear dielectric constant for any order. His theory applies to an anisotropic nonmagnetic dielectric medium. A general method for finding the amplitude of the harmonics in a crystal and in a vacuum under conditions of first-order effects is presented. As an example, he examines the transmission of ordinary light through a plane-parallel plate of a class D_3 crystal with nonlinear properties. A

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ACCESSION NR: AP4013494

comparison of theory with experiment is favorable for the theory. The author also makes a microtheoretical evaluation of the first-order nonlinear effects for any crystalline medium. The presence of angular dependence and other dependent relations in nonlinear effects leads to the belief that in the near future the study of these effects will become one of the important sources of information on the structures and properties of matter, for example, a method of crystallographic analysis. These effects may also be used for modulating and detecting light beams. Orig. art. has: 2 figures, 1 table, and 27 formulas.

ASSOCIATION: Kiyevskiy gosudarstvennyy universitet im. T. G. Shevchenko (Kiev State University)

SUBMITTED: 22Jul63 DATE ACQ: 03Mar64 ENCL: 00

SUB CODE: PH NO REF SOV: 008 OTHER: 009

Card 2/2

APPROVED FOR RELEASE: 08/26/2000 CIA-RDP86-00513R001653530003-5"

"APPROVED FOR RELEASE: 08/26/2000 CIA-RDP86-00513R001653530003-5

KONDILENKO, I.I.; POGORELOV, V.Ye.; STRIZHEVSKIY, V.L.

Frequency dependence of the intensity of Raman scattering of light in crystalline quartz and calcite. Fiz. tver. tela 6 no.2:533-538 F '64. (MIRA 17:2)

1. Kiyevskiy gosudarstvennyy universitet imeni Shevchenko.

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"APPROVED FOR RELEASE: 08/26/2000 CIA-RDP86-00513R001653530003-5

ACCESSION NR: AP4011505 S/0051/64/016/001/0169/0171

AUTHOR: Strizhevskiy, V.L.

TITLE: On interference effects in laser systems

SOURCE: Optika i spektroskopiya, v.16, no.1, 1964, 169-171

TOPIC TAGS: laser, interference, laser oscillation, interference rings

ABSTRACT: Some of the features of interference effects that may obtain in laser systems are considered in this paper. For simplicity it is assumed that the excess population of the upper levels remains constant, an assumption justified by the fact that in many cases the excess population is a relatively slowly varying function of time. The specific case analyzed is a laser system with the active medium in the form of an isotropic rod with mirrored ends, one of which is partially transparent, and transparent side walls. It is demonstrated that under certain conditions, in addition to the intense central spot, interference rings may appear. It is noted that interference rings have actually been observed by some experimenters. Some factors that may be responsible for broadening of the rings are considered briefly. "The authors thank I.I.Kondilenk and I.S.Gorban' for useful discussions." Orig.art.has: 22 formulas.

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"APPROVED FOR RELEASE: 08/26/2000 CIA-RDP86-00513R001653530003-5

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ACC.NR: AP4011505

useful discussions." Orig.art.has: 22 formulas.

ASSOCIATION: none

SUBMITTED: 23May63 DATE ACQ: 14Feb64 ENCL: 00

SUB CODE: PH NR REF SOV: 008 OTHER: 008

Card 2/2

APPROVED FOR RELEASE: 08/26/2000 CIA-RDP86-00513R001653530003-5"

"APPROVED FOR RELEASE: 08/26/2000 CIA-RDP86-00513R001653530003-5

ACC NR: AR6025775 SOURCE CODE: UR/0058/66/000/004/D068/D068

AUTHOR: Kondilenko, I. I.; Korotkov, P. A.; Strizhevskiy, V. L.

