Patented Sept. 20, 1932 1,878,684

UNITED STATES PATENT OFFICE

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ULTRA-VIOLET SENSITIVE PAPER

No Drawing. Application filed April 27, 1931. Serial No. 533,365.

This invention relates to photo-sensitive paper, the sensitivity of which lies chiefly in the ultra-violet.

It is desirable for certain actinometric purposes to have a light sensitive material which reacts to the near ultra-violet rays without being appreciably affected by the rest of the spectrum. Specifically, such a material may be used to demonstrate or dose the ultra-violet radiation of sunlight and of various artificial light sources, particularly those used therapeutically. It is an object of this invention to produce such a paper.

Under the influence of ultra-violet light, ortho-nitrobenzaldehyde undergoes molecular rearrangement to orth-nitroso-benzoic acid. By using a suitable indicator with ortho-nitro-benzaldehyde, I have been able to produce a paper which is sensitive primarily to the ultra-violet and which has very little sensitivity in the visible spectrum. On exposure to ultra-violet light this paper gives within a short time a visible color change showing the transformation or rearrangement just described.

A test paper suitable for determining the intensity of ultra-violet light may be made by dipping sheets of unsized paper into a solution of

Example I

Ortho-nitro-benzaldehyde	1 gram
Lacmoid	0.1 gram
Ethyl alcohol	100 c. c.

Under the influence of ultra-violet this paper changes from blue to pink, and an exposure of about one minute is normally sufficient to produce a good color change.

Another suitable formula is the following:

Example II

Ortho-nitro-benzaldehyde	1 gram
Brom-thymol blue	0.1 gram
Gelatin	0.1 gram
Acetone	100 c. c.

Papers may be made with such solutions by either dipping or floating the sheets of paper upon the solution, then withdrawing and drying. Sized paper will, as a rule, not be satisfactory for this purpose, the sizing materials in them interfering with the indicator. Unsized papers and those containing no fillers of any kind will be preferable. A suitable material is filter paper.

I have found that the sensitivity of a paper made in the manner just described has a sensivity lying almost entirely in the range of about 2480 to 3650 Ångstrom units, and is very little affected by visible light.

It will be understood that I do not limit myself by the particular examples given, especially so far as indicators are concerned, as it will be evident that other substances are available for producing a satisfactory result.

What I claim as my invention and desire to secure by Letters Patent of the United States is:

1. A photo-sensitive sheet sensitive primarily to the ultra-violet comprising ortho-nitro-benzaldehyde.

2. A photo-sensitive sheet sensitive primarily to the ultra-violet comprising ortho-nitro-benzaldehyde and an indicator.

3. A photo-sensitive sheet sensitive primarily to the ultra-violet comprising ortho-nitro-benzaldehyde and an indicator, which gives on exposure a visible color change.

Signed at Rochester, New York, this 20th day of April, 1931.

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