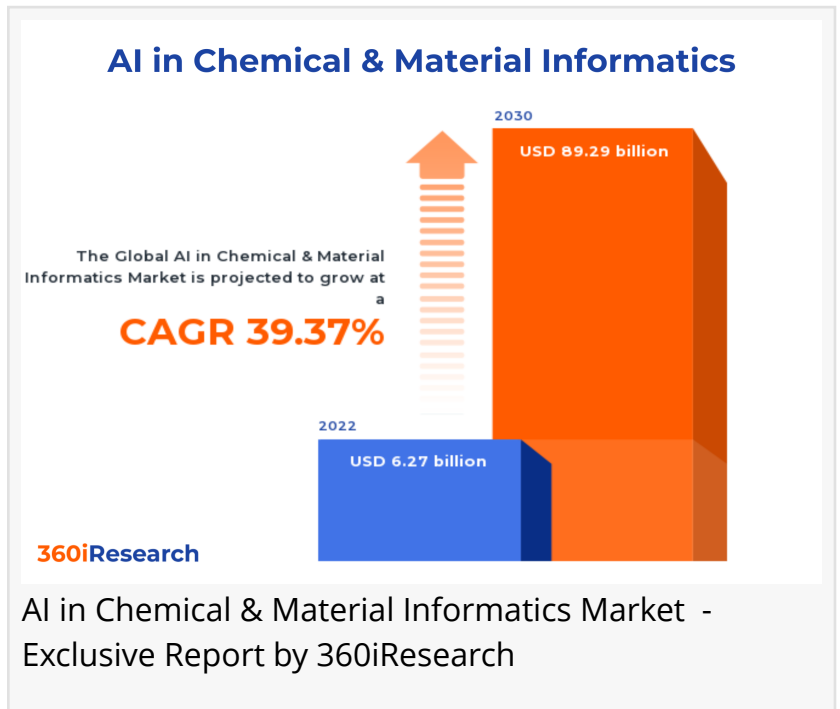


# AI in Chemical & Material Informatics Market worth \$89.29 billion by 2030 - Exclusive Report by 360iResearch

*The Global AI in Chemical & Material Informatics Market to grow from USD 6.27 billion in 2022 to USD 89.29 billion by 2030, at a CAGR of 39.37%.*

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EINPresswire.com/ -- The "[AI in Chemical & Material Informatics Market](#)" by Offering (Services, Software), Technology (Computer Vision, Machine Learning, Predictive Analytics), Deployment, Application, End-Use - Global Forecast 2023-2030" report has been added to 360iResearch.com's offering.



The Global AI in Chemical & Material Informatics Market to grow from USD 6.27 billion in 2022 to USD 89.29 billion by 2030, at a CAGR of 39.37%.

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Artificial intelligence (AI) within the context of chemical and materials informatics pertains to the application of machine learning and predictive modeling to solve complex problems in the chemical and materials science industries. This stream converges the novel and powerful computational methodologies under AI to study, understand, and predict the properties of chemicals and materials. Main growth catalysts in this market encompass technological developments along with a heightened need for operational efficiency. The troves of data from the chemical and material industry instigates efficient data management practices, bolstering the market's growth. However, the high investment costs, a dearth of skilled professionals, AI reliability skepticism, alongside data security and privacy concerns are distinct challenges that

impede market growth. Additional market opportunities include the burgeoning use of robotics and autonomous systems in research and manufacturing, opening doors for further AI integration. The acceptance of cloud-based solutions also fosters new prospects for AI service providers and software companies in the chemical and material sector.

**Technology:** Growing applications of machine learning to learn from past patterns for quick decision-making processes

Computer vision is a cutting-edge AI technology extensively used in the chemical and material informatics industry. It utilizes algorithms and machine learning to interpret and understand physical properties such as molecular and structural patterns, texture analysis, and microstructure quantification from digital images or videos. Machine learning (ML) is another significant technology widely applied in the chemical and material informatics realm. By leveraging algorithms that improve through experience, ML predicts the properties and behaviors of chemical compounds and materials. Companies in the chemicals and materials industry increasingly prefer machine learning for its predictive modeling features, which facilitate faster decision-making processes by predicting potential outcomes based on historical data. Predictive analytics utilizes AI and statistical algorithm techniques to identify the probability of future outcomes based on historical data. The application of predictive analytics is imperative in this industry as it aids in forecasting material performance, chemical reactions, and their potential impact, making it a preferred tool for R&D and production divisions.

**Offering:** Expanding usage of AI software in chemical & material informatics due to its predictive ability

Chemical & material informatics greatly benefit from AI-enhanced services that streamline the intricate processes within the industry. AI services for chemical & material informatics include features such as predictive modeling, simulation, and structure recognition, leading to more efficient procedures and sharper analytics. Services can be utilized as per the requirement of the businesses that accelerate research, reduce costs, and help in product innovation. Software plays a pivotal role in the practical implementation of AI in chemical and material informatics. Software solutions for material informatics have grown annually with an increase in the necessity for efficient material design and discovery. AI software solutions deliver improved performance and accuracy over traditional informatics tools. Using machine learning algorithms and neural networks, these systems automatically analyze, identify, and interpret complex patterns in chemical and material data much more accurately. This reduces errors, prevents wastage, and contributes to a scientific foundation of superior quality.