TITLE: On the use of Raman spectra for the study of oriented systems

SOURCE: Ref. zh. Fizika, Abs. 4D526

REF SOURCE: Tr. Komis. po spektroskopii. AN SSSR, t. 3, vyp. 1, 1964, 574-581

TOPIC TAGS: Raman spectrum, optic crystal, light polarization, quartz crystal

ABSTRACT: A theoretical study was made of the indicatrix and of the polarization effects in Raman spectra in arbitrary anisotropic crystals. General formulas are obtained for the intensity of the scattered light as a function of the scattering angle, polarization, and the macroparameters (dielectric constant) and microparameters of the medium. It is shown that it is possible to determine the orientation of the bonds inside the crystal. An experimental study was made of the indicatrix in a quartz crystal. Experiment and theory are in satisfactory agreement. [Translation of abstract]

SUB CODE: 20

Card 1/1 pb

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"APPROVED FOR RELEASE: 08/26/2000 CIA-RDP86-00513R001653530003-5

L 12902-65 EWT(l)/EWT(m)/EPF(c)/EEC(t) Pr-4 IJP(c)/AS(mp)-2/AFWL/
RAEM(a)/ESD(gs)/ESD(t) GG/RM

ACCESSION NR: AP4047174 S/0051/64/017/004/0528/0531

AUTHORS: Kondilenko, I. I.; Strizhevskiy, V. L.

TITLE: Vibration symmetry and intensity in Raman spectra

SOURCE: Optika i spektroskopiya, v. 17, no. 4, 1964, 528-531

TOPIC TAGS: Raman spectrum, vibration symmetry, light intensity, toluol, benzene, chloroform, carbon tetrachloride

ABSTRACT: The purpose of this paper was to obtain a qualitative interpretation of some features of the intensity distribution of allowed Raman-scattering lines, by taking account of the symmetry properties of the molecules. The Raman-scattering tensor is used in the form derived by the authors previously (with P. A. Korotkov, Opt. i spektr. v. 9, 26, 1960). The stable configurations are distinguished from the unstable ones with the aid of the Jahn-Teller rule. The conditions under which the fully symmetrical vibrations

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ACCESSION NR: AP4047174

3

predominate over the non-fully-symmetrical ones are qualitatively analyzed. These make it possible to ascertain when the diagonal elements of the Raman-scattering tensor increase or decrease, depending whether the minima of the first and excited electronic states appear in the same point or in different points of Q-space. The theoretical predictions are compared with the experimental data for toluol, benzene, chloroform, and carbon tetrachloride, and are found to be in qualitative agreement. Orig. art. has: 1 figure, 1 formula, and 5 tables.

ASSOCIATION: None

SUBMITTED: 06Nov63 ENCL: 00

SUB CODE: OP, IC NR REF SOV: 008 OTHER: 002

Card 2/2

APPROVED FOR RELEASE: 08/26/2000 CIA-RDP86-00513R001653530003-5"

"APPROVED FOR RELEASE: 08/26/2000 CIA-RDP86-00513R001653530003-5

L 40921-65 EEC-4/EED-2/EEC-2/EWT(d)/EWT(1) Pm-4/Pac-4

ACCESSION NR: AP5007306 S/0057/65/035/003/0546/0556

33
31
B

AUTHOR: Deryugin, I.A.; Strizhevskiy, V.L.; Kuts, P.S.

21

TITLE: Investigation of the operation of ultrahigh frequency Faraday effect devices under conditions of variable magnetization

SOURCE: Zhurnal tekhnicheskoy fiziki, v.35, no.3, 1965, 546-556

TOPIC TAGS: Faraday effect modulator, ferrite, pulsed magnetic field, relaxation process, relaxation time

ABSTRACT: This paper is concerned with pulsed operation of uhf Faraday effect devices, in particular of uhf modulators consisting of a ferrite rod within and coaxial to a cylindrical waveguide and magnetized by an external solenoid. The authors have previously discussed the distortion of the magnetic field pulse shape due to the skin effect in the waveguide wall (Visnyk Kyivs'kogo derzh.universytetu,ser. fizyky,khimyii, matematyky ta astronomii,1963). In the theoretical part of the present paper they calculate the time dependence of the magnetization induced in the ferrite by the distorted magnetic field pulse by solving the relevant Bloch equation (F.Bloch,Phys.Rev.70,460,1946) and present the results graphically. Ferrite

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modulators were constructed in silver and lanthanum waveguides of various sizes and wall thicknesses with ferrites of different grades; these were operated with (approximately) squar magnetic field pulses of various lengths, and the shapes of the corresponding output pulses were determined. The results are presented graphically and are discussed at some length, although a quantitative comparison with the theory was not possible because the relaxation times of the ferrites used were not known. It is concluded that uhf Faraday effect devices can be successfully operated with magnetizing pulses as short as 1 microsec. "Student I.Zaritskiy participated in the present work." Orig.art.has: 8 formulas, 10 figures and 3 tables.

