

ARCHITECTURE

UDC 621.3.032.35; 7.017.4+741.021

THE USE OF COLOURED LUMINOPHORS IN COLOUR THERAPY IN CHILDREN'S SHOWROOMS

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Abstract. The issues related to the influence of phosphor colour on children and the ways of using luminophors in children's showrooms have been considered in the research. The examples how to use phosphor colours successfully in creation of different children's states have been given. A number of phosphor colors have been analyzed, which can also be used in creation of light design for the showroom. Variants of color arrangement have been offered to create the corresponding atmosphere in space.

Key words: colour, phosphor as an element of design, visual impact, color psychology, children's showroom.

Recently, it has been determined that digitalization harms a child's emotional state, and the only way to change this is to divert the child's attention to more physical activity. Due to the proposed approach of drawing with phosphors, the baby will be able to purposefully develop color perception. It is critical to allow the child to select their favorite colors [1].

A pigment that glows in the dark is called phosphor. It glows due to its chemical traps of light which the light accumulated and releases it. [2]. As phosphor

is a non-toxic substance, it can be used in various applications.

One of the most exciting applications of phosphor as an interactive element of design and lighting is its use in the showroom. Drawing is a great way to improve the emotional and psychological state of children, as well as to develop their perception of color. To embody the idea that the child draws different images on the wall, you need to choose the appropriate kind of phosphor. A group of photoluminophores, including long afterglow phosphors and UV-excited phosphors, are among them. Their function is to accumulate light energy under the influence of ultraviolet or visible light and release it for a long period after the cessation of stimulation or conversion of ultraviolet light into luminescent radiation of different colors [3]. In Fig. 1, you can see an example of the glow of phosphors in the paintings of a young artist from Italy – Crisco.

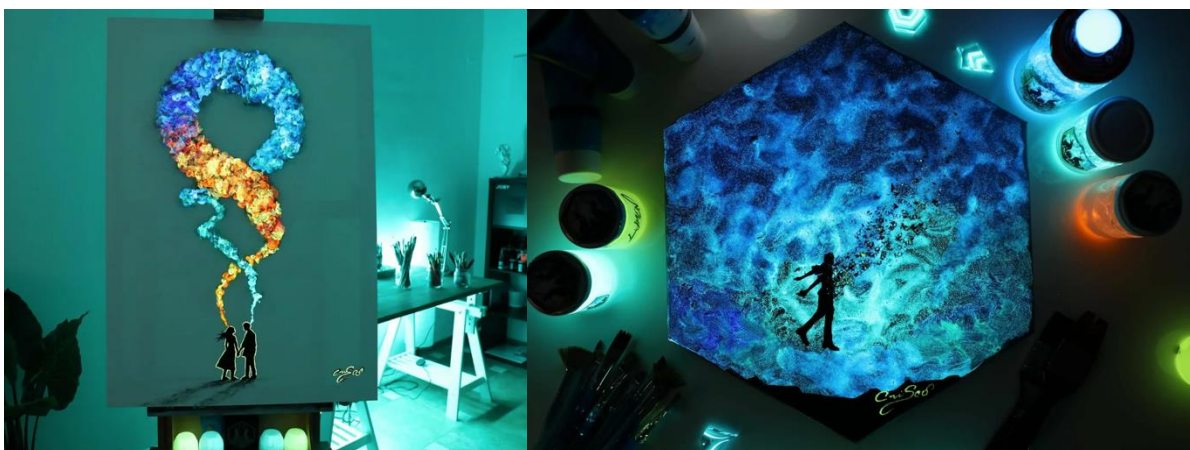


Fig. 1. Paintings by a young artist from Italy – Crisco

Drawing with a phosphor means that the basis for the drawing will be formed using the contents of different phosphors. Since the phosphor is a pigment that glows in powder form (Fig. 2), it can be of different shades.



Fig. 2. An example of the glow of multicolored phosphors in the dark

As a result, the phosphor needs a certain glow, in particular UV, to store light energy. Although this ultraviolet light is good for the child's health, the paintings on such canvases should be illuminated with directional sources of ultraviolet light (reflectors) to avoid discomfort in the eyes of the child. To satisfy all the qualities associated with this type of drawing, a great example would be to design a flashlight with an optical lens system that produces a narrow beam of light and has a low weight, which will allow the child to draw and write comfortably without extra load.

The main goal is to apply color therapy methods and select phosphors of a certain shade in children's showrooms, and not to use bright gadgets that negatively affect young people.

What surrounds a child affects his or her mental and physical health. Color, according to many years of observation and practical experience, is one of the most important needs because it has a great impact on the human body. The use of color promotes the emotional, intellectual, and physical development of children [4].

Color therapy (chromotherapy) is a method of correcting a child's emotional state with the help of certain colors. Color can help relieve stress or anxiety, calm or stimulate performance, and increase the vitality of the body. The effect of color on humans is mediated by two mechanisms: eyes and skin [4].

The paper examines the impact of color on a child's eyes. This is the main effect of color on the body. Color is perceived by the receptors of the eye, causing a chemical chain reaction that produces electrical impulses that activate the nervous system; nerve stimulation reaches the brain, forcing it to release hormones that are good for the body [4].

