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Gold Nanoparticles Market by Process (Physical, Chemical, Biological), Application (Imaging, Targeted Drug Delivery, Proton Therapy, In-Vitro Assays, Sensors, Probes, Catalysis), End-Use Industry and Region - Global Forecast to 2029

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Abstracts

The gold nanoparticles market is estimated at USD 0.50 billion in 2024 and is projected to reach USD 1.11 billion by 2029, at a CAGR of 16.3% from 2024 to 2029. Due to its properties such as scalability, cost effectiveness, and precise control over particle size, shape and surface functionality. It is the most popular choice among manufacturers for producing gold nanoparticles. Unlike the other nanoparticles which are physically or biologically processed, chemically processed gold nanoparticles provides high yield production and consistent quality which make them ideal for commercial applications. Chemically processed gold nanoparticles are used in various end use industries such as pharmaceuticals & healthcare, electrical & electronics, chemicals, personal care & cosmetics.

‘‘In terms of value, proton therapy application accounted for the largest share of the overall gold nanoparticles market.’’

Proton therapy application is projected to be the highest market share holding application in the gold nanoparticles market. Proton therapy is one of the groundbreaking advancements in cancer radiotherapy. Despite its advancements proton therapy faces challenges in precision and efficacy, but recent research has highlighted the potential of gold nanoparticles to enhance proton therapy outcomes. Gold nanoparticles have high atomic number and favourable biological properties through which it acts as a radiosensitizers by amplifying generation of secondary electrons and reactive oxygen species upon proton irradiation. This enhances DNA

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damage in tumor cells while preserving healthy tissues. Thus gold nanoparticles act as a backbone for enhancing proton therapy.

“During the forecast period, the gold nanoparticles market in pharmaceuticals & healthcare industry is projected to have highest market share.”

During the forecast period from 2024 to 2029, the pharmaceuticals & healthcare industry is expected to have the highest market share in end-use industry in the gold nanoparticles market. The demand for gold nanoparticles is rising in pharmaceuticals & healthacre industry due to its superior performance characteristics, including biocompatibility, optical properties, surface properties and others. Top leading pharmaceutical manufactures such as Gilead Sciences, Inc., and GSK plc. have already adopted gold nanoparticles for vaccine development and kits. Pharmaceuticals & healthcare end use industry is tend to grow with high rate and which will increase the consumption of gold nanoparticles.

“During the forecast period, the gold nanoparticles market in Asia Pacific region is projected to be the fastest growing region.”

Asia Pacific is the fastest growing market for gold nanoparticles because of its strong demand from pharmaceuticals & healthcare, which is a driving factor for high-performance materials such as gold nanoparticles. The region is dominated by large pharmaceuticals manufacturers, Sun Pharmaceutical Industries Ltd., Sapien Biosciences, which have comprehensive use of gold nanoparticles in various applications. Asia Pacific region has major countries such as India, China which has highest population in the world, and which will tend to increase the demand for pharmaceuticals & healthcare needs. Second, Asia Pacific region is home to various gold nanoparticles manufacturers such as ARITECH CHEMAZONE PVT LTD., Oparin Biotech Pvt Ltd and others.

This study has been validated through primary interviews with industry experts globally. These primary sources have been divided into the following three categories:

By Company Type- Tier 1- 60%, Tier 2- 20%, and Tier 3- 20%

By Designation- C Level- 33%, Director Level- 33%, and Managers- 34%

By Region- North America- 20%, Europe- 25%, Asia Pacific- 25%, Middle East & Africa- 15%, and Latin America- 15%

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The report provides a comprehensive analysis of company profiles:

Prominent companies BBI Solutions (UK), Cytodiagnostics Inc (Canada), Fortis Life Sciences, LLC. (US), Meliorum Technologies, Inc (US), TANAKA PRECIOUS METAL GROUP Co., Ltd. (Japan), Merck KGaA (Germany), Nanopartz, Inc (US), CD Bioparticles (US), Nano Labs (India), Nanocs Inc. (US), NanoHybrids (US), Sona Nanotech (Canada), Sisco Research Laboratories Pvt, Ltd. (India), Nanoprobes, Inc (US), American Elements (US), TORSKAL (France), Abcam Limited (UK), Particular GmbH (Germany), Dongguan Sat Nano Technology Material Co., Ltd (China), Nano Flow (Belgium), Strem Catalog (US), Nanorh (India), SkySpring Nanomaterials (US), Aurion (Netherlands), NNCrystal US Corporation (US).

Research Coverage

This research report categorizes the gold nanoparticles market By Process (Physical, Chemical, and Biological), By Application (Imaging, Targeted Drug Delivery, Proton Therapy, In-Vitro Assays, Sensors, Probes, Catalysis, and Other Applications), End-Use Industry (Pharmaceuticals & Healthcare, Electrical & Electronics, Chemicals, Personal Care & Cosmetics, and Other End-use Industries), Region (North America, Europe, Asia Pacific, Middle East & Africa, and South America). The scope of the report includes detailed information about the major factors influencing the growth of the gold nanoparticles market, such as drivers, restraints, challenges, and opportunities. A thorough examination of the key industry players has been conducted in order to provide insights into their business overview, solutions, and services, key strategies, contracts, partnerships, and agreements. Product launches, mergers and acquisitions, and recent developments in the gold nanoparticles market are all covered. This report includes a competitive analysis of upcoming startups in the gold nanoparticles market ecosystem.

Reasons to buy this report:

The report will help the market leaders/new entrants in this market with information on the closest approximations of the revenue numbers for the overall gold nanoparticles market and the subsegments. This report will help stakeholders understand the competitive landscape and gain more insights to position their businesses better and plan suitable go-to-market strategies. The report also helps stakeholders understand the pulse of the market and provides them with information on key market drivers,

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restraints, challenges, and opportunities.

The report provides insights on the following pointers:

Analysis of key drivers (Increasing demand for gold nanoparticles in electrical & electronics end use industry, unique properties of gold nanoparticles), restraints (Toxicity concerns of gold nanoparticles, stringent regulations impacting market development), opportunities (Increasing in research & development efforts in nanotechnology applications, growing demand for gold nanoparticles in various end use industries), and challenges (High time consumption for certain synthesis methods, growing cost of gold as a raw material) influencing the growth of the gold nanoparticles market.

Product Development/Innovation: Detailed insights on upcoming technologies, research & development activities, and service launches in the gold nanoparticles market.

Market Development: Comprehensive information about lucrative markets – the report analyses the gold nanoparticles market across varied regions.

Market Diversification: Exhaustive information about services, untapped geographies, recent developments, and investments in the gold nanoparticles market

Competitive Assessment: In-depth assessment of market shares, growth strategies and service offerings of leading players like BBI Solutions (UK), Cytodiagnostics Inc (Canada), Fortis Life Sciences, LLC. (US), Meliorum Technologies, Inc (US), TANAKA PRECIOUS METAL GROUP Co., Ltd. (Japan), Merck KGaA (Germany), Nanopartz, Inc (US), CD Bioparticles (US), Nano Labs (India), Nanocs Inc. (US), NanoHybrids (US), Sona Nanotech (Canada), Sisco Research Laboratories Pvt, Ltd. (India), Nanoprobes, Inc (US), American Elements (US), TORSKAL (France), Abcam Limited (UK), Particular GmbH (Germany), Dongguan Sat Nano Technology Material Co., Ltd (China), Nano Flow (Belgium), Strem Catalog (US), Nanorh (India), SkySpring Nanomaterials (US), Aurion (Netherlands), NNCrystal US Corporation (US), among others in the gold nanoparticles market.

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