EURASIAN JOURNAL OF ACADEMIC RESEARCH
Innovative Academy Research Support Center
UIF = 8.1 | SJIF = 5.685 www.in-academy.uz

# PRODUCTION OF PHOTOSENSITIVE DEVICES BY MONITORING AND CONTROLLING THE PARAMETRES OF SEMICONDUCTOR STRUCTURES

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https://doi.org/10.5281/zenodo.7476606

ARTICLE INFO

Received: 13th December 2022
Accepted: 21th December 2022
Online: 23th December 2022

KEY WORDS

*Semiconductor, physical parameters, photoelectric parameters, photosensitive devices.*

ABSTRACT

*The multispectral photosensitive device includes at least one opaque base layer; wherein each main layer has at least two sides, and at least two sides are provided with groups of photosensitive pixels, each group of photosensitive pixels is used to receive light of any spectrum coming from the front direction of the side. Alternatively, the multispectral photosensitive device includes at least one transparent base layer. In this case, each main layer has at least two sides, where at least two sides are provided with photosensitive pixel groups, each photosensitive pixel group is used to receive light of the spectrum of interest coming from the front or rear direction, the side where the photosensitive pixel group is located.*

## INTRODUCTION

In particular, this information relates to a panchromatic photosensitive device capable of simultaneously sensing multiple spectra (eg, visible and infrared light) and a method of manufacturing them. Here, the panchromatic spectrum (or color) includes the entire spectrum of interest. For common photosensitive devices (such as visible light), the panchromatic spectrum includes the entire spectrum of visible light, including red, green, blue, and white light. For photosensitive devices used for a combination of infrared and visible light, the panchromatic spectrum includes the spectra of visible and infrared light. This information refers to a multi-spectral photosensitive device that includes both monochrome and color images for perception.

**LITERATURE ANALYSIS AND METHODOLOGY** The traditional technology for designing and manufacturing color image photosensitive chips (or devices) uses a single-layer photosensitive pixel or a three-layer photosensitive pixel. For a photosensitive chip that uses a single-layer photosensitive pixel to capture color images, it must be coated with a filter according to a specific pattern, such as a Bayer pattern or honeycomb pattern. There is no need to use a color filter for the photosensitive chip using a three-layer sensor pixel. These traditional technologies still need to be improved to design and manufacture color image light-sensitive chips (or devices).

Light sensitivity is based on the ionization of dielectric atoms due to the loss of outer (valence) electrons as a result of absorption of light energy. Other atoms receive the electrons lost in this way and receive a charge of the opposite sign. When electrified, the material receives an electric charge, which is:

changing the physical properties of the material (for example, conductivity);

accumulated or removed by a physical system;

causes a chemical reaction (usually a decomposition reaction).

In some atoms, the absorption of light energy (and other electromagnetic radiation) by electrons does not lead to electrification, but to their transition to higher atomic orbitals. But this state of the atom is unstable, and the electrons tend to return to their previous orbits with the release of energy in the form of electromagnetic radiation of a certain wavelength.

**RESULTS**

Light sensitivity of substances and materials is widely used in nature and technology. Due to the photosensitivity of chlorophyll and other similar pigments, a chain of chemical reactions known as photosynthesis takes place in the plant cell, resulting in the formation of glucose (or starch) and oxygen.

The light sensitivity of rhodopsin and related proteins leads to their regeneration and the generation of electrical potentials in the nerve endings of the retina and other light-sensitive organs of animals and humans that provide vision.

Materials called photoresists change their solubility in certain solvents when exposed to light. It is used in the production of printed circuit boards, microcircuits. In photovoltaic cells, the charge generated as a result of electrification of the material is released in the form of an electric current. Light-sensitive compounds used in photographic materials change their internal structure when exposed to light, forming a latent image. After further development, this results in an image composed of metallic silver or paints. Light sensitivity of photographic materials in silver halide photographic emulsions, electrification of the optical sensitizer causes a chemical reaction to reduce metallic silver from its halogen salts.

When the charged selenium plate (drum) is irradiated with light, the irradiated areas lose their charge, and the charged areas electrostatically attract the coloring powder (toner), which is then transferred to the paper and fixed in the copiers. Semiconductors change their properties in light, which makes it possible to create all kinds of light recording devices based on them. Determination of the sensitivity of such devices is based on the measurement of the photoelectric effect, but in digital photography, sensitivity units obtained from film sensitometry are used.

**CONCLUSION**

Other image recording devices based on these principles (for example, video cameras) use different units of sensitivity that represent the nominal exposure of the lens at a given relative aperture. The light sensitivity of highly specialized video devices is often measured in relation to the effect received by it on the output voltage of the matrix. In this case, the wavelength of the radiation is indicated, often 550 nanometers, corresponding to the maximum sensitivity of vision.

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