CA

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Quantitative evaluation of the photographic effect in multilayer color-photography materials. Yu. N. Gorokhovskii, D. K. Balabukha, and T. M. Levenberg. *Doklady Akad. Nauk S.S.S.R.* 79, 73-6(1951).—The actual surface concns. of the dyes in the 3 elementary layers of a color-photographic emulsion provide an objective criterion for the evaluation of the photographic effect in color photography. This criterion corresponds to that of surface concn. of Ag in black and white photography, but, in contrast to the latter, there can be no linear relation between the surface concns. of the 3 dyes and an overall optical d., i.e. there is no const. photometric equiv. Assuming Beer's law $D_\lambda = k_\lambda c l$ (where D = optical d., c = concn. of the dye, l = thickness of the layer) to be valid for each component, one can write, since l = const., the system of linear equations: $D_{\lambda_1} = k_{\lambda_1}'c' + k_{\lambda_1}''c'' + k_{\lambda_1}'''c'''$; $D_{\lambda_2} = k_{\lambda_2}'c' + k_{\lambda_2}''c'' + k_{\lambda_2}'''c'''$; $D_{\lambda_3} = k_{\lambda_3}'c' + k_{\lambda_3}''c'' + k_{\lambda_3}'''c'''$, where the concns. c', c'', and c''', in the 3 layers are unknown, and the spectr. absorption coeffs. k are the ordinates of the 3 spectral curves of the optical ds. of the elementary layers at unit concn., and are detd. once and for all. The wavelengths λ were chosen according to the positions of the absorption maxima of the materials under study; for the neg. materials, λ = 440, 540, and 680 mμ, and for the pos. materials, λ = 440, 540, and 670 mμ. The latitude in the violet, green, and red range, is 20, 40, and 30 mμ, resp. The applicability of Beer's law was tested and demonstrated with one-layer emulsions. The abs. values of the k cannot be detd., as the abs. surface concns. of the dyes cannot be measured directly in a gelatin layer. By definition, the surface concn. of each dye at which the monochromatic optical d. of the gelatin layer contg. that dye, at the max. of the absorption curve, is unity, is taken as the relative unit surface concn. This convention permits a numerical detn. of the k. The system of linear equations then becomes, for neg. materials, $D_{440} = 1.00\,c_y + 0.32\,c_m + 0.13\,c_c$; $D_{540} = 0.17\,c_y + 1.00\,c_m + 0.09\,c_c$; $D_{680} = 0.05\,c_y + 0.05\,c_m + 1.00\,c_c$, and for pos. materials, $D_{440} = 1.00\,c_y + 0.34\,c_m + 1.00\,c_c$; $D_{540} = 0.10\,c_y + 1.00\,c_m + 0.14\,c_c$; $D_{670} = 0.04\,c_y + 0.08\,c_m + 1.00\,c_c$; the subscripts y, m, and c, refer to the yellow, magenta, and cyan layers. These systems of equations are easily solved for c_y, c_m, and c_c. N. Thon

S.A.
Sect. A

Photography

7H6

718. Spectral sensitometry of multi-layer colour-photography materials. YU. N. GOROKHOVSKII AND O. M. PONOMARENKO. *Dokl. Akad. Nauk, SSSR*, 79, 991-3 (No. 6, 1951) In Russian.

The method of spectral-energy sensitometry [Gorokhovskii, *Trudy Gosudarstvennogo Opticheskogo Instituta*, 14, 321 (1941)] has been used for the investigation on 2 negative and 2 positive colour-photography materials in the ranges of 425–720 and 250–450 mμ. After the usual colour development, the densities for 5 selected wavelengths have been determined in the spectro-sensitographs obtained by using an electrical micro-spectrophotometer [Gorokhovskii, Ilukhukhin and Levenberg, Abstr. 990 (1951)]. The relative surface concentrations of dyes have been calculated, and the curves of the spectral light sensitivity and the panchromatic coefficient of contrast determined. It has been found that the non-sensitized upper layers of the negative and positive materials have the same curves of spectral light sensitivity. The medium (green-sensitive) layers differ slightly in their properties, while the bottom (red-sensitive) layers of positive materials have a much wider zone of sensitization than in the case of the negative materials, and the sensitivity of the former extends to the infrared. In the case of positive materials, the coefficient of contrast depends much more upon the wavelength of the emission than in negative materials.

P. LACHMAN

GOROKHOVSKIY, Yu. N.

USSR

V Sensitometric properties of color development in multi-layer color photographic materials. D. K. Balabukha and Yu. N. Gorokhovskii. *Doklady Akad. Nauk S.S.S.R.* 79, 969–72(1951).—See *C.A.* 49, 3701b. J. Rovtar Leach