**End-Use:** Expanding usage of AI in chemical & material informatics across the chemical industry to fasten the discovery of new chemicals

In regard to battery & energy storage, AI has gained traction in battery design and system management. AI-powered predictive models help to customize the chemical design of batteries, ultimately leading to more efficient energy storage solutions. Moreover, AI promises to optimize the process of charging and discharging batteries, contributing to their longevity and reliability. In the chemical industry, the integration of AI has streamlined all processes from product

development to distribution. Deep learning has enhanced chemical reaction predictions, which resulted in significant cost savings and increased efficiency. These intelligent systems predict accurate chemical properties, encouraging data-driven decisions and reducing experimental costs. AI algorithms have the potential to both fast-track the discovery of new compounds and maximize the sustainability of chemical manufacturing processes. AI's role within the metals & mining sector promotes safety and productivity. Machine learning algorithms aid in the exploration of new mining possibilities. In the pharmaceutical industry, AI assists in drug discovery and development. AI algorithms screen billions of chemical structures within a few hours, innovatively speeding up the drug discovery process. Furthermore, AI tools also aid in predicting drug-target interactions, increasing the successful candidate leads for clinical testing and thus accelerating the journey from lab to life. AI has made significant strides in the polymer & plastics sector for recycling processes and material quality control. AI continues to drive innovation in the semiconductor industry, specifically in the realm of predictive maintenance and yield enhancement. AI systems facilitate sophisticated simulation and modeling, predicting failures, and optimizing chip designs. Furthermore, with the complexity of semiconductor manufacturing, companies are leveraging AI solutions for anomaly detection, quality assurance, and supply chain prediction to boost efficiency and yield.

**Application:** Significant demand for AI for material discovery & experimentation due to its ability to save resources in trial & testing

Artificial intelligence (AI) is extensively used in material discovery & experimentation to accelerate the process of creating new materials and designing advanced basic materials. AI enables the creation of a virtual space to conduct hundreds of thousands of trials, reducing the development time and cost. AI technology plays a significant role in material manufacturing. It aids in predictive maintenance and process optimization and enhances production efficiency. Algorithms help in maintaining the quality and safety of manufacturing output. AI is a pivoting point for quality control & assurance in the chemical and material industry. Computer vision combined with machine learning algorithms support defect detection and hence improve product quality.

**Deployment:** High potential for cloud AI systems across start-ups and mid-sized enterprises  
Cloud-based AI systems provide easy and swift access to vast databases, necessitating only an internet connection. They reduce infrastructure costs as there is no need for expensive servers or other hardware. Companies adopting cloud AI have shown a preference for its scalability. They effortlessly expand the AI's capabilities as their needs grow. Moreover, it offers colossal data storage, enabling organizations to manage and analyze large datasets effectively. Alternatively, some enterprises prefer on-premise deployment for AI in their chemical and material informatics workflows. In this setup, AI systems are installed directly on local devices inside businesses. Companies gravitating towards on-premise AI appreciate the control and security it offers, especially with sensitive data. They employ strict in-house data security policies and avoid potential risks associated with cloud breaches.

**Regional Insights:**

The Americas AI in chemical & material informatics market shows a remarkable trend owing to the region's technological advancements and dynamic innovation ecosystem, where the United States majorly contributing to adopting AI technologies and investing heavily in R&D. Additionally, regions's growing focus on industrial diversification is pushing for AI utilization across its chemical and materials industry. The EMEA region presents robust growth in the application of AI in chemical and material informatics market. Major European countries such as France, Germany, and the UK are spearheading the digital transformation drive in the chemical industry. The Middle East is leveraging AI potential, particularly in the oil and gas sector, while Africa's market, though nascent, is showing promising signs owing to growing digital literacy and infrastructure development. In the APAC region, a burgeoning tech scene and increased investments in AI are driving considerable growth. With emerging economies employing AI in every industrial sector, including the chemical industry, and booming digital economies, the APAC region is poised to significantly expand AI applications within Chemical and Material Informatics.

#### FPNV Positioning Matrix:

The FPNV Positioning Matrix is essential for assessing the AI in Chemical & Material Informatics Market. It provides a comprehensive evaluation of vendors by examining key metrics within Business Strategy and Product Satisfaction, allowing users to make informed decisions based on their specific needs. This advanced analysis then organizes these vendors into four distinct quadrants, which represent varying levels of success: Forefront (F), Pathfinder (P), Niche (N), or Vital(V).

