



Zinc Peroxide Nanoparticles, 40~50 nm

PRODUCT DATA SHEET

Zinc Peroxide Nanoparticles, 40~50 nm

Cat No: ABZN-40

Description

Liquid hydrogen peroxide is uncontrolled and inconvenient to use, while solid hydrogen peroxide sources can solve this problem. Zinc peroxide nanoparticles provided by Abvigen, with a size of about 40 ~ 50 nm, have good solubility, and will decompose to produce hydrogen peroxide and a small amount of oxygen in acidic water environment, which are widely used in the biomedical fields such as tumor treatment, bacterial infection treatment and biosensing combined with nanase.

Abvigen can provide high quality zinc peroxide nanoparticles. The product has high repeatability between batches, which can meet the needs of different personalized materials such as research and development, testing and production of various customers.

For custom sizes, formulations or bulk quantities please contact our customer service department.

Website: www.abvigen.com **Phone:** +1 929-202-3014 **Email:** info@abvigenus.com

Characteristics

Type: Zinc Peroxide Nanoparticles

Surface: PVP

Average particle size: 40 ~ 50 nm

Hydrodynamic dimensions: 70 ~ 80 nm

Zeta potential: 36.17 mV

Concentration: 10 mg/mL

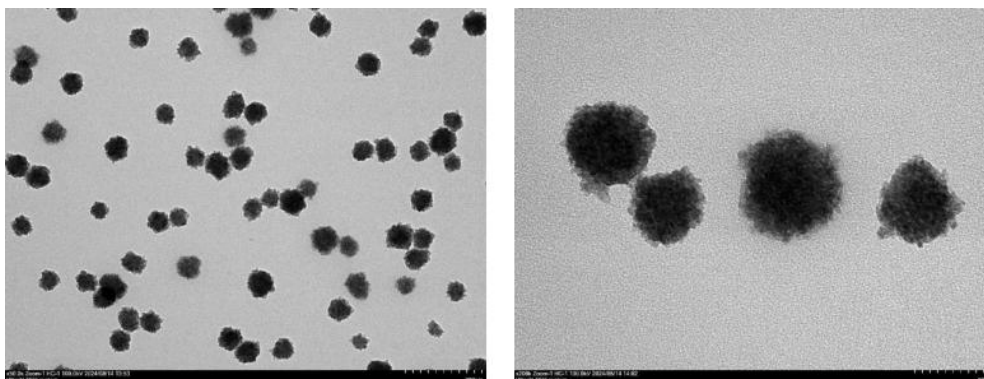
Dispersing solvent: Anhydrous ethanol

Storage condition: Sealed storage at 4°C. Do not freeze. Mix well before use.

Shelf life: 6 months

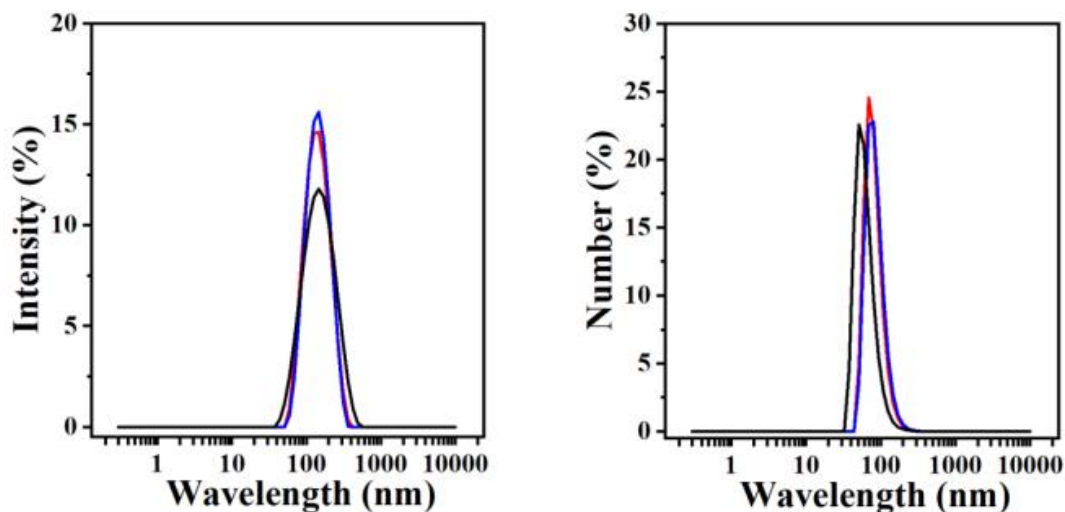
Package: Glass bottle

TEM of Zinc Peroxide Nanoparticles



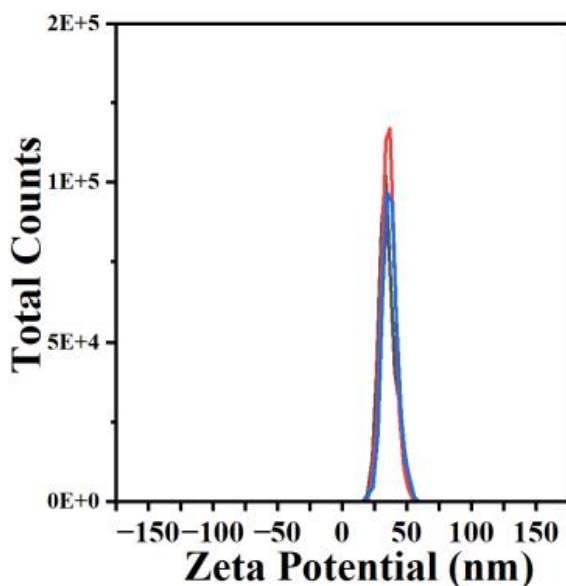
The above figure shows that zinc peroxide nanoparticles are uniformly dispersed with a size of approximately 40 ~ 50 nm.