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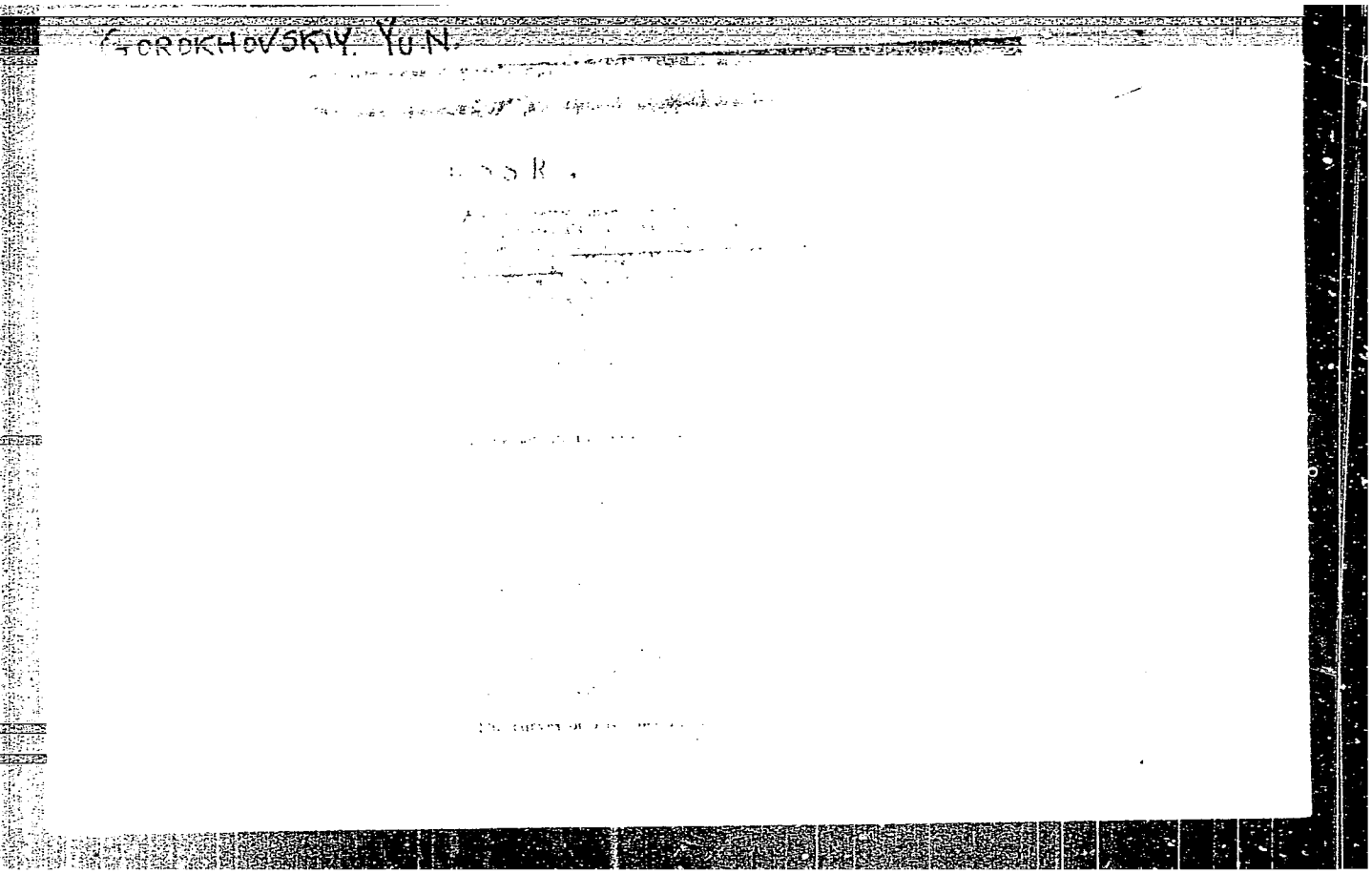
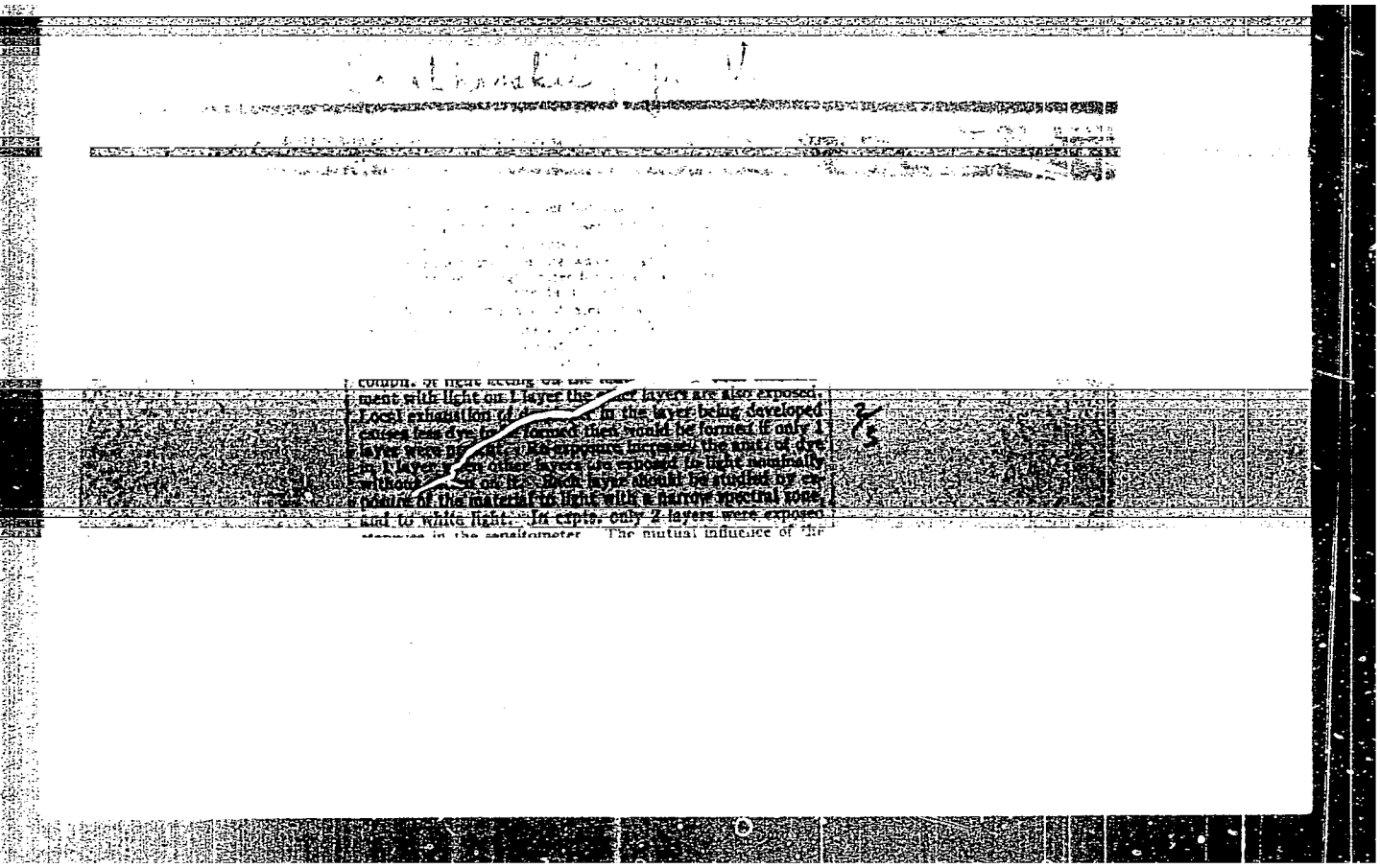
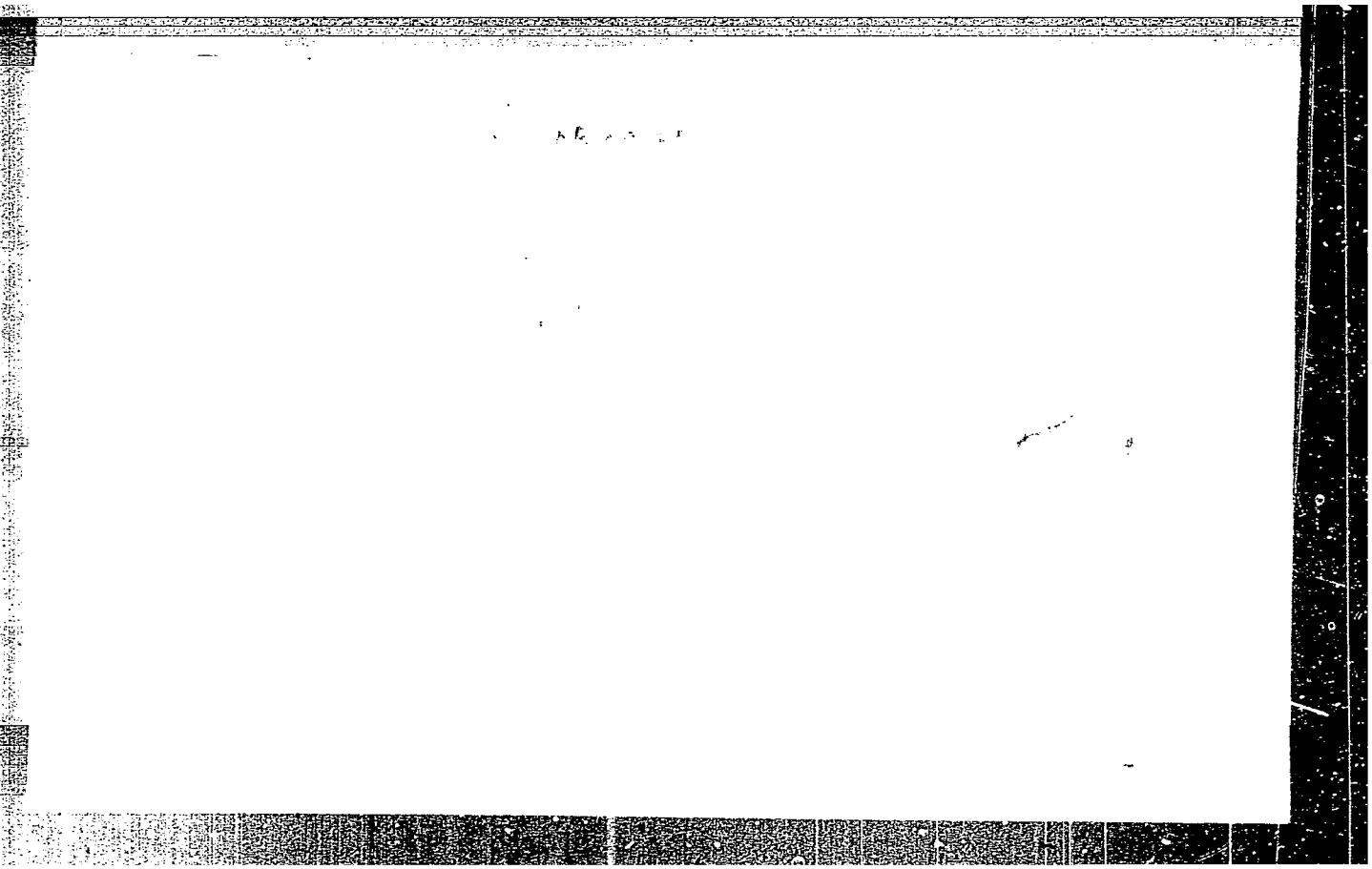






APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R000516310013-1"

GOROKHOVSKIY, Yu.N.; BALABUKHA, D.K.; PONOMARENKO, O.M.

Sensitometric investigation of multilayer color films. Part 2. Spectral photographic properties of color films. Usp.nauch.fot. 2:105-118 '54. (MLRA 7:5)
(Photographic sensitometry) (Color photography--films)

BALABUKHA, D.K.; GOROKHOVSKIY, Yu.N.

Sensitometric investigation of multilayer color films. Part 3. Mutual effect of elementary layers in color film development. Usp.nauch.fot. 2:119-130 '54. (MLRA 7:5)
(Photographic sensitometry) (Color photography--Developing and developers)

GOROKHOVSKIY, Yu.N.; LEVENBERG, T.M.

Sensitometric investigation of multilayer color films. Part.4. Resolving power of color photographic materials. Usp.nauch.fot. 2:131-133 '54. (MLRA 7:5)
(Photographic sensitometry) (Color photography--Films)

GOROKHOVSKIY, YU. N.

USSR/Physics

Card 1/1

Authors : Gorokhovskiy, Yu. N.

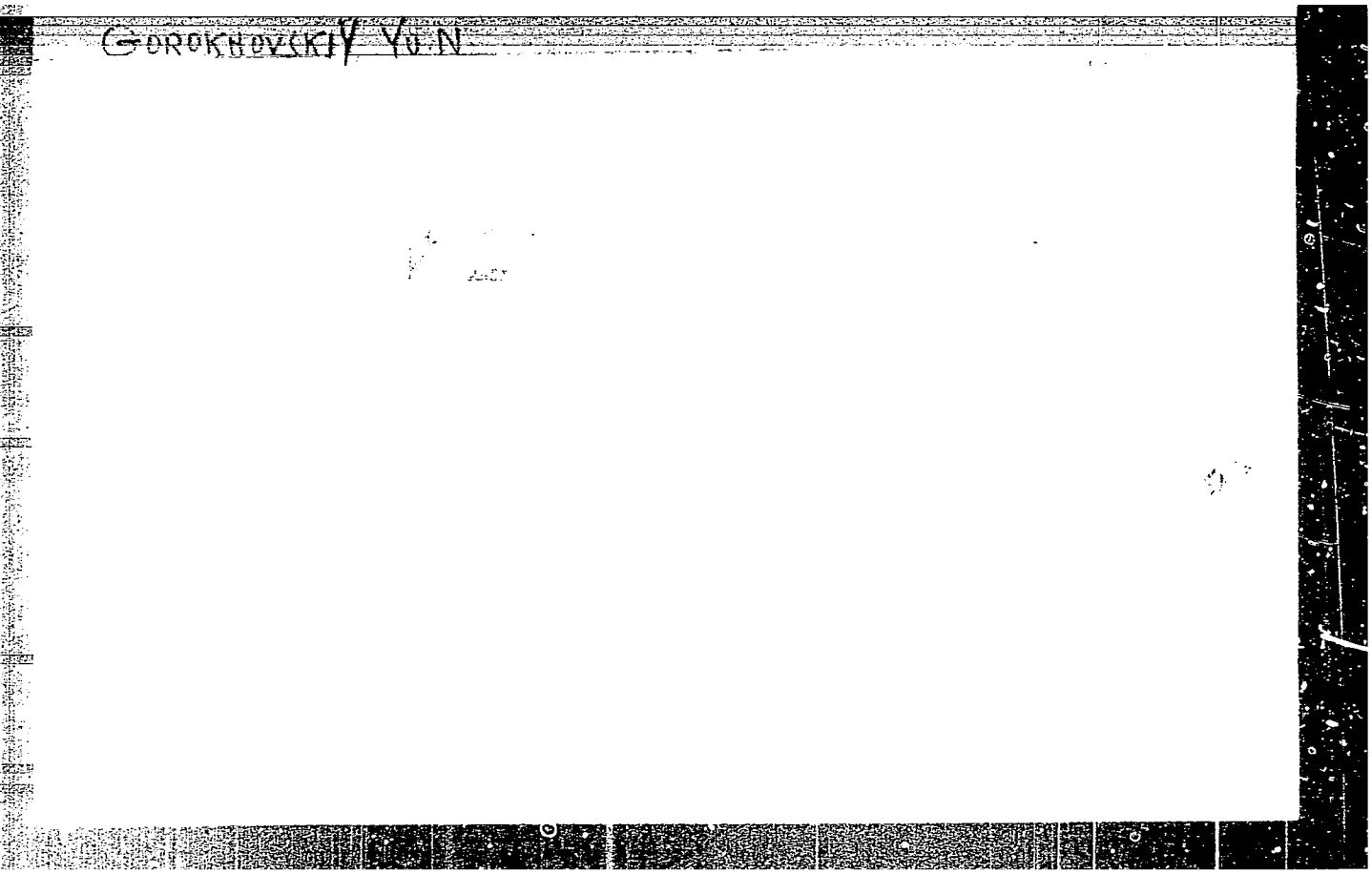
Title : Discussion on problems regarding the sensitometry of black-white photo. materials.

