Leading Driver In The Generative AI In Material Science Market 2025: AI Technologies Propel Growth Of The Industry

TBRC's Generative Artificial Intelligence (AI) In Material Science Global Market Report 2025 – Market Size, Trends, And Global Forecast 2025-2034

Generative Artificial Intelligence (AI) In Material Science Global Market Report 2025

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Is The Generative Artificial Intelligence (AI) In Material Science Market Set To Witness Substantial Growth?
The generative artificial intelligence AI in material science market size has experienced significant growth in recent years. This market is set to expand from $1.26 billion in 2024 to $1.68 billion in 2025, marking a compound annual growth rate CAGR of 33.8%. Factors contributing to this growth during the historic period include the discovery of new materials, increased government funding for research and development, enhanced computing performance, growing data availability, and rising demand for lightweight materials. What's more? The market is poised for exponential growth, estimated to touch $5.35 billion in 2029 at a CAGR of 33.6%. Here's a comprehensive report explaining why!

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What Are The Major Growth Drivers And Trends In The Generative Artificial Intelligence AI In Material Science Market?
The surge in private investment, increased demand for sustainable materials, personalized material design, growth in autonomous systems, and rising adoption of biotechnology applications are key growth factors for the forecast period. Among the trends to watch for are AI-driven predictive analytics, the development of self-healing materials, generative AI adoption in nanomaterial design, the evolution of decentralized research networks, and the integration of AI

with additive manufacturing.

More importantly, the rapid increase in investments in artificial intelligence technologies is projected to favor the generative artificial intelligence in the material science market significantly. Rising demand for automation, enhanced data analytics, innovation in applications, and robust government and private sector support have led to a surge in AI investments. Reports from International Business Machines Corporation IBM indicate that the global AI adoption rate increased to 35% in May 2022, a four-point rise from the previous year. Consequently, the burgeoning investment in AI technologies propels the growth of the generative artificial intelligence in the material science market.

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Who Are The Key Players In The Generative Artificial Intelligence In Material Science Market?
Prominent players spearheading the generative artificial intelligence in material science market include Microsoft Corporation, Siemens AG, International Business Machines Corporation IBM, NVIDIA Corporation, Hexagon AB, Illumina Inc., ANSYS Inc., DeepMind Technologies Limited, Altair Engineering Inc., OpenAI, Schrödinger Inc., XtalPi, Alchemy Insights Inc., Citrine Informatics Inc., QuesTek Innovations LLC, Materials Zone, Kebotix Inc., Nanotronics Imaging Inc., AION Labs, and Exabyte.io. These top firms drive market growth through innovation, and notable strides are observed in the development of innovative solutions like accelerated generative AI models for drug discovery. These computational systems, powered by machine learning algorithms, swiftly and efficiently design and predict potential new drugs, thus accelerating molecular design and optimization.

How Is The Generative Artificial Intelligence (AI) In Material Science Market Segmented?

1. By Type:
- Materials Discovery And Design
- AI-Driven Materials Screening
- AI-Based Computational Chemistry
- Quantum Materials Design
- Material Property Prediction
- Predictive Modeling And Simulation
- AI-Based Simulation For Material Behavior
- Predictive Analytics For Material Performance
- Failure Prediction And Reliability Analysis
- Thermal And Mechanical Property Simulation
- Process Optimization
- AI For Manufacturing Process Optimization
- Energy Efficiency In Material Processing

- AI-Driven Quality Control In Material Production
- Supply Chain Optimization For Materials
2. By Deployment: Cloud-Based, On-Premises, Hybrid
3. By Application: Pharmaceuticals And Chemicals, Electronics And Semiconductors, Energy Storage And Conversion, Automotive And Aerospace, Construction And Infrastructure, Consumer Goods, Other Applications

What Does The Regional Analysis Say About The Generative Artificial Intelligence In Material Science Market?
North America was the largest region for the generative artificial intelligence in material science market in 2024. However, set your sights on the Asia-Pacific region, which is presumed to be the fastest-growing region in the forecast period.

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Oliver Guirdham
The Business Research Company
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