Proper organization of a child's play environment has a good effect on the child and promotes creativity and communication with the world around him and with other children. The color scheme has a significant impact on the psychological environment of young people. The selection of the color scheme of phosphors for the children's play area should consider not only the size and light of a particular area, but also the impact of color on the child's psyche [5].

Even young children may have a special reaction to a certain shade of

phosphor. Color sensitivity is increased in all children. Numerous studies have been conducted to determine how a particular shade affects young people. If you use this knowledge, you can choose color schemes and use them correctly in the children's play area [6].

Phosphors, on the one hand, are a good method for child development because they allow you to turn off the light and observe the temporary glow; on the other hand, these phosphors can be chosen in such shades to control their psychomotor state. For example, we will choose one shade for a relaxing activity (Fig. 3), but another shade for energetic and active games.



Fig. 3. Example of using the phosphor drawing method

Let's analyze some colors of phosphors that can be used in lighting design:

- The color red stimulates blood circulation, normalizes metabolism, and stimulates the brain. Muscles can also respond to redness. It helps to relax muscles and joints [6].
- Yellow is known as the color of calm. It can make a child happy and also encourage her to focus. Yellow, in particular, has a calming effect on an excited, nervous child who is prone to hysteria [6].
- Green has a strong influence on a child's development. It arouses interest in the world and the desire to learn more. Green shades encourage children to be bold, which increases their self-esteem [6].
- Blue is a shade associated with purity and depth. Its shades can arouse

interest in something new and awaken the imagination of even the most sluggish teenager. Blue is a shade used in color therapy to help people cope with stress. Bright blue can also cause an unconscious feeling of fear in a sensitive child. Since the purpose of the showroom is to draw the child's attention to something specific, blue should be one of the main colors [6].

- During stress, the color blue is simply irreplaceable. It is always lightness, freshness, and weightlessness. Blue colors have a calming and relaxing effect on the child's body. From a medical point of view, blue has been shown to lower blood pressure [6].

According to the article, the knowledge that children and adults who have a favorite red color can be soothed by blue and lift the mood of "blue" red is important for psychotherapists, neurologists, and doctors. Such children will be calm and balanced; they will try to explore, think and think about everything. The blue hue creates images of a peaceful night sky or water. This is order, law, thought, and reason [7].

As play is the main activity for children, it helps to master the knowledge of color better. The perception of color in games of "colorology" can be objective and moving, calm and lively. They are unique to each child. So that the child is not bored, you can come up with a variety of additional games in which the phosphor will be involved, such as crosses-zeros for more energetic children or "Quick, Draw!", in which the child draws an object, and the neural network tries to determine what it is [8].

Another advantage of using phosphor instead of gadgets for children's development is that energy consumption will be much lower than current methods. This approach is perfect for use in any educational, medical, or sports institution due to its ease of use and the ability to change color during creative activities.

The issues about the influence of color on children's development are decisive. Using the useful knowledge provided in this article, parents, teachers, and psychologists can help young artists discover and show not only their artistic and abstract abilities, but also their mental processes and personality traits.

REFERENCES

1. Роль цвета в жизни ребенка / Л. Д. Шеховцова, И. В. Прокофьева, Р. И. Маркова [и др.] // *Молодой ученый*. 2017. № 49 (183). С. 433-435. — URL: <https://moluch.ru/archive/183/46940/>
2. Люмінофор: скільки часу світиться пігмент?. *JAY*. URL: <https://jay.com.ua/lyuminofor-skilki-chasu-svititsya-pigment/>.
3. Люминофоры, их классификация и особенности применения. ООО "МЕХАНИКА+". URL: <http://gross-ulianovsk.narod.ru/index/0-13>.
4. Ковалева А. Е. Воздействие цвета на психоэмоциональное состояние ребенка. *Актуальные вопросы развития современной науки и образования: сборник научных трудов*, 30 июня 2015 г., 2015. С. 26–32. URL: http://conf.ru/wp-content/uploads/2015/07/Sbornik_30.06.2015.pdf#page=26
5. Куриленко О. Н., Волкодаева И. Б. Психология цвета в дизайне детского игрового пространства. *Гуманитарные основания социального прогресса: сборник ст. Межд. науч.-практ. конф.* 2016. С. 189–193. URL: <https://kosygin-rgu.ru/filemanag/Uploads/onti/21-04-2016-mnpk/ЧАСТЬ%202.pdf#page=189>.
6. Влияние цвета на ребенка с точки зрения психологии и медицины. *Kids-Town*. URL: <https://kids-town.com.ua/detskoe-razvitie/vliyanie-cveta-na-razvitey-rebenka>.
7. Демидова О. Б. Влияние цвета на развитие личности дошкольников. URL: <https://files.scienceforum.ru/pdf/2018/2032.pdf>.
8. Колмакова М. Л. Игры на восприятие цвета своими руками. *Интерактивное образование*. URL: <http://io.nios.ru/articles2/80/10/igry-na-vozpriyatie-cveta-svoimi-rukami>.