Periodical : Usp. Fiz. Nauk, 52, Ed. 2., 315 - 319, 1954

Abstract : Minutes of conference held at the Academy of Sciences USSR in Leningrad in March 1953 on the subject of sensitometry of photo materials. Photo sensitometry represents a special section of metrology, namely, the science of measuring the properties of photo materials. The concepts and methods of photo sensitometry can to a greater extent be expanded to technical fields related to photography, especially to television. The major points discussed at the conference are analyzed.

Institution : .....

Submitted : .....



GOROKHOVSKIY, Yu.N.; OSHERKEL'YEVA, Ye.I.

Investigation of the optical sensitization of photographic emulsions. Part 5. Relation between the spectral distribution of photosensitivity and the light absorption of sensitized photographic emulsion layers. Usp. nauch.fot. 3:119-128 '55. (MLRA 9:1)
(Photographic emulsions)

GOROKHOVSKIY, Yu.N.; KUPCHINSKAYA, V.P.

Spectrophotometric method of identifying pigments in a hydrotype color image. Trudy LIKI no.3:213-219 '55. (MLRA 9:8)

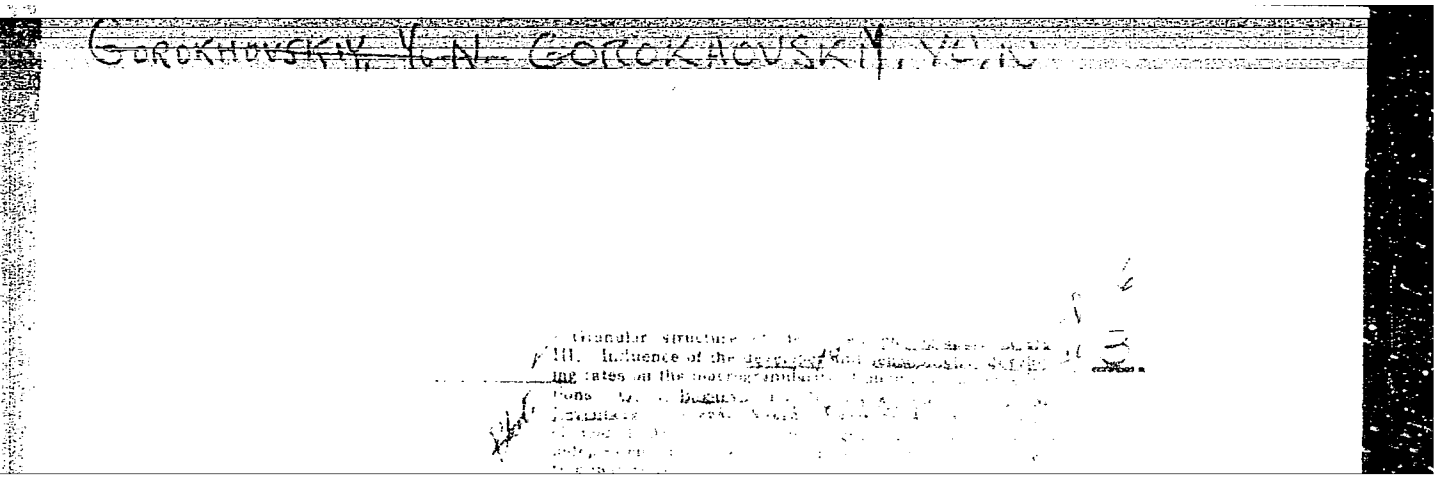
1. Kafedra obshchey fotografii i tekhnologii obrabotki kinofotomaterialov.
(Spectrophotometry) (Color photography)

BAKHVALOV, V.M.; GOROKHOVSKIY, Yu.N.

Sensitometry of multi-layered photographic color materials. Part 5. Criteria for photosensitivity of color materials. Usp.nauch.fot. no.4:29-43 '55. (MLRA 9:4)
(Color photography) (Photographic sensitometry)

GOROKHOVSKIY, Yu.N.; LEVIN, B.M.

Projector-granuloreter for the determination of gran arity of photographic blackening. Usp.nauch.fot. no.4:117-124 '55. (Photographic sensitometry) (MIRA 9:4)



GOROKHOVSKIY, Yu.N.

Sensitometric control of the photochemical processing of multilayer color films. Usp.nauch.fot.no.4:295-306 '55. (MLRA 9:4)
(Color photography) (Photographic sensitometry)

GOROKHOVSKIY, Yu.N.

FD-3038

USSR/Physics - Photography, color

Card 1/2 Pub. 153 - 7/23

Author : Gorokhovskiy, Yu. N.; Pruss, P. Kh.

Title : Investigating the resolving capacity of multi-layer color photographic materials

Periodical : Zhur. tekh. fiz., 25, February 1955, 221-235

Abstract : The authors investigate the dependence of the resolving capacity of elementary layers of multi-layer colored films, multi-layer films in the whole (for white light), and one-layer colored films upon a number of factors (focussing, exposure, development time, contrast, brightness, thickness of positive layer, aperture, etc.). They establish that the resolving capacity of multi-layer films in the whole is determined by the purple component of the colored image and consequently by the resolving capacity of the middle layer. They show that the brilliance and silver components of the photographic image in multi-layer film give identical resolving capacity, indicating that the microelements of these images possess practically identical dimensions. They further establish that the dependence of the resolving capacity of multi-layer film upon "mira" contrast differs essentially for various emulsion layers; only for

the upper elementary layer does this dependence follow the theoretical formula, observed well in the case of black-white materials. The authors also studied the influence of aperture of aberrationless objective on the resolving capacity of multi-layer films and found that this influence holds true only for the upper elementary layer, being completely absent for the middle and lower layers. They found that change in the thickness of emulsion layers is reflected in the resolving capacity of the middle and lower layers of multi-layer film. They finally observed that change in of development over a sufficiently wide range practically does not exert any influence upon the resolving capacity of the two lower layers, but influences somewhat the resolving capacity of the upper layer. In addition to resolving capacity, photographic reproduction of fine details depends upon the graininess of the developed multi-layer films, investigations showing that the macro-granularity of the latter is very small. Sixteen references.

Institution : -

Submitted : April 3, 1954

GOROKHOVSKIY, Yu. N.

USSR/Chemical Technology. Chemical Products and Their Application -- Photographic materials, I-19

Abst Journal: Referat Zhur - Khimiya, No 2, 1957, 5975

Author: Gorokhovskiy, Yu. N., Kayuchina-Liksno, A. N.

Institution: None

Title: Dependence of Kinetics of Color Development of a Multilayer Color Film on Temperature

Original Publication: Zh. nauch. i prikl. fotografii i kinematogr., 1956, 1, No 1, 23-28

Abstract: Investigation of the question concerning temperature dependence of the kinetics of color development of each of the layers of a color film, in the temperature interval from +7 to +26°, and of the phenomenon of mutual effect (PME) of these layers. It is shown that within the same interval of development duration (t_{dev}) the relative values of γ vary to a greater extent on combined development of three layers, than on development of one layer. This PME of the layers, in color development, is observed to a least extent in the case of

Card 1/2

USSR/Chemical Technology. Chemical Products and Their Application -- Photographic materials, I-19

Abst Journal: Referat Zhur - Khimiya, No 2, 1957, 5975

Abstract: the bottom layer. Temperature dependence of PME is most strongly manifested in the case of the top layer and is practically absent in the case of the bottom layer. With increase in temperature and in t_{dev} the PME of the layers becomes weaker, and with a t_{dev} of 24 minutes it practically vanishes altogether. The conclusion is reached that with rising temperature the role of diffusion, during the development, is decreased, and the role of diffusion exchange in the different layers of the film, is not the same. Temperature coefficients (α_T) of the development of image and fog, in each layer, are given. It is shown that the α_T of different layers of the film differs, and is also dependent upon the properties of photographic emulsions, the same as in the case of black-and-white photographic materials. Values of α_T depend on depletion of developer within the layer being developed; they are higher for fog than for image, and are higher for images produced with green and red light filters than for images recorded in a white light.

Card 2/2

GOROKHOVSKIY, YU.N.

USSR/Physics - Color photography

Card 1/1 Pub. 22 - 19/49

Authors : Gorokhovskiy, Yu. N., and Konyushkova, I. N.

Title : About the additive photographic effect of spectrally different emissions on multilayer color-photographic materials

Periodical : Dok. AN SSSR 101/3, 469-472, Mar 21, 1955

Abstract : Experimental analytical investigations were conducted to determine the additive effect of spectrally different monochromatic lights on multilayer color-photography films of negative and positive types. The investigations were accomplished with the help of a monochrometor-integrator and with the equipment necessary for measuring color sensitivity of films. Seven references: 6 USSR and 1 German. (1933-1951). Graphs; tables.

Institution : .....

