

# The Functional Value of Smart Materials in Design of Luminous Jewellery

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## **Abstract:**

The research sheds light on what smart materials are and their types, dealing with the values of jewellery design, especially the functional values through the use of electric painting and used it Different as a smart material. People who are exposed to a dark environment, which exposes them to fear and to find a source of light that restores peace to them, So they need a close source of light that is easily accessible in the form of a piece of jewellery that carries an aesthetic and functional value, allowing it to illuminate the surroundings without occupying the hands, so the research problem can be formulated in a The question: Is it possible to find innovative design for luminous jewellery using smart materials? The importance of the research is summarized in finding new design for luminous jewellery using smart materials. as The research aims to take advantage of the technological development of smart materials such as electric painting to influence the development of the functional, use, aesthetic and economic aspects of luminous ornaments that help the wearer in illuminating the surrounding place in the dark. The results of the research is that smart materials are the next generation that can influence various fields, including the design of contemporary jewellery, the creation of new functional visions in the field of metal jewellery, as the development in smart materials has become fast and variable, so The product designer must keeps pace with this development and employs it optimally to serve the user

## **Keywords:**

Smart Materials - Electric Paint - Conductive Ink- LED- Luminous .jewellery

## **Introduction:**

The development of materials used in the formulation of ornaments and jewelry is closely related to the development and progress of technologies, and this was accompanied by a development in the development of new materials, and the diversity of methods, methods and means of manufacturing, until the employment of materials and techniques in the service of design became an inevitable necessity, as it can contribute significantly to finding solutions to many problems. Facing the jeweler's designer.

In the context of the development of materials, what is known as smart materials, which are often associated with smart design and smart systems, has emerged. Recent years have witnessed a boom in research and development activities related to materials, which have produced many compounds, materials and metal alloys that have been used in many products. Smart materials are a category of materials Which show a strong and reproducible change in physical properties in response to external conditions that affect them, they are engineering treated materials that feel and are affected by the surrounding climatic conditions, and have

properties that can change and modify in a controlled manner with external stimuli, and among these materials are the electrically conductive materials (Electric Paint) It is a treated coating that carries electric charges that respond to an electric field, and this physical property describes the ability of the electric charge to move through the material to deliver electricity to the other end to be lit.

The design of jewelry is one of the arts that have a direct relationship to aesthetic values and the appearance of an always renewed appearance, in addition to the functional values that keep pace with technological development and the available smart materials that allow the jewelry designer to add new utilitarian functions such as the use of electroplating and its use in aesthetic ways in luminous jewelry.

Therefore, it can be said that jewelry design is a creative activity that includes innovative data in the field of metallic ornaments based on the use of smart materials in designing aesthetic and functional products with efficiency and effectiveness that are capable of interaction between the user and the producer of luminous ornaments, as it achieves the effectiveness of use, and provides the user with an enjoyable experience, as people are often exposed to Being in a dark environment for several reasons, which exposes them to fear and turmoil until they find a source of light that restores reassurance to them to discover the cause of this temporary darkness. Therefore, a person needs a close source of light that is easily accessible and at the same time in the form of a piece of jewelry that carries an aesthetic and functional value, allowing him Illumination of the environment surrounding it while not occupying the hand to hold it, jewelry explores the relationships between the self and the purpose of wearing it. functional.

Hence, the research aims to take advantage of this huge technological development in smart materials such as electroplating to influence the development of the functional, use, aesthetic and economic aspects of luminous ornaments that help the wearer to illuminate the surroundings in the dark.

### **Research problem:**

Due to the successive development in smart materials and the extent of the aesthetic and functional addition they achieve in the various ornaments' classifications, especially the electrically conductive materials that give the lighting function to the ornaments, which gives them functional value within the framework of contemporary design.

From the above, the problem can be formulated in the following question:

Is it possible to find innovative design formulas and functional values for luminous jewelry using smart materials?

### **Research Importance:**

- Taking advantage of the technological development in smart materials to influence the development of the functional, use, aesthetic and economic aspects of luminous metallic ornaments.

### **Research goal:**

- Finding new design formulas for luminous ornaments.  
Employing smart materials to add aesthetic and functional values to jewelry.

### **Force search:**

The possibility of employing smart materials in creating new functional visions in the field of designing luminous ornaments.

**Search Limits:**

The search for smart materials was limited to:

The use of electrically conductive ink (electro-paint) to help conduct an electrical charge to light up jewelry.

**Research Methodology:**

- The research dealt with the descriptive method in the theoretical framework and the experimental method in practical experience.

**Results :**

- 1- Smart materials are the next generation of materials that have the potential to influence various fields including the design of luminous jewellery, and have a significant impact on the career development of their works.
- 2- Benefiting from the tremendous technological development in smart materials that has led to a positive impact on the development of the functional, use, aesthetic and economic aspects of luminous metallic ornaments.
- 3- Employment of electroplating contributed to the development of new job visions in the field of luminous ornaments.

**Discuss the results:**

Ornaments enjoy being an inexhaustible field of new ideas and continuous development that keeps pace with continuous technological progress in materials and techniques, as the development in smart materials has become rapid and diversified in impact, so the jewelry designer has to keep pace with this development and employ it in an optimal way to serve the user to achieve realistic design and functional solutions, Through the research, electroplating was employed as one of the smart materials capable of carrying electric charges from the power source to the LED bulbs in the locket through an aesthetic geometric decoration, which added a functional value to the ornaments besides the aesthetic value, which is lighting during the dark, which contributes to providing a better life for the user.

**Recommendations:**

- 1- Smart materials technology is a multidisciplinary field that requires a lot of research and experimentation in the field of metal products in general and the field of jewelry in particular.

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