

# **Nanozymes Market- Global Industry Size, Share, Trends, Opportunity, and Forecast, 2018-2028F Segmented By Type (Cerium based, Iron oxide-based, Manganese-Based, Gold-Based, Platinum-Based, and Others), By Application (Medical and Bio-Medical Applications, Environmental Science and Technology, Chemical Industry, Food Industry, Agriculture and Others), Region and Competition**

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## **Abstracts**

Global Nanozymes Market is anticipated to witness a robust CAGR in the forecast period, 2024-2028. The intrinsic enzyme activity of the class of nanomaterials known as nanozymes makes them particularly attractive for use in therapeutic and diagnostic procedures. Nanozymes are basically nanomaterials that mimic enzyme activities. Nanozymes are superior to natural enzymes because they can be engineered for high catalytic activity, simple production, cost-effectiveness, stability, and reusability. Nanozymes are majorly composed of metals and metal oxides. The active metallic center can effectively mimic the catalytic, electronic redox process enabled by natural enzymes. The enzyme-mimicking activities are affected by various factors, such as the oxidation states of the metallic center, reduction agent, temperature, and pH. The design features of nanozymes differ from normal tissues and provide typical therapeutic options for the rational design and application of nanozymes in biomedicine.

The main driver of its market expansion for nanozymes is their usage in various end-user industries. The market has also grown due to the increased use of nanozymes in multiple sectors, including the chemical industry, food industry, agricultural industry, medical and bio-medical applications, and environmental science and technology. This

has increased the demand of the overall market.

Moreover, Nanozymes, an alternative to natural enzymes, have several advantages over natural enzymes and have hastened the development of synthetic biocatalysts. These advantages of nanomaterials include smooth surface modification, low cost, high stability, dependable catalytic efficacy, and ease of manufacturing. Apart from these, favorable government policies for Nanozymes and technological advancement for new applications propel the growth of Global Nanozymes Market in the forecasted period.

### Substitute for Conventional Enzymes

Nanozymes, have numerous benefits over natural enzymes, which have accelerated the creation of synthetic biocatalysts. The ease of synthesis, low cost, high stability, reliable catalytic efficacy, and smooth surface modification of nanomaterials are only a few of these benefits. Rigorous physiological conditions are necessary for natural enzymes to perform catalytic functions. The natural enzymes are not very stable under adverse environmental conditions. Additionally, the synthesis, isolation, and purification of natural enzymes are much higher than that of nanozymes, adding up to the overall cost. This, in turn, is creating a demand for substitutes such as nanozymes, thereby opening new prospects for the growth of global nanozymes market.

### Usage of Nanozymes in various End-User industries

The market has expanded because of the increased use of Nanozymes in a wide range of industries, including the Food Industry, Agriculture, Medical and Bio-Medical Applications, Environmental Science and Technology, and the Chemical Industry. Throughout the forecast period, the market for Nanozymes will continue to be led by the Medical and Bio-Medical application segment. In the medical and biomedical industry, nanozymes can treat diseases such as protecting the myocardium and improving Alzheimer's disease and ischemic stroke, thus fueling the growth of the overall market.

### Recent Developments

Currently, nanozymes can only be used to simulate enzymes accurately, specifically those needed for redox processes. Further research into the dynamics of natural enzymes is anticipated to lead to the development of more rational artificial enzyme designs. Moreover, iron oxide nanoparticles' peroxidase-like activity enables the catalysis of substrate oxidation in the presence of H<sub>2</sub>O<sub>2</sub>. As a plus, these particles are biocompatible and ferromagnetic, making them suitable for therapeutic and diagnostic

applications. Ongoing advancements also aid in developing proteins that can be used to make novel enzymes in theoretical and computational protein design. Nanozymes will be able to compete with natural enzymes in terms of catalytic activity and selectivity with improved design.

## Market Segmentation

Global Nanozymes Market is segmented based on Type and Application. Based on type, the global Nanozymes Market can be divided into Cerium-based, Iron oxide-based, Manganese-Based, Gold-Based, Platinum-Based, and Others. Based on Application, the market is divided into Medical and Bio-Medical Applications, Environmental science and technology, Chemical Industry, Food Industry, Agriculture, and Others. Regionally, the market can be segmented into North America, Europe, Asia Pacific, Middle East & Africa, and South America.

## Market players

Bionics Enviro Tech, Nanjing NANO EAST BioTech CO.LTD, Nanozyme Inc., Institute of Biophysics Chinese Academy of Sciences, GenScript Biotechnology, and Bloomage Bio are the key players operating in the market.

## Report Scope:

In this report, Global Nanozymes Market has been segmented into the following categories, in addition to the industry trends, which have also been detailed below:

### Nanozymes Market, By Type:

Cerium based

Iron oxide-based

Manganese-Based

Gold-Based

Platinum-Based

Others

### Nanozymes Market, By Application:

Medical and Bio-Medical Applications

Environmental science and technology

Chemical Industry

Food Industry

Agriculture

Others

### Nanozymes Market, By region:

Europe

France

Germany

United Kingdom

Italy

Spain

Russia

Asia-Pacific

China

India

Japan

Australia

South Korea

North America

United States

Canada

Mexico

Middle East and Africa

Saudi Arabia

UAE

Qatar

Turkey

Egypt

South Africa

Competitive Landscape

Company Profiles: Detailed analysis of the major companies present in Global Nanozymes Market.

Available Customizations:

With the given market data, TechSci Research offers customizations according to a company's specific needs. The following customization options are available for the report:

Company Information

Detailed analysis and profiling of additional market players (up to five).

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