#### Market Share Analysis:

The Market Share Analysis offers an insightful look at the current state of vendors in the AI in Chemical & Material Informatics Market. By comparing vendor contributions to overall revenue, customer base, and other key metrics, we can give companies a greater understanding of their performance and what they are up against when competing for market share. The analysis also sheds light on just how competitive any given sector is about accumulation, fragmentation dominance, and amalgamation traits over the base year period studied.

#### Key Company Profiles:

The report delves into recent significant developments in the AI in Chemical & Material Informatics Market, highlighting leading vendors and their innovative profiles. These include AI Materia, Ansatz AI, Bytelab Solutions SL, All, Chemical.AI, Citrine Informatics, Dassault Systèmes SE, ENEOS Corporation, Enthought, Inc., Fujitsu Limited, Hitachi High-Tech Corporation, International Business Machines Corporation, Kebotix, Inc., Mat3ra, Materials.Zone Ltd., Mitsubishi Chemical Holdings Corporation, Noble Artificial Intelligence, Inc., PerkinElmer Inc, Phaseshift Technologies Inc., Polymerize Private Limited, Schrödinger, Inc., Sumitomo Chemical Co., Ltd., TDK Corporation, Tilde Materials Informatics, Toray Industries, Inc., and Uncountable

Inc.

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#### Market Segmentation & Coverage:

This research report categorizes the AI in Chemical & Material Informatics Market in order to forecast the revenues and analyze trends in each of following sub-markets:

Based on Offering, market is studied across Services and Software. The Services is projected to witness significant market share during forecast period.

Based on Technology, market is studied across Computer Vision, Machine Learning, and Predictive Analytics. The Machine Learning is projected to witness significant market share during forecast period.

Based on Deployment, market is studied across Cloud and On-premise. The Cloud is projected to witness significant market share during forecast period.

Based on Application, market is studied across Material Discovery & Experimentation, Material Manufacturing, and Quality Control & Assurance. The Quality Control & Assurance is projected to witness significant market share during forecast period.

Based on End-Use, market is studied across Battery & Energy Storage, Chemicals, Metals & Mining, Pharmaceuticals, Polymer & Plastics, and Semiconductor. The Polymer & Plastics is projected to witness significant market share during forecast period.

Based on Region, market is studied across Americas, Asia-Pacific, and Europe, Middle East & Africa. The Americas is further studied across Argentina, Brazil, Canada, Mexico, and United States. The United States is further studied across California, Florida, Illinois, New York, Ohio, Pennsylvania, and Texas. The Asia-Pacific is further studied across Australia, China, India, Indonesia, Japan, Malaysia, Philippines, Singapore, South Korea, Taiwan, Thailand, and Vietnam. The Europe, Middle East & Africa is further studied across Denmark, Egypt, Finland, France, Germany, Israel, Italy, Netherlands, Nigeria, Norway, Poland, Qatar, Russia, Saudi Arabia, South Africa, Spain, Sweden, Switzerland, Turkey, United Arab Emirates, and United Kingdom. The Americas commanded largest market share of 37.04% in 2022, followed by Europe, Middle East & Africa.

#### Key Topics Covered:

1. Preface
2. Research Methodology

3. Executive Summary
4. Market Overview
5. Market Insights
6. AI in Chemical & Material Informatics Market, by Offering
7. AI in Chemical & Material Informatics Market, by Technology
8. AI in Chemical & Material Informatics Market, by Deployment
9. AI in Chemical & Material Informatics Market, by Application
10. AI in Chemical & Material Informatics Market, by End-Use
11. Americas AI in Chemical & Material Informatics Market
12. Asia-Pacific AI in Chemical & Material Informatics Market
13. Europe, Middle East & Africa AI in Chemical & Material Informatics Market
14. Competitive Landscape
15. Competitive Portfolio
16. Appendix

The report provides insights on the following pointers:

1. Market Penetration: Provides comprehensive information on the market offered by the key players
2. Market Development: Provides in-depth information about lucrative emerging markets and analyzes penetration across mature segments of the markets
3. Market Diversification: Provides detailed information about new product launches, untapped geographies, recent developments, and investments
4. Competitive Assessment & Intelligence: Provides an exhaustive assessment of market shares, strategies, products, certification, regulatory approvals, patent landscape, and manufacturing capabilities of the leading players
5. Product Development & Innovation: Provides intelligent insights on future technologies, R&D activities, and breakthrough product developments

The report answers questions such as:

1. What is the market size and forecast of the AI in Chemical & Material Informatics Market?
2. Which are the products/segments/applications/areas to invest in over the forecast period in the AI in Chemical & Material Informatics Market?
3. What is the competitive strategic window for opportunities in the AI in Chemical & Material Informatics Market?
4. What are the technology trends and regulatory frameworks in the AI in Chemical & Material Informatics Market?
5. What is the market share of the leading vendors in the AI in Chemical & Material Informatics Market?
6. What modes and strategic moves are considered suitable for entering the AI in Chemical & Material Informatics Market?

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