Presented by : Academician A. N. Teremin, July 24, 1954

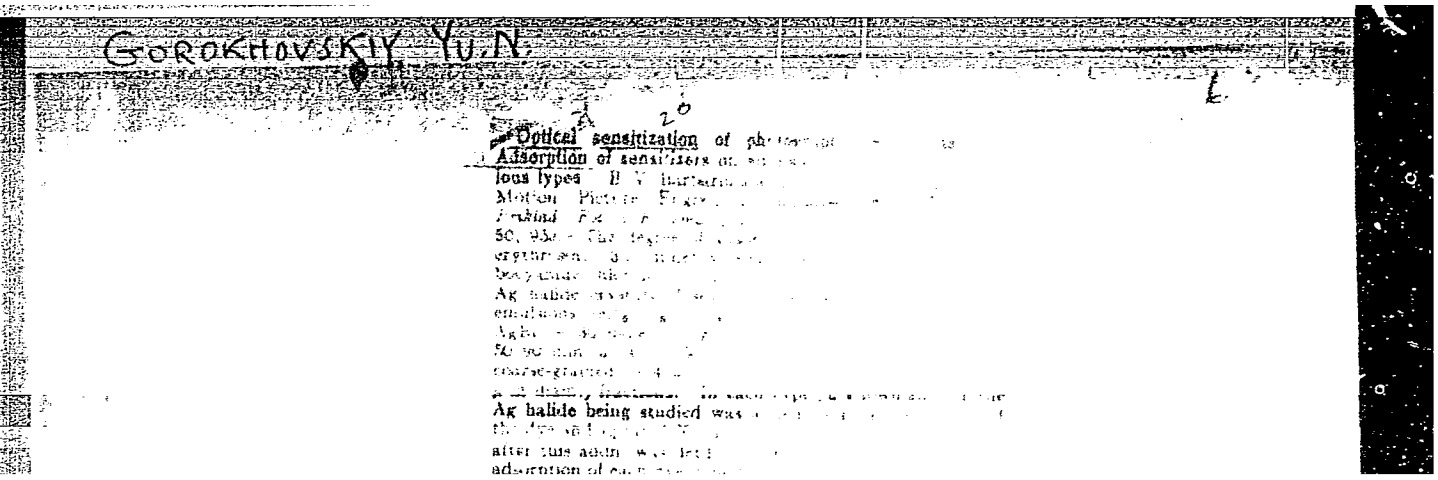
GOROKHOVSKIY, Yu. N.

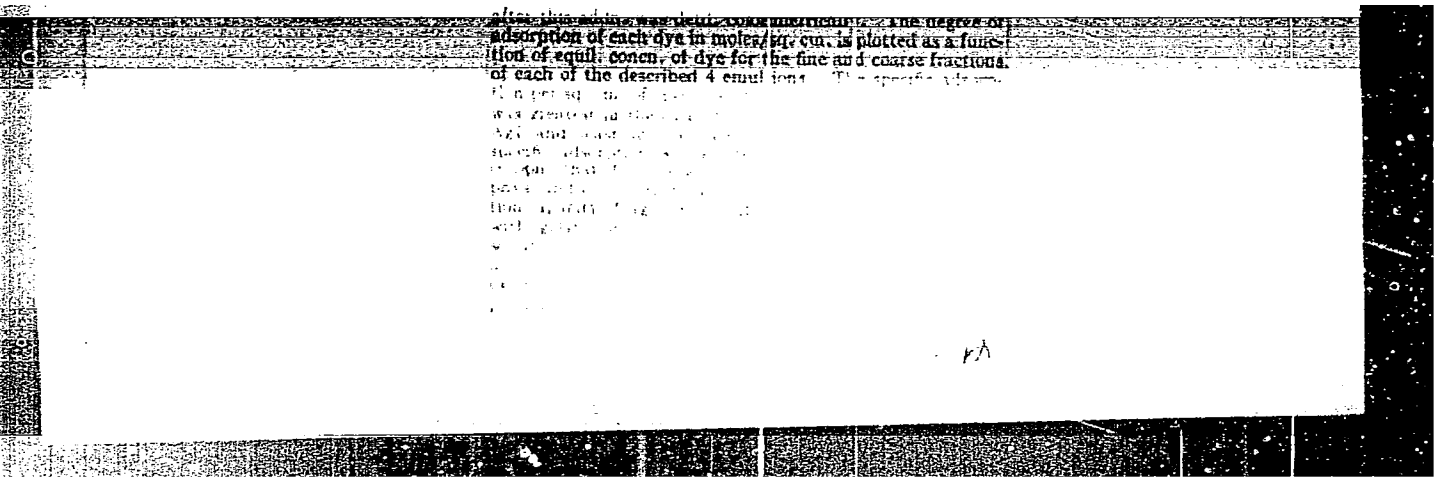
"On the Influence of Temperature on the Kinetics of the Color Development of Multilayer Color Films," a paper given at the International Conference on Scientific Photography, Cologne, 24-27 Sep 1956

E-3072367

GOROKHOVSKIY, Yu.N.

Conference on the chemistry of photographic emulsions. Zhur.nauch.i prikl.fot.i kin. 1 no.5:387-390 S-O '56. (MLRA 9:11)
(Photographic chemistry)




adsorption of each dye in moles/sq. cm. is plotted as a funct
tion of equil. concn. of dye for the fine and coarse fractions
of each of the described 4 emul

GOROKHOVSKIY, YU. N

[illegible] photographically on single-layer colour films [illegible]
[illegible] colour film. The [illegible]

[illegible] decreased in the following [illegible]
purple dyes, and black-white images. [illegible]

GOROKHOVSKIY, Yu. N.

"On the Influence of Temperature on the Kinetics of the Color Development of Multilayer Color Films," paper given at the International Conference on Scientific Photography, Cologne, 24-27 Sep 1957

E-3,068,138

and - "Some Problems of the Sensitometry of Multilayer Color Materials,"

GOROKHOVSKIY, Yu.N.

Some Problems in the Sensitometry of Multi-Layer Colour Materials. Yu. N. GOROKHOVSKII. *Zh. nauch. priklad. Photogr. Kinematogr.*, Jan.-Feb. 1957, 2, 22-27. [In Russian]. -- This discussion of problems ... multi-layer colour materials ... by the author and his collaborators and ...

... compared. The observability of small ... black and white.

GOROKHOVSKII, [redacted]

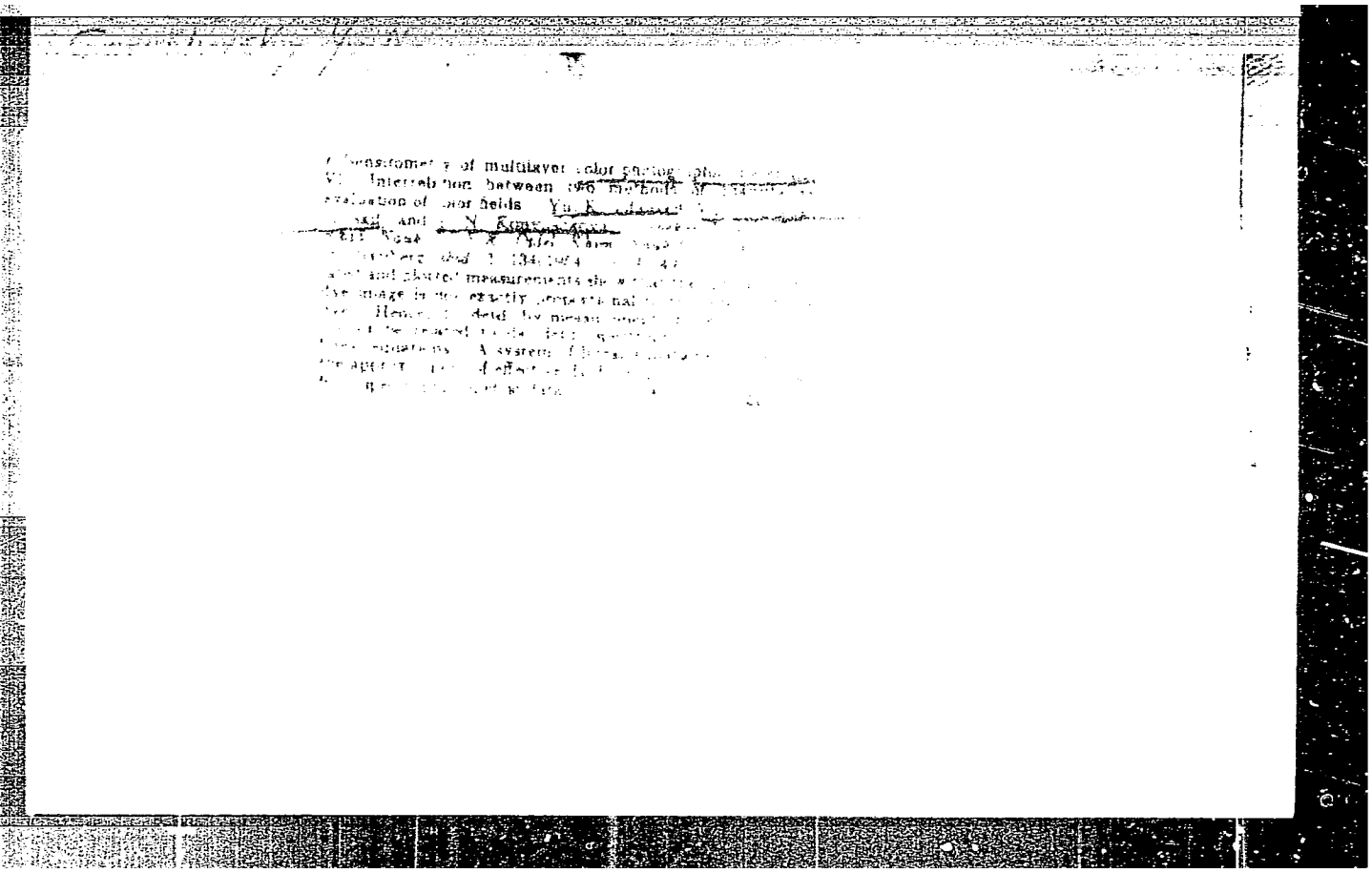
"The theory of the photographic process" [in English]. C.E. Kenneth Mees. Reviewed by IU.N.Gorokhovskii. Zhur. nauch. i prikl. fot. i kin. 2 no.1:77 Ja-F '57. (MLRA 10:3)
(Photography) (Mees, Kenneth C.E.)

GOROKHOVSKIY, Yu.N.

GOROKHOVSKIY, Yu.N.; GRATSIANSKAYA, Z.I.

Research on the optical sensitizing of photographic emulsions. Part 7: Influence of the color-forming components of color development on the process of optical sensitizing. Zhur.nauchn.i prikl.fot.i kin. 2 no.6:421-431 N-D '57. (MIRA 10:12)

1. Leningradskiy institut kinoinzhenerov.
(Color photography) (Photographic sensitometry)



GOROKHOVSKIY, Yu.N.