ASSOCIATION: Kiyevskiy gosudarstvennyy universitet im.T.G.Shevchenko (Kiev State University)

SUBMITTED: 12Jun64 ENCL: 00 SUB CODE: EC,EM

NR REF SOV: 003 OTHER: 006

APPROVED FOR RELEASE: 08/26/2000 CIA-RDP86-00513R001653530003-5"

"APPROVED FOR RELEASE: 08/26/2000 CIA-RDP86-00513R001653530003-5

DERYUGIN, I.A.; STRIZHEVSKIY, V.L.; KUTS, P.S.

Superhigh-frequency Faraday devices under variable magnetization. Zhur. tekh. fiz. 35 no.3:546-556 Mr '65. (MIRA 18:6)

1. Kiyevskiy gosudarstvennyy universitet imeni Shevchenko.

APPROVED FOR RELEASE: 08/26/2000 CIA-RDP86-00513R001653530003-5"

"APPROVED FOR RELEASE: 08/26/2000 CIA-RDP86-00513R001653530003-5

LISITSA, M.P.; STRIZHEVSKIY, V.L.; SUGAKOVA, N.A.; TSYASHCHENKO, Yu.P.

Verification of the Kramers-Kronig relations in the vibrational part of the spectrum. Dokl. AN SSSR 163 no.6:1361-1362 Ag '65.
(MIRA 18:8)

1. Kiyevskiy gosudarstvennyy universitet. Submitted February 5, 1965.

APPROVED FOR RELEASE: 08/26/2000 CIA-RDP86-00513R001653530003-5"

"APPROVED FOR RELEASE: 08/26/2000 CIA-RDP86-00513R001653530003-5

L 25952-66 EWT(1)

ACC NR: AP6011576 SOURCE CODE: UR/0051/66/020/003/0516/0519

39
B

AUTHOR: Strizhevskiy, V. L.

ORG: none

TITLE: On the spectral composition of generation in the case of nonlinear optical effects

SOURCE: Optika i spektroskopiya, v. 20, no. 3, 1966, 516-519

TOPIC TAGS: nonlinear optics, laser, laser theory, second harmonic

ABSTRACT: The author first writes down an equation for the intensities of the electric and magnetic fields of exciting radiation in terms of the Fourier components of the electric and magnetic fields, when the radiation penetrates a medium with weakly nonlinear optical properties. The spectral components of the resultant harmonics are expressed in terms of products of coefficients determined by the specific parameters of the problem and the Fourier components of the induction. The analysis is then confined to the case of noise-like sources, in which the fields at different instants of time have a Gaussian or normal distribution. This approximation is valid for the case of laser emission. The intensity is then obtained with the aid of the appropriate correlation functions. In the case of the second harmonic, the results obtained agree with those given by R. H. Pantell (Proc. IEEE v. 52, 607, 1964). The presently available experimental data are not yet reliable enough to permit a comparison with the theory. The author thanks S. A. Akhmanov for fruitful discussions. Orig. art. has: 13 formulas. [02]

SUB CODE: 20/ SUBM DATE: 20Aug65/ ORIG REF: 005/ OTH REF: 006/ ATD PRESS: 4257

UDC: 621.375.9: 535.001.1

Card 1/1 FW

APPROVED FOR RELEASE: 08/26/2000 CIA-RDP86-00513R001653530003-5"

"APPROVED FOR RELEASE: 08/26/2000 CIA-RDP86-00513R001653530003-5

L 22622-66 EWT(1) LJP(c) GG

ACC NR: AP6004931 SOURCE CODE: UR/0056/66/050/001/0135/0139

AUTHORS: Obukhovskiy, V. V.; Strizhevskiy, V. L.

