

Size :Less than 50 nm

Appearance: gray powder

Shape: Spherical Diamond Nanoparticles for Biochemical Sensor

1- Nano-diamond and metal electrochemical and electroless plating

Experimental studies have shown that the application of electroplating technology of nano-diamond has the following advantages:

1.1 to improve the quality and structure characteristics of the product, including:

- superior abrasion resistance and high micro hardness;
- high adhesion and low friction coefficient;
- high electrical insulation properties anodic alumina membranes;
- high corrosion resistance;
- sharp increase in diffusion capacity of the electrolyte;
- high elastic.

1.2 products, improve service life 1-9 times.

1.3 up to save material, energy and labor consumption.

1.4 Plating operating line productivity increased by 20% -50% reduction of speed and the film thickness of the coating is formed to improve related.

1.5 Economic Characteristics electrolysis process can be improved.

2. Nano diamond for lubricants, solid lubricants and lubricating coolant.

Nano diamond add the oil has the following advantages:

2.1 to improve the quality and competitiveness of products; increase the working life of the cartridge transport device; saving materials for fuels and lubricants

2.2 the friction momentum is reduced by 20% -40%.

2.3 friction surface wear is reduced by 30% -40%.

2.4 Friction quick run-pairs.

3-Anti-Fog And Self-Cleaning Film

Brief introduction of nano diamond powder in nano film:

Researcher Tang Yongbing's team from the Functional Thin Film Materials Research Center of the Shenzhen Institutes of Advanced Technology, Chinese Academy of Sciences, and Professor Zhang Wenjun from the City University of Hong Kong, have developed an ultra-thin diamond nano film with high self-transmittance from ultraviolet to infrared bands, and has anti-fog and underwater self-transmission properties. The series of properties provide a new strategy for surface protection in important fields such as

optical lenses, marine precision instruments high-definition surveillance, and infrared sensors.

Tang Yongbing's team successfully produced a high-density nano diamond film with a thickness of only 45nm through the self-assembled crystal-planting vapor deposition method independently developed. The coated quartz glass has a light transmittance of up to 90% in the ultraviolet and visible light bands, and the light transmittance under water up to 98%, close to uncoated quartz glass. The nano diamond film has an anti-reflection effect in the infrared band, and the light transmittance of the coated quartz glass is as high as 85%, which is 10% higher than that of the uncoated quartz glass.

Further studies have found that the nano-film after surface treatment has super-hydrophilic and underwater super-oleophilic properties, so that the coated glass still has the function of transparency and anti-fog in the environment of drastic changes in steam and temperature, and it can resist the adhesion of oil stains underwater, to achieve underwater self-cleaning function. In addition, this kind of ultrathin diamond nano film has excellent anti-wear performance. After the high-speed moving sand particles hit the surface of the diamond nano film, its surface morphology and transmittance rate remain basically unchanged. It is also found that the coated quartz glass has an ultra-low friction coefficient and self-lubricating function, and the friction coefficient is 1/3 lower than that without coating.

At present, the super-thin diamond nano film with wide band and high light transmittance can be prepared on various commercial substrate materials have good application prospects such as in semiconductor, quartz, glass, etc..

4- Diamond Nanoparticles for Biochemical Sensor A growing interest in diamond nanoparticles has been shown in the recent years for biochemical sensors due to its characteristics of high surface area, high surface energy and high catalytic efficiency.

The study found that the electrochemical pretreatment can significantly improve the conductivity of undoped diamond nanoparticles modified electrodes and the electric catalytic reduction ability of oxygen. Based on it, biosensor is constructed by dissolved oxygen current determining the concentration of glucose (low potential test), exclude the interference of the common active substances.