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# Chemicals materials in the manufacture of chemical-nano dyes

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**Abstract**
Many chemicals are used in the manufacture of chemical-nano dyes. In recent years, expensive chemical coatings made of nano-chemicals have spread. The nano-coatings consist of film-forming materials, dyes, fillers, additives and solvents. Compared with ordinary coatings, nano-coatings have the following characteristics: It can produce negative ions and have an effect on the health care of the human body; It can decompose and absorb harmful substances in the air, such as formaldehyde, etc.; It has unique anti-mold and sterilization functions; And it has super self-cleaning function; has superior resistance to washing; superior resistance to artificial aging; It has the function of waterproof and high-quality heat insulation.

**Keywords:** *nano, chemical dyes, nano materials*

## Introduction
Chemical colorants and pigments in the paint industries: The colorants are usually traded in the form of a very fine and insoluble powder, in the carrier shops used in the paint industries, which are organic or inorganic materials known as tomer, or organic colorants carried on inorganic carriers such as aluminum hydroxide, barium sulfate or clay, and in this way the Preparation of shellac pigment (animal or vegetable red pigment). As for the organic dyes used in the paint industries, we find azo dyes and phthalocyanine complexes.

## Types of Manufactured Nano Coatings
### a. Nano Silica Coating
Silica architectural coatings do not separate, are thixotropic, anti-sag, have good application performance, greatly improve stain resistance, and have excellent self-cleaning and adhesion performance. The nano-silica coating can form a lattice structure when dried, which improves the smoothness and aging resistance of vehicle and ship coatings.

### b. Titanium Dioxide Nano Coating
Architectural coatings of nanoscale titanium dioxide can improve the weather resistance of latex coatings to a new level. The catalytic compound coating technology is simple and low cost. The atmospheric environment purification coating made by photo catalytic oxidation technology of nano-titanium dioxide has a good purification effect on nitrogen oxides in the air and can also degrade other pollutants in the atmosphere.

### c. Calcium Carbonate Nano Coating
Calcium carbonate is an excellent filler and white pigment with the characteristics of low price, abundant resources, good color and high grade. Application studies showed that the elasticity, hardness, flatness and glossiness of the coatings filled with calcium carbonate nanoparticles are significantly improved.

## Chemical Coating Industries
Chemical paint industries. In this article, we will learn about the way and how to manufacture paints, the definition of paints, their types and composition, the chemical bases for their composition, and their physical properties. Paint is a mixture of insoluble materials suspended in an oily liquid medium, or suspended in an aqueous emulsion, and the liquid medium consists of a group of organic or inorganic materials, which, by exposure to air and through polymerization, oxidation or drying reactions, gives a cohesive layer that has a strong adhesion with the painted surface. Paints are classified in two main categories:

### Suspended Oil Paints
The liquid medium contains unsaturated fat oil in some of its bonds, and is used to paint all surfaces.

### As for Emulsified Water-Based Paints
Their liquid emulsion medium consists of water, so we cannot use them with metal or plastic surfaces due to the large factor of their surface tension with water.

## Nanochemical Dyes
One of the characteristics of nanotechnology in the manufacture of nanochemical dyes is the high surface area ratio of the quantity to many nanomaterials, which in turn leads to the occurrence of new potential quantum mechanical effects, such as the “quantum size effect” where the electronic properties of solid materials with a massive decrease in Particle size. However, this effect is not effective by switching from macro to micro dimensions. However, it becomes apparent when the nanosize range is reached. Also, a certain set of physical properties changes with the change of microscopic systems. Hence, new mechanical properties of nanomaterials are one of the

research topics in nano mechanics. The stimulating activities also reveal a new picture of interaction with biomaterials. Nanotechnology can also be considered as extensions of traditional disciplines in order to look at these properties explicitly. In addition, traditional disciplines can be reinterpreted as specific applications of nanotechnology. Hence, this lively exchange of ideas and concepts contributes to a civilized understanding of the field. In general, nanotechnology is a process of synthesis and application of ideas from both science and engineering with the aim of understanding and producing new materials and devices, and these products generally contribute to the widespread use of physical properties associated with small scales. As mentioned earlier, materials that have been reduced in size to the nano scale may suddenly exhibit very different properties compared to those that appeared on the macro scale, resulting in unique and previously unheard of applications. Where, for example, opaque materials may become transparent materials such as copper (copper), inert materials become catalytic properties such as platinum, stable materials turn into burning materials (such as aluminum), solid materials turn into liquids at room temperature (such as gold). Insulating materials are transformed into conductive materials (such as silicon). Also, inert materials in their natural chemical composition (such as gold) may turn into chemical catalysts when reduced to nanoscale sizes. Thus the greatest admiration for nanotechnology stems from these unique quantum and surface phenomena that matter exhibits at the nanoscale.

**Applications of Nano-Chemical Coatings**

**Water Repellent Nano Coating**

The waterproof nanotechnology mainly uses nano-scale organic molecular coating materials. In a dust-free and vacuum environment, the electronic products are ideally encapsulated by ultrasonic vibration to achieve the same function in waterproof nano-coating as in the normal use case.

**Self-Cleaning Nano Coating**

The self-cleaning nano-coating makes it easy to keep the solar panels clean and increase work efficiency, reducing maintenance and operating costs. Using the double phobic mechanism of nanomaterials, the water in the coating can be effectively drained, and the external water intrusion can be prevented, so that the coating film has the performance of breathing. At the same time, the physical properties of the double interface of nanomaterials are used to effectively discharge the interference of dust and oil, so that it maintains good self-cleaning properties.

**Nano Coating for Optical Applications**

The size of the nanoparticles is much smaller than the wavelength of 400-750 nm for visible light, and it has a transmission effect, thus ensuring the high transparency of the nano composite coating. Nano particles have strong UV absorbing effect. Add TiO2, SiO2, and other nanoparticles to architectural coatings for exterior walls to improve weather resistance, and add TiO2 to automotive topcoats to improve the aging resistance of automotive coatings.

**Invisible Nano Coating**

The phantom nanomaterial has excellent adsorption properties, at the same time it has the characteristics of good compatibility, small quality and thin thickness. The coating made of it can reduce the detection distance of the detector in a wide frequency range. Visible light, infrared and sound have a stealth effect, so they have a wide range of applications in the military.

**Anti-Bacterial Nano Coating**

Light irradiation can cause TiO2 surface formation of an amphiphilic superoxide as two hydrophilic and lipophilic phases coexist in the area where the negative ions are washed away and returned to the ecological protection rice. Domestically, industrially produced antibacterial nano-powders have been used in coatings, antibacterial nano-coatings can be manufactured, which can be applied to building materials, such as sanitary ware, interior spaces, appliances, walls and floors of operating rooms and hospital wards, etc. · Sterilization and cleaning.

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