

Calcium Peroxide Nanoparticles

Cat. No.: C1520779 | Pack size: 1 mL / 5 mL / 10 mL | Storage: Store at 2-8°C; protected from light; desiccated; do not freeze

Overview

Metal and metal oxide nanoparticles have attracted great attention due to their good efficacy in treating drug-resistant bacterial infections. In the antibacterial process, oxidative stress caused by reactive oxygen species (ROS) is an important mechanism by which these antibacterial agents exert their therapeutic effects. However, in hypoxic environments, ROS are difficult to generate, which affects the antibacterial activity of most metals and their oxides. Calcium peroxide (CaO_2), as a solid hydrogen peroxide source, can effectively generate hydrogen peroxide (H_2O_2) under anoxic conditions, providing a strategy to alleviate hypoxic environments, increase endogenous H_2O_2 , and improve the clinical therapeutic efficacy against tumors and bacterial infections.

Aladdin provides Calcium Peroxide Nanoparticles, approximately 60-70 nm in size, with good solubility. In an aqueous environment, they decompose to produce hydrogen peroxide and oxygen. They can be used for controlled release of H_2O_2 and are widely applied in biomedical fields such as alleviating hypoxic environments, combination with nanozymes for tumor therapy, bacterial infection therapy, biosensing, and microenvironment-responsive release.

Attribute	Value
Cat. No.	C1520779
Product Name	Calcium Peroxide Nanoparticles
Surface Modification	PVP
Concentration	5 mg/mL
Average Particle Size	60-70 nm
Hydrodynamic Size	200 nm
Zeta Potential	5.29 mV
Dispersion Solvent	Anhydrous ethanol

Product Parameters

1. TEM Characterization

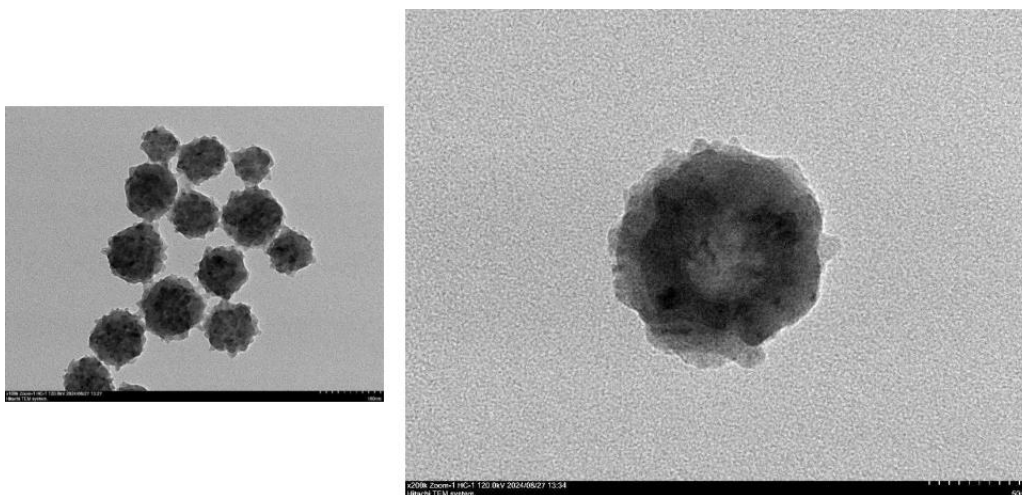


Figure 1: TEM image of CaO_2 nanoparticles showing uniformly dispersed nanoparticles with a size of approximately 60-70 nm.