ORG: Kiev State University (Kiyevskiy gosudarstvennyy universitet)

TITLE: Relation between the nonlinear dielectric constant and the Green's functions for electromagnetic radiation

SOURCE: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 50, no. 1, 1966, 135-139

TOPIC TAGS: dielectric constant, Green function, electromagnetic radiation, tensor, nonlinear effect, electromagnetic wave dispersion, quantum field theory, anisotropic medium

ABSTRACT: The relation between the Green's functions for electromagnetic radiation in a medium and its dielectric constant are derived for the case of an anisotropic medium whose interaction with the electromagnetic radiation is weakly nonlinear. The analysis is confined to effects whose nonlinearity in terms of the field is of second order. The medium is assumed to be homogeneous and nonmagnetic. The formula expresses the dielectric constant tensor in terms of triple-time retarded Green's functions, and is derived on the basis of an application of the method of external currents and perturbation theory for the density matrix of the system. While spatial dispersion of the dielectric constant is disregarded, generalization of the theory to include dispersion is not difficult. The results make it possible to employ methods

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"APPROVED FOR RELEASE: 08/26/2000 CIA-RDP86-00513R001653530003-5

L 22622-66
ACC NR: AP6004931

of quantum field theory to study the propagation of electromagnetic waves in media possessing nonlinear properties. Orig. art. has: 24 formulas.

SUB CODE: 20/ SUBM DATE: 30Jun65/ ORIG REF: 003/ OTH REF: 002/

Card 2/2

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"APPROVED FOR RELEASE: 08/26/2000 CIA-RDP86-00513R001653530003-5

L 45219-66 EWT(1)

ACC NR: AP6027904 SOURCE CODE: UR/0369/66/005/001/0119/0122

AUTHOR: Korsak, K. V.; Strizhevskiy, V. L.

ORG: none

TITLE: Microtheory of producing a difference frequency based on the nonlinear photoconductivity effect of semiconductors during excitation by two laser sources with close frequencies

SOURCE: Zhurnal prikladnoy spektroskopii, v. 5, no. 1, 1966, 119-122

TOPIC TAGS: photoconductivity, difference frequency, laser excitation

ABSTRACT: The problem of photoconductivity to a continuous spectrum under the effect of two monochromatic electromagnetic waves with near frequencies is solved by methods of microscopic theory. It is shown that the probability of finding the system in an excited state and the concentration of excited electrons in the irradiated medium contains, besides the usual constant term, interference terms changing with

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L [illegible]

ACC NR: AP6027904

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the difference frequency $\omega = \omega_1 - \omega_2$. With increasing ω, the relative contribution of these terms decreases as Γ/ω, where Γ is the inverse lifetime of the excited state. Orig. art. has: 13 formulas. [DW]

SUB CODE: 20/ SUBM DATE: 03May65/ ORIG REF: 001/ OTH REF: 014

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APPROVED FOR RELEASE: 08/26/2000 CIA-RDP86-00513R001653530003-5"

"APPROVED FOR RELEASE: 08/26/2000 CIA-RDP86-00513R001653530003-5

ACC NR: AP6036815 SOURCE CODE: UR/0360/66/005/005/0685/0687

AUTHOR: Strizhevskiy, V. L.

ORG: none

TITLE: Special features of the difference frequency generation based on nonlinear optical effects

SOURCE: Zhurnal prikladnoy spektroskopii, v. 5, no. 5, 1966, 685-687

TOPIC TAGS: nonlinear optics, frequency generation, harmonic generation

ABSTRACT: Certain special features of the difference frequency (subharmonic) generation are discussed theoretically in terms of the nonlinear polarization effect in a dielectric or semiconductor crystal. A formula is given for the intensity of radiation at a subharmonic frequency which can be used to calculate the generation power of a laser (e.g., two ~10-kw ruby lasers operating at 6934 Å and 6943 Å at room and liquid N temperatures, respectively, with beam cross sections of ~0.5 cm^2 and a yield $\approx 10^{-3}$ w). The possibility of increasing the generation level when the pumping frequencies approach the absorption bands is discussed. If a crystal absorbs at the difference frequency, genera-

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ACC NR: AP6036815

tion of subharmonics can be observed in the reflected light. The subharmonic yield depends on the real value of the nonlinear permittivity. No experimental works have confirmed this thus far. Orig. art. has: 1 formula.