Hydrodynamic Dimension



As shown in the figure, the hydrodynamic size of PVP modified ZnO₂ nanoparticles is larger than the TEM size.

Zeta Potential



It can be seen from the figure that the Zeta potential of PVP modified ZnO₂ nanoparticles is 36.17 mV.

Advantages

Good solubility

Easy to use

Applications

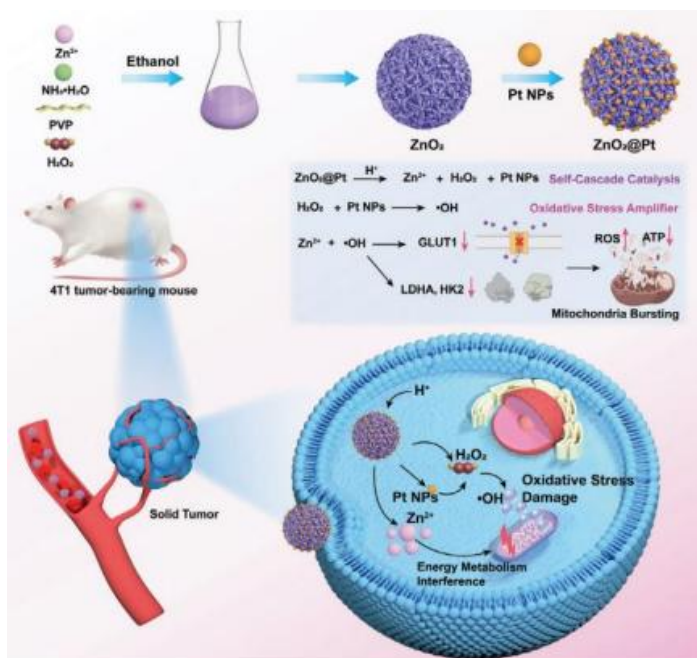
Tumor treatment

Bacterial infection treatment

Biosensing

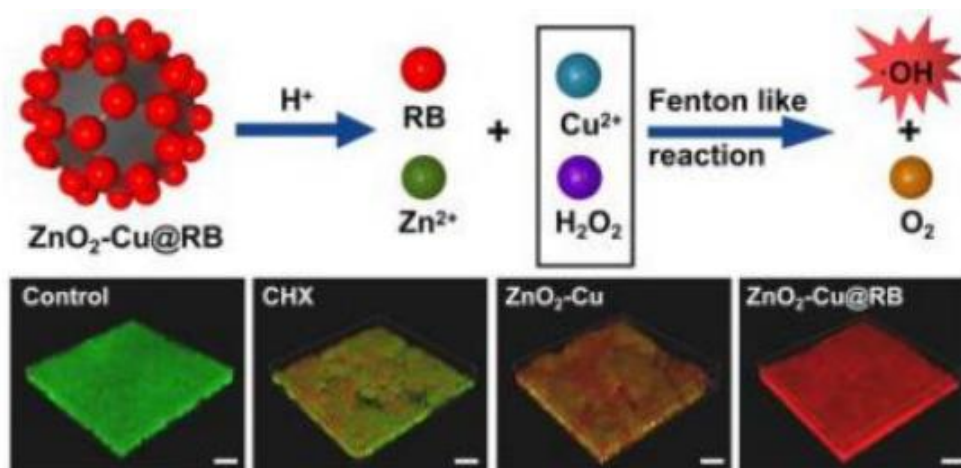
Application Example

(1) ZnO₂ NPs combined with Pt NPs for H₂O₂ self-supplied synergistic energy metabolism interference-enhanced catalytic therapy (Quoted from Zinc-Based ROS Amplifiers Trigger Cancer Chemodynamic/Ion Interference Therapy Through Self-Cascade Catalysis [J]. Small, 2024: 2402320. DOI: 10.1002/smll.202402320)



A nano enzyme with H_2O_2 self supply was constructed by loading Pt nanoparticles with peroxidase like (CAT) activity onto ZnO_2 nanoparticles. Under the acidic tumor microenvironment, ZnO_2 nanoparticles release H_2O_2 . Pt nanoparticles catalyze the generation of hydroxyl radicals from H_2O_2 while reducing the relief of oxidative stress by glutathione, acting as an active oxygen amplifier through self cascade catalysis. In addition, the Zn^{2+} released by ZnO_2 nanoparticles interferes with the energy supply and metabolism of tumor cells, leading to the synergistic effect of ion interference therapy and chemodynamic therapy in killing tumors.

(2) $\text{ZnO}_2\text{-Cu@RB}$ for dental biofilm treatment (Quoted from Bacterial biofilm microenvironment responsive copper-doped zinc peroxide nanocomposites for enhancing chemodynamic therapy [J]. Chemical Engineering Journal, 2022, 446: 137214. DOI: 10.1016/j.cej.2022.137214)





ZnO₂-Cu@RB consists of copper-doped zinc peroxide nanoparticles (ZnO₂-Cu NPs) and the antimicrobial agent Rose Bengal (RB). In acidic biofilms, ZnO₂ decomposes to produce H₂O₂ through in-situ enhanced chemodynamic therapy (CDT), and Cu⁺ reacts with H₂O₂ to produce hydroxyl radical (\cdot OH) and combines with antibiotic RB for double-mode sterilization.

Storage

Sealed stored at 2-8°C away from light for 6 months.

Note

ZnO₂ nanoparticles cannot be mixed with acidic aqueous solutions and will decompose at high temperatures (200°C).

Ordering Information

Website: www.abvigen.com

Phone: +1 929-202-3014

Email: info@abvigenus.com