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PHOTOTHERMOGRAPHIC SUBSTANCE

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No Drawing. Original application June 29, 1954, Serial No. 440,308. Divided and this application March 8, 1955, Serial No. 496,356

2 Claims. (Cl. 95—7)

(Granted under Title 35, U. S. Code (1952), sec. 266)

The invention described herein may be manufactured and used by or for the Government for governmental purposes without the payment of any royalty thereon.

This invention relates to new photothermographic substances and to photographic layers sensitized with the new photothermographic substances.

The term "photothermographic" has been defined in U. S. Patent 2,095,839 as characterizing a material which after its exposure to light may be decomposed or modified by the action of heat differentially in accordance with the exposure to light. A photographic layer sensitized with such photothermographic substances is therefore, after exposure to light, developable by heat.

The present invention is based on the discovery that the silver salt of benzamidoxime is a valuable thermographic substance which will produce after exposure to light and subsequent to heat treatment a visible record of the incident light.

The invention will become more apparent from the description of an embodiment of the broad inventive idea.

Preparation of the silver salt of benzamidoxime:

$$C_6H_5C\begin{matrix}=NOH\\-NH_2\end{matrix}$$

Dissolve 2.72 grams of benzamidoxime in 50 ml. of water on a water bath. Cool to approximately 25° C. Dissolve separately 3.40 grams $AgNO_3$ in 10 ml. H_2O and add 3 ml. ammonium hydroxide (26 Bé.) so that any precipitate which may first form again dissolves; cool this second solution to 25° C. and dump it into the first solution. The precipitate now formed is filtered and washed with 20 ml. of water to which 0.6 ml. NH_3 (26 Bé.) was

added. The precipitate was dried over night in a vacuum desiccator over calcium chloride. The compound remains white after this period of time but decomposes rapidly even if stored in the dark.

Since the silver benzamidoxime is decomposed by water, it was necessary to disperse this salt in a vehicle of polystyrene dissolved in benzene. The mixture was coated on glass slides and dried over night in the dark. The slides were exposed to light and thermally developed at 70° C.

The photothermographic substances according to the invention may be dispersed in any suitable colloidal carrier to produce a photothermographic layer on one of the conventional supports. The material for the photographic layer may consist of gelatin, casein, agar, and various natural or synthetic high polymers such as the already mentioned polystyrene or phenol formaldehyde resins, vinyl resins, alkyd resins, etc. The support for the photographic layer may be a plate of any of the commonly used materials such as glass, paper, cellulose derivatives, etc.

As described in the parent application Serial No. 440,308, filed June 29, 1954, of which this application is a division, the light sensitivity of the silver salt of benzamidoxime will depend, like in the case of the silver salts described in the parent application, (*a*) on the variation ratio of silver nitrate to benzamidoxime, (*b*) on the type of gelatin used to disperse the silver salts, and (*c*) the variation in the ratio of silver salts to gelatin in the emulsions.

It will be obvious to those skilled in the art that a great many variations and combinations of the described processes are possible within the broad inventive idea as characterized in the appended claims.

What is claimed is:

1. A photothermographic element comprising a support and a photothermographic layer comprising an organic colloid carrier having dispersed therein the silver salt of benzamidoxime.

2. A photothermographic element comprising an organic colloid carrier having dispersed therein the silver salt of benzamidoxime.

References Cited in the file of this patent

UNITED STATES PATENTS

2,095,839 Sheppard et al. ---------- Oct. 12, 1937