T.P. Kravets; on his 80th birthday. Usp. nauch. fot. vol.5:200-205 '57. (MLRA 10:6)
(Kravets, Torichan Pavlovich, 1876-)

GOROKHOVSKIY, YU. N.

AUTHORS: Gorokhovskiy, Yu. N., and Davydkin, I. M. 48-11-8/13

TITLE: Light-Dispersion-Indicatrix Which Becomes Apparent With Photographic Layers on a Transparent Base. (Indikatrisy rasseyaniya sveta proyavlennymi fotograficheskimi sloyami na prozrachnoy podlozhke).

PERIODICAL: Izvestiya AN SSSR Seriya Fizicheskaya, 1957, Vol. 21, Nr 11, pp. 1505-1516 (USSR).

ABSTRACT: This is a thorough investigation of the physical picture of light-dispersion by photographic blackening under various conditions and a calsulation of both the integral and effective optic densities of the blackening is carried out on the basis of the measured dispersion-indicatrix. A visual goniophotometer was constructed for measuring the dispersion-indicatrix. The spatial geometric distribution of the light dispersed by the blackened samples on the transparent base was measured by means of this appliance. The obtained indicatrix of light-dispersion by blackening made it possible to clear up the mode of dependence of the dispersion capacity of the blackening from its parameters. 1) Various photographic materials show a similar behavior with respect to the general character of light-dispersion, but two blackenings of the same

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Light-Dispersion-Indicatrix Which Becomes Apparent With Photographic Layers on a Transparent Base. 48-11-8/13

optic density show a remarkably different dispersion-indicatrix of their micro-graininess of various materials. 2) The light-dispersion by blackening which was obtained to a certain degree as a result of the occurrence of an effect of contrast increases with the optic density. 3) The light-dispersion by blackening with a given optic density is the greater the higher is the coefficient of the effect of contrast. - With the help of the dispersion-indicatrix the values of the integral optic densities of blackening were calculated and compared with the direct test. The dependence of the optic density of blackening on the solid angle of the receiver was determined. From that also the data on the practically admissible minimum dimensions of the solid angles of the receiver by measuring the integral optic density were obtained. There are lo figures, 1 table and 9 references, 5 of which are Slavic.

ASSOCIATION: Chair of General Photography and Technology of Film-Processing at the Leningrad Institute for Cinematographic Engineers (Kafedra obshchey fotografii i tekhnologii obrabotki plenki Leningradskogo instituta kinoinzhenerov).

AVAILABLE: Library of Congress.

Card 2/2

Gorokhovskiy, Yu. N.

AUTHORS: Gorokhovskiy, Yu. N., Davydkin, I. M. 48-11-9/13

TITLE: Numerical Evaluation of the Dispersion of the Light With Photographic Blackenings on a Transparent Carrier (Chislennaya otsenka svetorasseyaniya v fotograficheskikh pocherneniyakh na prozrachnoy podlozhke)

PERIODICAL: Izvestiya AN SSSR Seriya Fizicheskaya, 1957, Vol. 21, Nr 11, pp. 1517-1527 (USSR)

ABSTRACT: This is the continuation of a work of the author in the same periodical, page 1505. After the indicatrix of the dispersion of the light by photographic blackening, the analysis of the phenomenon of Maksimovich-Callier(Kall'ye) was carried out and it was clarified that the Callier coefficient cannot serve as exact characteristic of the dispersing properties of the blackening and that this coefficient gives no possibility of evaluating the distribution of the light which penetrated the blackening. For characterizing the dispersing properties of the blackenings, a new parameter q,- the dispersion-factor, - is proposed, which characterizes the part of the dispersed light of the whole beam which passed through the blackening. A second posibility for this characterization is mentioned, viz.: The difference between the regular and integral (or diffuse) optical density which determines only the

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Numerical Evaluation of the Dispersion of the Light With Photographic Blackenings on a Transparent Carrier. 48-11-9/13

dispersing properties of the blackenings. It is shown that the extent of the regular optic density requires a correction which takes account of the dispersed light of the directioned bundle passing through. It is pointed out that it is useful for this reason to differ the real from the apparently regular desity of the blackening. The conception of an angle of dispersion was suggested for the relative evaluation of the dispersing blackening properties nad for the indicatrix-form of the dispersion of blackening. There are 8 figures, 2 tables, and 13 references, 7 of which are Slavic.

ASSOCIATION: Chair of General Photography and Technology of Film Processing at Leningrade Institute for Cinematographic Engineers (Kafedra obshchey fotografii i tekhnologii obrabotki plenki Leningradskogo instituta kinoinzhenerov)

AVAILABLE: Library of Congress

Card 2/2

GOROKHOVSKIY, Yu. N.

Photographic education in the higher institutions of learning; education in the chemistry of photography in the Leningrad Institute of Motion-Picture Engineers. Zhur. nauch. i prikl. fot. i kin. 3 no.1:65-68 Ja-F '58. (MIRA 11:2)
(Photography--Study and teaching)
(Cinematography--Study and teaching)

AUTHOR: Gorokhovskiy, Yu.N., Davydkin, I.M. SOV/77-3-6-7/15

TITLE: Investigations of the Densitometry of Blackening
(Issledovaniya po densitometrii pocherneniy)
I. The Light Scattering by Developed Photographic Films
(Rasseyaniye sveta proyavlennymi fotograficheskimi plenkami)

PERIODICAL: Zhurnal nauchnoy i prikladnoy fotografii i kinematografii, 1958, Vol 3, Nr 6, pp 430-439 (USSR)

ABSTRACT: This first part of the article considers the physical aspect of the dispersion of light by photographic densities on black-and-white photographic layers on a transparent support and the calculation of the integral and effective optical densities of the photographic densities based on the measured indicatrices of the dispersion. Forty-three samples of photographic densities were produced on two SZG Agfa products, the highly sensitive Aerorapid film and the phototechnical Printon K film of low sensitivity. The samples had different optical scattering densities and different contrast coefficients due to developing in different developers. The optical scattering densities were measured with a carefully calibrated IFT-11 wedge densitometer, the integral optical densities with a photometric integrator. For measuring of the scattering in-

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Investigations of the Densitometry of Blackening
I. The Light Scattering by Developed Photographic Films.

dicatrices, a visual wedge-type goniophotometer (Fig. 1) was devised and used in connection with a low-voltage STs-62 point lamp. The measuring results are presented in the polar system of coordinates in logarithmic scale. The obtained accuracy in determination of the brightness by means of the goniophotometer was about ± 5 % or ± 0.02 by logarithmic scale. Subsequent evaluation comprised scattering indicatrices with respect to brightness of certain blackening samples on Aerorapid film in developer Nr 1 according to GOST 2817-50, gamma = 1.5 (Fig. 2 and 3), in developer Nr 2 according to GOST and in developer Size III A. Comparative figures and calculating results for the experimentally determined scattering and ingral densities of the blackenings are presented (Table 1) and the curves of the dependence of the effective optical densities of the blackenings on the solid angle of the receiver shown(Fig. 5). Further graphic evaluations are

Investigations of the Densitometry of Blackening SOV/77-3-6-7/15
I. The Light Scattering by Developed Photographic Films.

devoted to conditions of different values of gamma (Fig. 7). There are 2 diagrams, 6 graphs, 3 tables, and 11 references, 7 of which are Soviet, 1 American, 1 French, and 2 German.

ASSOCIATION: Leningradskiy institut kinoinzhenerov (The Leningrad Institute of Motion Picture Engineers)

Card 3/3

VANYUKOV, M.P.; GOROKHOVSKIY, Yu.N.

Conference on high-speed photography and cinematography.
Usp. fiz. nauk 64 no.4:790-795 Ap '58. (MIRA 11:7)
(Photography, High-speed) (Cinematography--Scientific applications)

KRAVETS, Torichan Pavlovich [deceased]; SMIRNOV, V.I., akademik, red.; TERENIN, A.N., akademik, red.; GOROKHOVSKIY, Yu.N., red.; NEPORENT, B.S., red.; SAVOST'YANOVA, M.V., red.; TOPORETS, A.S., red.; FAYERMAN, G.P., red.; SAZONOV, L.S., red.izd-va; ZENDEL', M.Ye., tekhn.red.

[Works in physics] Trudy po fizike. Moskva, Izd-vo Akad.nauk SSSR, 1959. 339 p. (MIRA 12:8)

1. Chlen-korrespondent AN SSSR (for Kravets).
(Kravets, Torichan Pavlovich, 1876-1955) (Physics)

GOROKHOVSKIY, Yu.N.

On the occasion of S.G.Bogdanov's 60th birthday. Zhur.nauch. i prikl.fot. i kin. 4 no.1:77 Ja-F '59. (MIRA 12:2)
(Bogdanov, Sergei Gavrilovich, 1898-)

23(3,5)
SOV/77-4-4-5/19

AUTHOR: Vifanskiy, Yu.K., and Gorokhovskiy, Yu.N.

TITLE: Investigation on the Ability of Photographic Materials to Reproduce Small Optic Image Elements

PERIODICAL: Zhurnal nauchnoy i prikladnoy fotografii i kinematografii, 1959, Vol 4, Nr 4, pp 276-284 (USSR)

ABSTRACT: The authors present methods and results of determining the distinguishing power of photographic material. For numerical evaluation of treshold dimensions of double measured details of different forms the authors use a quantity which is called "distinguishing power of photographic material". (Not to be mistaken for the quantity of F.L. Burmistrov, ref 6, which characterizes the photographic reproduction of isolated thin lines). The dimensionality of this quantity coincides with the dimensionality of the solving power (L^{-1}). The measuring units also coincide (mm^{-1}). The "distinguishing power" is marked by the Roman letter C (in Latin "cognosco"). For the numerical evaluation of the "distinguishing power of photographic materials" a

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Investigation on the Ability of Photographic Materials to Reproduce Small Optic Image Elements

special test was elaborated (Figure 1). It consists of 24 lines of figures of different shapes. Every line contains 20 figures. The dimensions of the figures change from line to line by geometric progression by 11%. The size of the figures in the first line of the test is 1.50 mm, in the 24.line only 0.13 mm. Tests were made for the following five contrasts (under "contrast" $K_t = \frac{Bmax - Bmin}{B_{max}}$) : 1 (absolute contrast), 0.71 - 0.66, 0.36 - 0.34, 0.13, 0.07. Eight black and white photographic materials were tested (domestic and imported). The dependency of the solving power of photographic material from the object contrast at any contrast factors follows the formula of H. Frieser [Ref 8]. The results of three tested materials are given by the graphs in figure 7. These results testify the existence of a relation between the "distinguishing power" (C) and the solving power

Investigation on the Ability of Photographic Materials to Reproduce Small Optic Image Elements

(R). For statistic exploitation of this problem more than 32,000 tests of photographic images of the figures have been made. The results are given in figure 8. The recognition factor M (in %) is given for every kind of figure and the absolute number of tests (N) for the figure. The relative area of the figure is also given by number (6). The area of the square, in which the figures are located, gets the number 100. The optimal density and exposition for the "distinguishing power" is a little higher than for the solving power. For this study the works of Mauge [Ref 2], Istomin [Ref 3], Perrin and Altman [Ref 4] and Barrows [Ref 5] were used. V.V. Levina and A.N. Tikhonov participated in this study. There are 2 diagrams, 6 graphs, 1 table and 8 references, 4 of which are Soviet 2 English, 1 German and 1 French.