2. Hydrodynamic Size Characterization

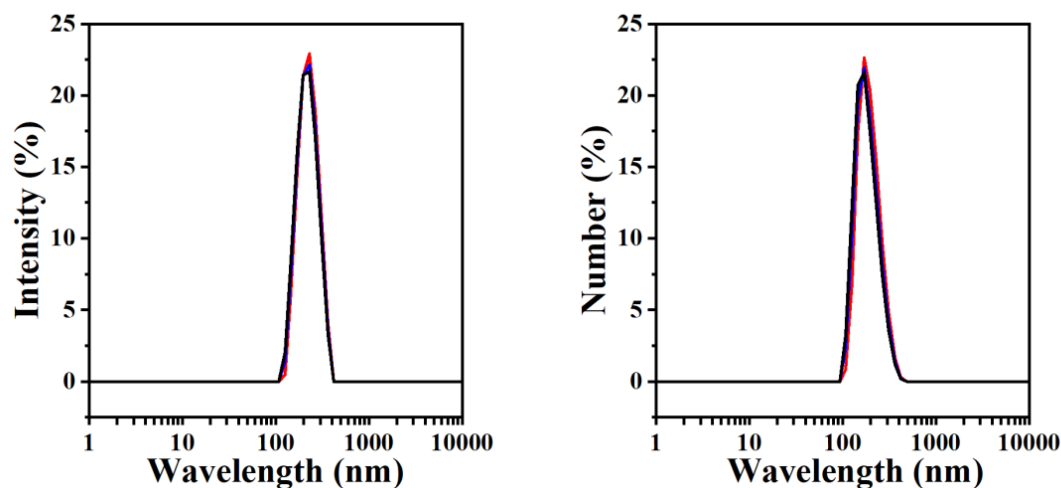


Figure 2: DLS plot of CaO_2 nanoparticles (Left: Intensity; Right: Number). The hydrodynamic size of PVP-modified CaO_2 nanoparticles is larger than the TEM size.

Z-Average: 214 nm, Polydispersity Index (PI): 0.04204, Intensity (nm): 226.2 nm, Number (nm): 190.5 nm (measured in ethanol).

3. Zeta Potential Characterization

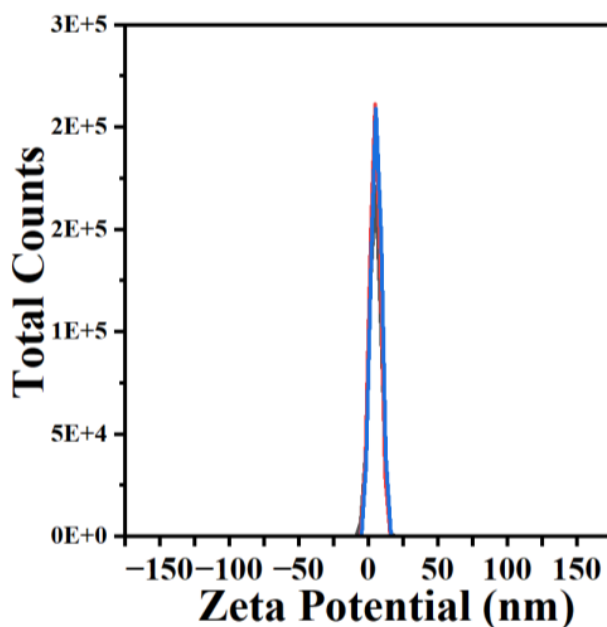


Figure 3: Zeta potential plot of CaO₂ nanoparticles. The Zeta potential of PVP-modified CaO₂ nanoparticles is 5.29 mV.

Notes

- CaO₂ nanoparticles decompose in water.
- CO₂ in the air reacts with CaO₂ to form CaCO₃.

Specifications

Attribute	Value
Specifications & Purity	BioReagent, 5 mg/mL, dispersion solvent: Absolute Ethanol, particle size: 60-70 nm
Stability And Storage	Store at 2-8°C long term (12 months). Desiccated. Do not freeze. Store in the dark.
Storage Conditions	Store at 2-8°C, Protected from light, Desiccated, Do not freeze
Shipped In	Wet ice, Do not freeze. This product requires cold chain shipping. Ground and other economy services are not available.
Grade	BioReagent
Sensitivity	Light-sensitive

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Performance depends on sample type, sample condition, handling, and operator technique. Users are responsible for validating the product for their specific application.

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