SUB CODE: 20/ SUBM DATE: 29Jun65/ ORIG REF: 004/ OTH REF: 004/
ATD PRESS: 5107

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L 46748-66 EWT(1)/T IJP(c) SOURCE CODE: UR/0051/66/021/003/0347/0356

ACC NR: AP6031960

AUTHOR: Strizhevskiy, V. L.

ORG: none

TITLE: A practical method of computing the nonlinear optical effects in a plane parallel plate

SOURCE: Optika i spektroskopiya, v. 21, no. 3, 1966, 347-356

TOPIC TAGS: nonlinear optics, laser induced effect, nonlinear effect, plane parallel plate, resonator theory, laser theory, CRYSTAL OPTIC PROPERTY, MONOCHROMATIC RADIATION

ABSTRACT: Within the framework of phenomenological theory, an investigation was made of the generation of optical harmonics (sum and difference frequencies of the first order) in a plane-parallel crystal plate with nonlinear optical properties which were induced by high-intensity monochromatic radiation. Expressions were obtained for the intensity of radiation in a vacuum for the case of an arbitrary orientation of crystal axes and wave vectors of the exciting radiation. The expressions derived can be used to solve the problems in terms of simple algebraic operations. A detailed analysis was made of the synchronism case, i.e., when the wave vector of the stimulated and natural waves approach each other, for which the general formulas were transformed and further simplified. As an example, the results were applied to the case of generation of the first harmonic in a class C_{6v} crystal. Orig. art. has: 2 figures and 41 formulas.

SUB CODE: 20/ SUBM DATE: 13Feb65/ ORIG REF: 004/ OTH REF: 005/ ATD PRESS: 5089 [YK]

UDC: 621.375.9:535.01

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STRIZHEVSKIY, V.M.

STRIZHEVSKIY, V.M., inzhener.

Industrial production and installation of wooden construction parts. (MLRA 6:8)
Biul.stroi.tekh. 10 no.10:25-28 My '53.
(Woodworking industries) (Building)

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"APPROVED FOR RELEASE: 08/26/2000 CIA-RDP86-00513R001653530003-5

[illegible], [illegible] (Dzerzhinsk); MIKHEYEVA, L.V. (Dzerzhinsk); DAVYDOVA, [illegible] (Dzerzhinsk)

Analysis of the outbreak of Botkin's disease associated with parenteral infection in one of the children's institutions of Dzerzhinsk. Vop.med.virus. no.9:192-194 '64. (MIRA 18:4)

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"APPROVED FOR RELEASE: 08/26/2000 CIA-RDP86-00513R001653530003-5

DASHEVSKAYA, [illegible]; [illegible]NATA, A.TS.; STRIZHKO, L.V.

Significance of some methods of laboratory diagnosis of epidemic hepatitis. Lab. delo no.2:87-90 '65. (MIRA 18:2)

1. Virusologicheskoye otdeleniye laboratorii (zaveduyushchiy I.I. Shpits) Dnepropetrovskoy gorodskoy sanitarno-epidemiologicheskoy stantsii (glavnyy vrach M.A. Gulyanitskiy).