SOV/77-4-4-5/19

Investigation on the Ability of Photographic Materials to Reproduce Small Optic Image Elements

ASSOCIATION: Gosudarstvennyy opticheskiy institut imeni S.I. Vavilova (State Institute for Optics imeni S.I. Vavilov)

SUBMITTED: October 9, 1957

Card 4/4

SOV/77-4-4-17/19

AUTHOR: Gorokhovskiy, Yu.N.

TITLE: Scientific Discussion on Sensitometry of Black and White and Colored Photographic Materials

PERIODICAL: Zhurnal nauchnoy i prikladnoy fotografii i kinematografii, 1959, Vol 4, Nr 4, pp 317-319 (USSR)

ABSTRACT: From April 21-23, 1959, the extended plenum of the Komissii po nauchnoy fotografii i kinematografii AN SSSR (Commission for Scientific Photography and Cinematography AS USSR) convened in Leningrad. A discussion on sensitometry of black and white and colored photographic materials took place. About 120 people, representing 46 scientific and industrial organizations in Leningrad, Moscow, Kazan', Kiyev, Vilnius and other places, participated. The discussion concentrated on three problems: 1) Numerical expressions of photographical photosensitivity; 2) New sensitometric installations; 3) Standardization of sensitometric methods. The plenum of the Commission was opened with an introductory speech by their

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SOV/77-4-4-17/19

Scientific Discussion on Sensitometry of Black and White and Colored Photographic Materials

Chairman K.V. Chibisov, Corresponding Member of AS USSR. More than 20 reports were heard at the conference.

Card 2/2

GOROKHOVSKIY, Yuriy Nikolayevich; ORLOVA, L.I., red.; POL'SKAYA, R.G., tekhn.red.

[Spectral investigations of the photographic process] Spektral'nye issledovaniia fotograficheskogo protsessa. Moskva, Gos.izd-vo fiziko-matem.lit-ry, 1960. 391 p. (MIRA 14:1)
(Photographic sensitometry) (Spectrum analysis)
(Color photography)

VIFANSKIY, Yu.K.; GOROKHOVSKIY, Yu.N.; KHRUL'KOVA, N.D.

Investigating the capacity of photographic materials for reproducing small details of the optical image. Part 3: Effect of the positive printing conditions on the reproduction of two-dimensional objects. Zhur.nauch.i prikl. fot.i kin. 5 no.1:15-19 Ja-F '60. (MIRA 13:5)

1. Gosudarstvennyy opticheskiy institut imeni S.I.Vavilova.
(Photographic sensitometry)

GOROKHOVSKIY, Yu.N.

Sixtieth birthday of I.A. Chernyi. Zhur. nauch. i prikl. fot. i kin. 6 no.1:78 Ja-F '61. (MIRA 14:3)
(Chernyi, Igor' Andreevich, 1900 -)

GOROKHOVSKIY, Yu.N.; LEVINA, V.V.; POPOVA, L.B.

Using the "diatest" method for testing color printing papers. Zhur.nauch.i prikl.fot. i kin. 6 no.4:289-293 Jl-Ag '61. (MIRA 14:11)

1. Gosudarstvennyy opticheskiy institut imeni S.I. Vavilova.
(Color photography--Printing papers)

VIFANSKIY, Yu.K.; GOROKHOVSKIY, Yu.N.

Numerical evaluation of the sharpness of the photographic image. Zhur.nauch.i prikl.fot. i kin. 6 no.5:382-385 S-O '61. (MIRA 14:9)

1. Gosudarstvennyy opticheskiy institut imeni S.I. Vavilova.
(Photography--Testing)
(Photographic sensitometry)

S/058/63/000/003/053/104
A062/A101

AUTHORS: Barro, M. I., Gorokhovskiy, Yu. N., Gratsianskaya, Z. I., Pruss, P. Kh.

TITLE: Dependence of the resolving power of multilayer color films on the disposition sequence of the layers

PERIODICAL: Referativnyy zhurnal, Fizika, no. 3, 1963, 88, abstract 3D594 ("Uspekhi nauchn. fotogr.", 1962, v. 8, 21 - 28)

TEXT: A concept is introduced for a resolvometric balancing of three elementary images in the final positive color image. Requirements are formulated for the structure of a pair of multilayer films forming a set, in which the resulting image can attain the highest resolution. A study was made on the resolvometric properties of 7 sets of multilayer films with different sequences of disposition of the layers, and it is shown that fulfillment of the presented demands brings about effectively a higher resolution and a resolvometric balancing of the set. The resolving and distinguishing powers of two negative multilayer materials and the positive images obtained from them are compared. It is

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Dependence of the resolving power of...

shown that these quantities are approximately proportional to each other and that, consequently, the quality of geometric reproduction of two-dimensional color objects can be, at least in a first approximation, characterized by the magnitude of the resolving power.

[Abstracter's note: Complete translation]

GOROKHOVSKIY, Yu.N.

Effect of color developing conditions on the light sensitivity of multilayer films. Usp. nauch. fot. 8:72-78 '62.
(MIRA 17:7)

S/058/63/000/002/033/070
A062/A101

AUTHOR: Adashev, N. P., Gorokhovskiy, Yu. N.

TITLE: Statistical analysis of densitometric properties of color motion-picture images

PERIODICAL: Referativnyy zhurnal, Fizika, no. 2, 1963, 100 - 101, abstract 2D649 ("Uspekhi nauchn. fotogr.", 1962, v. 8, 134 - 145)

TEXT: Spectrodensimetric measurements were carried out on image elements of negative and positive motion-picture frames, and the surface concentrations of the dyes, forming the images, were determined. Distribution curves of the frames were plotted for the minimum and maximum surface concentrations and their intervals; on the characteristic curves of the negative and positive films the portions were found that are utilized for forming the fields - the brightest and the darkest for a given dye. An analysis was carried out in the entire mass of the investigated negatives and positives as well as differentially on the films and on the subject groups of the photograph objects. It is established that for color motion-picture negatives and positives it is typical to utilize not only the rectilinear but also the curvilinear portions of the characteristic curves of the elementary layers of

Card 1/2

Statistical analysis of...

S/058/63/000/002/033/070
A062/A101

a film. It is made clear that the exposure conditions for all aspects of motion--picture photographs are still insufficiently strictly observed, in particular in outdoor photographs; the exposures are chosen with sufficient precision only for images of the human face and for snow. It is admitted that the photographic width of the present day negative films is still insufficient. Practically this width is often reduced as a result of the fact that the spectral composition of the photograph illumination does not correspond to the composition of the light for which the film balancing was carried out. The photographic width of the present day positive color films is sufficient for reproduction of all the important subject elements of an image. However, the often observed utilization of the upper portions of the characteristic curves of positive films results in obtaining the dark elements of the screen image either with a distortion of the color tone or as black. It may be admitted that the gradation distortions practically play a minor role in comparison with the color separation distortions.

[Abstracter's note: Complete translation]

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S/058/63/000/002/032/070
A062/A101

AUTHORS: Gorokhovskiy, Yu. N., Popova, K. B.

TITLE: Dependence of color reproduction on the spectral distribution of the light sensitivity of the layers of negative multilayer films

PERIODICAL: Referativnyy zhurnal, Fizika, no. 2, 1963, 100, abstract 2D648 ("Uspekhi nauchn. fotogr.", 1962, v. 8, 146 - 154)

TEXT: A study was made of the influence of the width of the spectral regions of light sensitivity of the elementary layers of a negative multilayer film on the quality of color reproduction when photographing multicolor objects typical as to the character of their spectral reflection capability. It is shown that under conditions of the usual negative-positive color photography process, using dyes with appreciable parasitic absorption, the change within wide limits of the width of the sensitivity regions of the layers does not practically affect the quality of reproduction for the whole set of colors of the objects, although for separate elements of the objects some fluctuations of the chromaticity take place. Only for very wide sensitivity zones, when the degree of their mutual overlapping attains 20% and more, a substantial deterioration of the photographic reproduction of the

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Dependence of color reproduction on...

majority of colors is observed. Thus, under conditions of the normal color photography process on multilayer materials, the fact is confirmed, as previously predicted for other processes of color reproduction, that the quality of color reproduction is determined by the spectrophotometric qualities of the formed dyes in a considerably larger measure than by the spectral distribution of the light sensitivity of the triad of negative materials utilized for color separation.

[Abstracter's note: Complete translation]

S/058/63/000/001/068/120
A160/A101

AUTHORS: Gorokhovskiy, Yu. N., Levina, V. V.

TITLE: The rational light-sensitivity criterion of black-and-white and color photographic negative materials

PERIODICAL: Referativnyy zhurnal, Fizika, no. 1, 1963, 86 - 87, abstract 1D623 ("Uspekhi nauchn. fotogr.", 1962, 8, 179 - 194)

TEXT: Investigated are the various light-sensitivity criteria of black-and-white and color photographic materials, and also the arguments which are in favor of accepting or rejecting these or those photographic materials. In view of the differences of opinion to be found in the literature regarding this problem, experimental investigations were conducted of the practical light-sensitivity of various materials. The practical light-sensitivity was compared with the data of the sensitometric light-sensitivity. The latter was determined when developing up to a given gamma by three criteria (D = 0.1, 0.2, and 0.85 above the fog) for black-and-white materials, and by four criteria (C_n^1 = 0.1, 0.2, 0.85 above the fog for the single colors, and D_{eff} = 0.85 above the fog for the

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field as a whole) for multi-layer color materials. The practical light-sensitivity was determined from the positive pictures obtained by filming and photographing a large number of various-character subject matters according to the standard. The data obtained for 10 black-and-white and 11 color negative films of various sensitivity reveal that all investigated criteria are exponometrically equivalent, and that, as a result, the selection of any of them must be determined by considerations differing from those investigated in the literature, and mainly by metrological expediency.

A. Kartuzhanskiy

[Abstracter's note: Complete translation]

S/058/63/000/002/028/070
A062/A101

AUTHORS: Gorokhovskiy, Yu. N., Pekarskaya, G. L.

TITLE: Universal densitometer of the differential type for black-and-white and color fields

PERIODICAL: Referativnyy zhurnal, Fizika, no. 2, 1963, 98, abstract 2D637 ("Uspekhi nauchn. fotogr.", 1962, v. 8, 248 - 255)

TEXT: On the basis of the series produced wedge type photoelectric densitometer ДФЭ-10 (DFE-10) a universal densitometer is designed for black-and-white and color photomaterials. With this purpose in view, the selenium photoelements have been replaced by a photoelectric amplifier ФЭУ-32 (FEU-32) and grey filters have been introduced for optical shunting of the main color beam and widening the range of measured densities; also zonal filters have been introduced for measuring zonal optical densities of colored materials. The general aspect of the device and its optical schematic diagram are presented. Results are given of tests of the device both as a color and a black-and-white densitometer. The device allows to measure integrated optical densities of photographic blackenings up to 0.6 and

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Universal densitometer of the differential type for...

zonal densities of color fields up to 4.0 with an error of 2.5%. There are 26 references.

V. Sintsov

[Abstracter's note: Complete translation]

Card 2/2

GOROKHOVSKIY, Yu.N.

Teaching of photography in the institutions of higher learning. Part 4: Organizing the training of specialists in engineering photography in the Leningrad Institute of Motion-Picture Engineering. Zhur.nauch.i prikl.fot.i kin. 7 no.1:76-77 Ja-F '62. (MIRA 15:3)

(Photography--Study and teaching)

VIFANSKIY, Yu.K.; GOROKHOVSKIY, Yu.N.

High speed recording michrophotometer ard its application. Zhur.nauch. i prikl.fto. i kin. 7 no.3:195-201 My-Je '62. (MIRA 15:6)

1. Gosudarstvennyy opticheskiy institut imeni S.I.Vavilova.
(Michrophotometer)

VIFANSKIY, Yu.K.; GOROKHOVSKIY, Yu.N.

Studying the physical sharpness of the photographic layer. Part 1: Methods of plotting the boundary curves and their evaluation. Zhur.nauch.i prikl.fot.i kin. 7 no.4:290-296 Jl-Ag '62. (MIRA 15:8)

1. Gosudarstvennyy opticheskiy institut imeni S.I.Vavilova. (Photometry)

VIFANSKIY, Yu.K.; GOROKHOVSKIY, Yu.N.

Investigating the physical sharpness of the photographic image. Part 2: Effect of the conditions of the carrying out of the black-and-white photographic process on the physical sharpness. Zhur.nauch.i prikl.fot.i kin. 7 no.5:369-379 S-O '62. (MIRA 15:11)

1. Gosudarstvennyy opticheskiy institut imeni S.I.Vavilova.
(Photography—Testing)

GOROKHOVSKIY, Yu.N.; OVECHKIS, N.S.

Discussion on the sensitivity criterion of all-purpose photographic materials. Zhur.nauch.i prikl.fot.i kin. 7 no.6:472-474 N-D '62. (MIRA 15:12)
(Photographic sensitometry)

GOROKHOVSKIY, Yu.N.; POPOVA, K.B.

Effect of the spectrum distribution of the sensitivity of the layers of negative multilayer films on color reproduction. Usp. nauch. fot. 8:146-154 '62. (MIRA 17:7)

GOROKHOVSKIY, Yuriy Nikolayevich; LEVENBERG, Tat'yana Mikhaylovna; KRAUSH, L.Ya., spets. red.; TELESHEV, A.N., red.; BACHEK, R.P., tekhn. red.

[General sensitometry; theory and practice] Obshchaia sensitometriia; teoriia i praktika. Moskva, Izd-vo "Iskusstvo," 1963. 301 p. (MIRA 16:10)
(Photographic sensitometry)

GOROKHOVSKIY, Yu.N.

Defense of dissertations in Leningrad on the theory of the photographic process and photochemical technology. Zhur. nauch. i prikl. fot. i kin. 8 no.3:244-245 My-Je '63. (MIRA 16:6)

(Dissertations, Academic—Abstracts)
(Photography)

GOROKHOVSKIY, Yu.N.; TIKHONOV, A.N.

F.L. Burmistrov; on the occasion of his 75th birthday.
Zhur. nauch. i prikl. fot. i kin. 8 no.6:475 N-D '63.
(MIRA 17:1)

ACCESSION NR: AP3013644 S/0077/63/008/006/0437/0446

AUTHORS: Baranova, V. P.; Gorokhovskiy, Yu. N.

TITLE: Glass light filters for sensitometric light sources

SOURCE: Zhurnal nauchnoy i prikład. fotografii i kinemat., v. 8, no. 6, 1963, 437-446

TOPIC TAGS: light meter, sensitometric light source, sensitometric light source filter, glass light filter, glass sensitometric light source filter, glass sensitometric light filter, light filter, spectral energy distribution, light source temperature, artificial sunlight, artificial sky light, colored glass spectral absorption, PS5 filter plate, PS14 filter plate, SZS7 filter plate, SZS8 filter plate

ABSTRACT: The results of experiments on five sensitometer glass light filters have been reported. The tests were carried out in front of incandescent lamps with T = 2850K reproducing radiation temperatures corresponding to T = 3200K, T = 3700K, mean diurnal light intensity, cosmic solar radiation and mean sky light intensity (T = 15000K). The general visual transmission coefficient of each light filter is calculated, and the results are plotted and tabulated as nominal absorption curves,

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ACCESSION NR: AP3013644

maximum possible departures from this nominal distribution, and curves of relative spectral distribution of energy. It is found that all five light filters tested show an increased absorption rate in the ultraviolet compared to standard specification. Orig. art. has: 7 figures, 5 tables, and 3 formulas.

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

SUBMITTED: 27Oct62 DATE ACQ: 02Dec63 ENCL: 00

SUB CODE: PH NO REF SOV: 008 OTHER: 004

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GOROKHOVSKIY, Yu.N.; SHCHERBAKOVSKIY, Z.S.

Microsensitometric testing of color multilayer photographic materials. Zhur. nauch. i prikl. fot. i kin. 9 no.5:341-351 S-O '64. (MIRA 17:10)

1. Gosudarstvennyy opticheskiy institut imeni Vavilova, Leningrad.

GOROKHOVSKIY, Yu.N.; SHCHERBAKOVSKIY, Z.S.

Effect of color d velopment on the microsensitometric properties of spectrozonal two-layer films. Zhur.nauch. i prikl.fot. i kin. 9 no.6:466-469 N-D '64. (MIRA 18:1)

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

VIFANSKIY, Yu.K.; GOROKHOVSKIY, Yu.N.

Marginal curves and sharpness of black-and-white photographic images. [illegible]
Usp.nauch.fot. 10:58-67 '64. (MIRA 17:10)

GOROKHOVSKIY, Yu.N.; LOZNEVOY, G.I.

Marginal curves and sharpness of color photographic images. Usp.nauch. fot. 10:68-74 '64. (MIRA 17:10)

BARANOVA, V.P.; GOROKHOVSKIY, Yu.N.

Analyzing the photometric equivalent of the blackening. Usp.nauch.fot. 10:181-194 '64. (MIRA 17:10)

GOROKHOVSKIY, Yu.N.; PRUSS, P.Kh.

Analyzing the relation between the resolving power and the macrograininess of black-and-white photographic materials. Usp.nauch.fot. 10:248-252 '64. (MIRA 17:10)

GOROKHOVSKIY, Yu.N.

Exhibition of the History of Photography. Zhur.nauch.i prikl.fot. i kin. 10 no.3:234-238 My-Je '65.
(MIRA 18:11)

L 9542-66 EWT(1)/T IJP(c)

ACC NR: AP5028148 SOURCE CODE: UR/0077/65/010/006/0469/0471

AUTHOR: Gorokhovskiy, Yu. N.

ORG: none

TITLE: XVII Conference on Scientific Photography

SOURCE: Zhurnal nauchnoy i prikladnoy fotografii i kinematografii, v. 10, no. 6, 1965, 469-471

TOPIC TAGS: motion picture photography, photography, film processing, aerial photography, scientific conference

ABSTRACT: The XVII conference on scientific photography, held in Moscow from June 1 to 4 1965, was devoted to the chemical-photographic processing of light-sensitive materials. The conference was organized by the Commission for the Chemistry of Photographic Processes, AN SSSR (Komissiya po khimii fotograficheskikh protsessov AN SSSR) together with the All-Union Scientific-Research Cinematography Institute (Vsesoyuznyy nauchno-issledovatel'skiy kinofotoinstitut) and the Section for Science and Engineering of the Cinematographic Workers Trade Union of the SSSR (Sektsiya nauki i tekhniki Soyuza rabotnikov kinematografii SSSR). Topics presented covered: 1) the kinetics and mechanism of photographic development; 2) developers and their properties; 3) developer composition and the results of development; 4) color and tanning development; 5) fast film processing; 6) aerial film processing technology and 7) motion picture film processing technology. Representatives of 13 organizations

Card 1/2 UDC 77.01:006.3

L 9542-66
ACC NR: AP5028148 C

presented more than 40 papers by 60 authors to an audience of 400, representing 70 institutes and enterprises of the Soviet Union. The article gives brief summaries of most of the articles. All papers will be published in volume 13 of Uspekhi nauchnoy fotografii. [08]

SUB CODE: ES, GO/ SUBM DATE: none/ ATD PRESS: 4157

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L 13505-65 EWT(1)/EWG(v) Pe-5/Pae-2 GW

ACCESSION NR: AR3004147 S/0272/63/000/006/0109/0109

SOURCE: RZh. Metrologiya i izmer, tekhn. Otd. vy*p., Abs. 6.32.894

AUTHOR: Gorokhskaya, N. N.; Podol'skaya, E. L.