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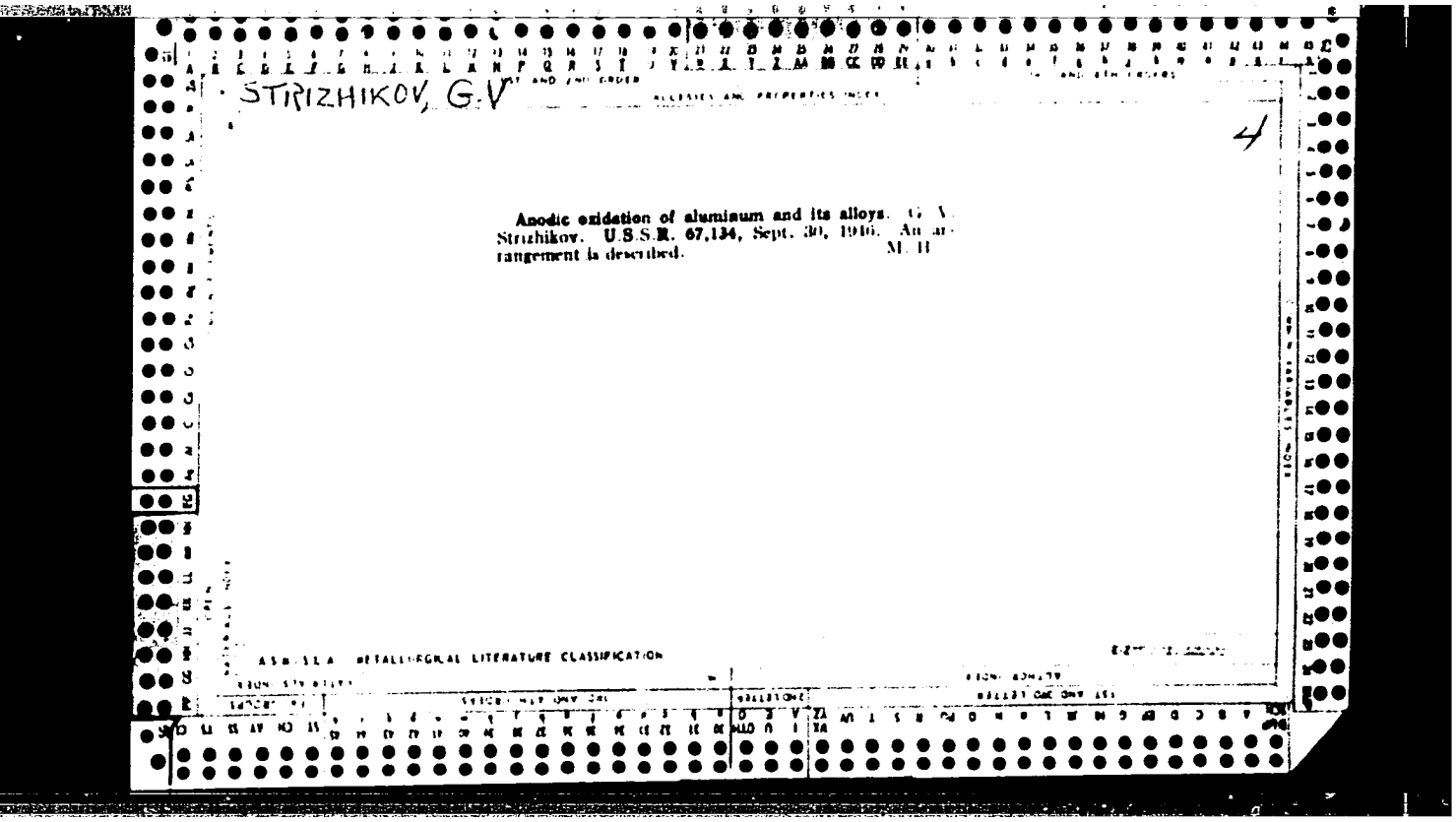

STRIZHIKOV, G.V.

4

Anodic oxidation of aluminum and its alloys. G. V. Strizhikov. U.S.S.R. 67,134, Sept. 30, 1946. An arrangement is described.

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OBRAZTSOV, A.L.; STRIZHIKOVA, Z.I.; CHAZOV, V.N.

Experimental burning of natural gas without sufficient air supply. Gaz. prom. 6 no.12:27-28 '61. (MIRA 15:2)
(Gas, Natural)
(Gas burners)

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S/226/62/000/003/004/014
I003/I203

AUTHOR Aksenov, G. I., Minayev, Ye. M. and Strizhikova, Z. I.