TITLE: An ideal black body model for calibrating actinometric instruments

CITED SOURCE: Nauchn. soobshch. In-t geol. i geogr. AN LitSSR, v. 13, 1962, 5-12

TOPIC TAGS: actinometric instrument calibration, ideal black body, low temperature black body, De Vos successive approximation, cavity temperature gradient

TRANSLATION: A low-temperature 'ideal black body' is calculated by using the De Vos successive approximations technique for hemispheric radiation, with consideration given to "aperture" emission. The described black body model

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L 18585-65
ACCESSION NR: AR3004147

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[illegible] is made of technical copper and encircled by a galvanized iron jacket. [illegible] tempered temperature circulates between the [illegible] and the jacket. [illegible] ment to be calibrated is clamped in a special holder and inserted [illegible] of the black body to such a distance that the receiving surface [illegible] on the same level as the leading wall of the black body. Measurements [illegible] that the maximal temperature difference at extreme points of the ca- [illegible] reached 1.5C at a 40C variation between the black body and the [illegible] atmosphere. This corresponds to a temperature gradient along [illegible] surface of about 1.23C/cm. Bibl. with 12 titles. 2 illustrations.

SUB CODE: OP, IE ENCL: 00

Card 2/2

GOROKHVODATSKAYA, R.I

18.2000

65689

SOV/136-59-10-6/18

AUTHORS: Getskin, L.S., Batyuk, A.G., Tsyb, P.P., Gorokhvodatskaya, R.I., Savrayev, V.P., Zinov'yev, V.P., Fel'dman, V.G., Bratchik, A.V. and Polulyakh, V.P.

TITLE: Mastering the Process of Sulphatizing Lead Dusts

PERIODICAL: Tsvetnyye metally, 1959, Nr 10, pp 35-42 (USSR)

ABSTRACT: The method of sulphatizing poly-metallic ores and concentrates was first developed in the Soviet Union by Professor A.Ye.Makovetskdy in 1923. Since then, a great deal of investigational work has been done in this connection. One variant of this method, so-called Makovetskdy-Gintsvetmet process, consisting of mixing the material with diluted (60%) sulphuric acid and treating the pulp in a cylindrical sulphatizator at 200°C, was put to test at a pilot plant (designed to treat 3 t of sulphide concentrate per day) at Ordzhonikidze. However, even after three years' operation, no means have been found to overcome serious difficulties associated with the formation of crust in the sulphatizator and with rapid corrosion of the equipment and of the gas system, due to the action of hot gases containing water and acid vapours. Work on this problem was resumed at VNIITsvetmet in 1955

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Mastering the Process of Sulphatizing Lead Dusts

and, as a result, a modified method was developed which, by now, has also been tested on a semi-industrial scale. The main difference between the new and the original method is the application of concentrated sulphuric acid which could not be used previously, owing to the fact that cementation of the dense pulp took place in the equipment used in the old process, ie in the mixer, re-pulper and sulphatizator. This difficulty was overcome by nodulizing the powder materials mixed with concentrated sulphuric acid in a pan granulator. Owing to the exothermic nature of the reactions taking place during the nodulizing process, the nodule temperature rises to 200°C or even higher and this ensures rapid distillation of chlorine and fluorine and accelerates sulphatization of the pulp components. The subsequent heating of the granules to 350°C (necessary to distill off arsenic and to complete the sulphatizing reactions) is carried out in a reactor, using the fluidized bed principle (Ref 1). The preliminary investigation was carried out in a large laboratory plant in which dusts from various lead and copper smelting plants were treated. On the basis of the

Mastering the Process of Sulphatizing Lead Dusts

results of this work, the staff of the Ust'-Kamenogorskiy Lead-Tin Combine in cooperation with VNIITsvetmet, designed and constructed a large pilot plant capable of treating 10 t of lead-bearing dusts per day. Its main components, ie the granulator shown diagrammatically in Fig 1 and the fluidized bed reactor illustrated in Fig 2, were constructed in the Combine workshops. The granulator, driven by a 14 kW electric motor, is equipped with a pan 1500 mm diameter and 250 mm deep, the axis of which is inclined to the horizontal at an angle of 30 to 60° and which rotates at the rate of 8 to 14 rev/min. Gases evolved during the process are removed through an exhaust hood. The application of concentrated sulphuric acid made it possible to use mild steel as the constructional material of the granulator, the inlet and outlet pipes and the ventilating system. The reactor shell (Fig 2) is also made of steel, lined inside with a single layer of a refractory brick; the active area of the hearth is 0.75 m^2, the height of the fluidized bed, 105 cm, the total height of the reactor being 3.5 m. The final product obtained in the fluidized bed reactor is discharged into a

Mastering the Process of Sulphatizing Lead Dusts

stainless steel tank, from which it is pumped into mechanical agitators, where the sulphate product is leached out. The following are the main operations carried out in the hydro-metallurgical section: leaching out of the sulphate product, settling and washing the lead cake, precipitation of raw metals, removal of arsenic and iron from the solutions and extraction of cadmium. The lead dusts treated in the experimental pilot plant contained (%): 49.3 Pb, 16.3 Zn, 2.5 Cd, 0.5 Cu, 1.0 Fe, 5.3 As, 1.0 Cl and 0.2 F. The consumption of concentrated sulphuric acid in nodulizing this product varied between 55 and 62% of the weight of the dust which corresponded to 110% of the theoretically required quantity. (The authors point out here that if sulphuric acid of the concentration less than 92% is used, the nodulizing process is adversely affected, granules of low mechanical strengths are obtained, the quantity of distilled off chlorine, fluorine and arsenic is reduced and the output of the granulator is reduced.) With the granulator inclined at 55° and operating at 8.3 rev/min, 10 to 15 t of the dust was treated per day, the obtained

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Mastering the Process of Sulphatizing Lead Dusts

product containing 80% of the -5 mm fraction. The proportion of dust carried away by the exhaust gases was comparatively small and amounted to 1% only; the quantity of gases evolved during the process was also small, owing to the low chlorine, fluorine and arsenic contents in the dust; the H_2S content in the gases varied between zero and 9 mg/m^3. The optimum temperature for sulphatizing the granules in the fluidized bed reactor was 350°C. The capacity of the reactor was 12 to 14 t/m^2/24 hr, the air consumption being 3000 m^3/hr. The granules remained in the reactor for more than two hours; however, it was found that the time necessary for the completion of the sulphatizing reaction and for the removal of 90% of arsenic, is approximately 45 min; consequently, it can be assumed that the productivity of the reactor could be increased, whereby its specific air consumption would be reduced. The solutions (including those obtained during washing and filtering the lead cake) resultant from the water leach of the sulphate product, contained (g/l): 37.9 Zn, 6.5 Cd; the washed lead cake contained (%): 0.52 Zn, 0.16 Cd, 64.3 Pb;

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Mastering the Process of Sulphatizing Lead Dusts

97% Zn and 95% Cd present in the dust was recovered in the solution; the recovery of Zn, Cd and Pb in the lead cake was 2.4, 4.8 and 98% respectively; the recovery of raw metals amounted to 74 to 93%; 80 to 90% arsenic was distilled off during the sulphatizing treatment; 80 to 85% chlorine and fluorine and 60 to 75% selenium was distilled off during both nodulizing and sulphatizing processes. After describing the dust-collecting process and various controlling equipment, the authors state their conclusions. (1) Difficulties experienced in the application of the sulphatizing process on an industrial scale have been overcome by using concentrated sulphuric acid and by nodulizing the pulp in a rotary pan granulator. (2) No signs of corrosion of the granulator, made of mild steel, have been observed during the test period; both the granulator and the fluidized bed reactor have been working continuously without any stoppages and the working conditions have been satisfactory. (3) The process, as outlined in the present paper, has been found to be very efficient regarding the degree of both the recovery of rare and non-ferrous metals present in the dust and the

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removal of the volatile components. (4) A necessary condition for ensuring efficient purification of the gases leaving the fluidized bed reactor is lowering the temperature of the gases to 25 to 30°C and the application of a wet system of dust collection. To comply with the sanitary regulations regarding the arsenic content in the exhaust gases, a supplementary cleaning operation in a wet electro-filter is necessary. (5) The application of the sulphatizing process for treating lead dust provides a convenient means of utilizing this complex material and can be recommended for adoption in all the lead plants in the Soviet Union. There are 2 figures, 1 table and 1 Soviet reference.

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AUTHORS: Plotnikov, V. I., Gorokhvodatskaya, R. I., Tsyb, P. P.

TITLE: Co-precipitation of indium with sulfides of some metals in sulfide-alkaline media

PERIODICAL: Referativnyy zhurnal, Metallurgiya, no. 2, 1963, 15, abstract 2K84 ("Sb. tr. Vses. n.-i. gornometallurg. in-t tsvetn. met.", 1962, no. 7, 289 - 295)

TEXT: To a solution containing In chlorides and the solution of another test metal, an excess of the Na_2S solution was added and filled up with water up to 100 ml. The mixture was stirred at a speed of 250 rpm, the precipitate was separated by centrifuging. The amount of In remaining in the solid phase was calculated from the radioactive aliquot portion of the solution. An In^{114} radioisotope was used. It was established that in the Na_2S solution at a concentration as high as 1 n. and more, In is fully transferred into the solution. In the presence of Cu, Cd and Zn, considerable co-precipitation of In with sulfides of these metals takes place. If the Zn content exceeds the In content, the latter

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is fully precipitated. A compound of composition $In_2S_3 \cdot 4ZnS$ is formed. With higher In concentration in the solution, the solubility of Cu and Cd sulfides in the Na_2S solution increases. In the joint presence of Fe and In in the solution, full Fe precipitation takes place if Na_2S solution is added, and In remains in the solution. This can be used for the separation of Fe and In. Sn as well as In do not co-precipitate with Fe_2S_3. Experiments were made on the precipitation of Sn with ZnS. It is shown that in the presence of ZnS, Sn and In can not be separated with the aid of Na_2S.

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[Abstracter's note: Complete translation]

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