TITLE Microstructural investigation of metal powder particles

PERIODICAL Poroshkovaya metallurgiya, no. 3, 1962, 24–30

TEXT A new method of preparation of samples for a microstructure study of single grains of powders permits the investigation of their dimensions, shape and structure, in a condition unaltered by the process of preparation of the cross-section, using epoxide resins with hardeners of the polyethylene-polyamine type which can be hardened at room temperature. The structure of the powders is affected by the methods of their preparation and subsequent treatment. Microstructures of iron and stainless steel powders, after various processes are shown There are 5 figures.

ASSOCIATION Kuibyshevskiy aviatsionnyy institut (Kuibyshev Aviation Institute)

SUBMITTED November 9, 1961

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"APPROVED FOR RELEASE: 08/26/2000 CIA-RDP86-00513R001653530003-5

OBRAZTSOV, A.L., inzh.; STRIZHIKOZA, S.I., inzh.; CHAZOV, V.N., inzh.

Roasting to magnetize bog iron ores in a fluidized bed with products from the incomplete combustion of natural gas. Gor. zhur. no.8:63-65 Ag '62. (MIRA 15:8)

1. Krasnodarskiy filial Vsesoyuznogo neftegazovogo nauchno-issledovatel'skogo instituta (VNIINeft').
(Iron ores) (Magnetic separation of ores)

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[illegible], P.S.; STRIZHIUS, Zh.N.; SLADKOVA, V.N.

Thermomechanism of the brittle fracture of large samples.
Avtom. svar. 17 no.12:1-7 D '64 (MIRA 18:2)

1. Institut elektrosvarki im. Ye.O.Patona AN UkrSSR.

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"APPROVED FOR RELEASE: 08/26/2000 CIA-RDP86-00513R001653530003-5

ACC NR: AP7010715 SOURCE CODE: UR/0020/66/171/006/1348/1351

AUTHOR: Yakshin, I. N. (Corresponding Member AN SSSR); Strizhko, V. S.; Fedotov, Yu. S.

ORG: none

TITLE: Effect of diluents on the extraction of rare-earth elements by carboxylic acids

SOURCE: AN SSSR. Doklady, v. 171, no. 6, 1966, 1348-1351

TOPIC TAGS: lanthanum, praseodymium, neodymium, gadolinium, carboxylic acid, aliphatic alcohol

SUB CODE: 11, 07

ABSTRACT: The authors studied some peculiarities in the reaction of diluents with aliphatic synthetic acids of the C_7 - C_9 fraction in the extraction of lanthanum, praseodymium, neodymium and gadolinium. The role of the diluents depends essentially on the proton affinity, as well as the ability to form addition compounds with the acid molecules through hydrogen bonds of varying strength and polarity. Carboxylic acids and alcohols posses donor-acceptor properties with respect to hydrogen. Extraction is considerably less affected by diluents which are only proton acceptors in an acid-base reaction. Nonpolar diluents have the least effect. The diluents studied are listed in the

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following order as to their effect on extraction equilibrium and their ability to form hydrogen bonds: heptyl alcohol, decyl alcohol, isoamyl acetate, metaxylene, dichlorodiethyl ether, carbon tetrachloride, kerosene. Orig. art. has: 3 figures, 11 formulas and 1 table. [JPRS: 40,361]

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MERFULOVA, M.S.; MELIKHOV, I.V.; MULYAROVA, I.G.; STRIZHKOV, B.V.

Distribution of lead and bismuth isotopes between solution and crystals of sodium chloride. Trudy kom.anal.khim. 9:115-120 '58. (MIRA 11:11)

(Lead--Isotopes) (Bismuth--Isotopes) (Salt)

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"APPROVED FOR RELEASE: 08/26/2000 CIA-RDP86-00513R001653530003-5

LAPITSKIY, A.V.; STRIZHKOV, B.V.; VLASOV, L.G.

Some thermodynamic constants of alkali metal metaniobates and metatantalates. Vest. Mosk un. Ser. 2:Khim. 15 no.4:25-27 Jl-Ag '60. (MIRA 13:9)

1. Kafedra radiokhimii Moskovskogo universiteta.
(Alkali metal niobates) (Alkali metal tantalates)

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