

# Global Graphene Market Opportunity, Projects, Application & Patent Insight 2023

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## Abstracts

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Graphene is latest discovery belonging to the group of carbon allotropes and can be considered as among the leading versatile material ever discovered on the earth. Its amazing properties like light weight, extremely high mechanical strength make it an ideal material for many applications. The amazing properties of graphene also include excellent electrical and thermal conductivity, thinness, selective permeability, electronic and optical properties. These properties together make graphene a versatile material that can be integrated into a huge number of applications.

Graphene is undoubtedly emerging as one of the most promising nanomaterials because of its unique combination of superb properties, which opens a way for its usage in a wide spectrum of applications ranging from electronics to optics, sensors, and bio-devices. It is an allotrope of carbon in the form of a two-dimensional, atomic-scale, hexagonal lattices with each atom forming each vertex. Graphene is the smallest unit of carbon with one-atom carbon thus forming the basic structural element of other allotropes, including graphite, charcoal, carbon nanotubes and fullerenes.

At present, the industrial applications of graphene are minuscule compared to its potential in various fields. The major concerns for the commercialization of graphene are high costs and low production. This scenario is likely to change in next 5 years or even less due to ongoing researches on graphene that will continue to reduce the costs and broadening the scope of applications. More discussions about graphene in various media will also affect in creation of greater awareness on this material and subsequently will speed up the process of technological adaptation of graphene in industrial applications. Hence, it will lead to expansion of graphene market by great extent.

Among several sectors, graphene finds its maximum number of applications in two rapidly growing areas, electronics and energy storage. Electronics already provides the maximum share in graphene market in terms of applications because of the excellent properties of graphene like thermal and electrical conductivity, optical transparency, high mechanical strength etc. These physical properties of graphene are also utilized in case of applications in energy sector, which are mostly concentrated in energy storage and photovoltaic panels for harnessing solar energy. With the technological progress these two industrial sectors are being considered as the two leading and fast emerging sectors across the world and hence steady efforts are on to achieve enhance device performance, energy efficiency, greater cost-effectiveness etc.

“Global Graphene Market Opportunity, Projects, Application & Patent Insight 2023”  
Report Highlights:

Introduction to Graphene

Graphene Applications by Sector (Biomedical, Electronics, Optoelectronics  
Energy, Composites Materials & Others)

Global Graphene Market Current Scenario

Global Graphene Market by Products, Applications & Region

Global Graphene Patent Database by Sector/Application

Global Graphene Market Commercial Projects by Sector/Application

Global Graphene Market Future Outlook by Products, Applications & Region

Analysis of the future market prospect of graphene with respect to areas of applications and geographical regions give some interesting movement patterns. These findings reflect favorable conditions for more investment and opportunities for further research and development. Electronics is very likely to continue as the largest component in the global graphene market in terms of applications until 2023 or even beyond that for some time. The share of the sector comprising composite materials seems to remain approximately same over the years with marginal decrease through 2023. On the other hand, energy sector shows substantial increase in market share along with other

sectors. The rapid growth in the demand for solar PV cells and batteries are going to be the drivers behind this. Other sectors including biomedical, water treatment, mitigation of environmental pollutants etc. also look to grow considerably because of the increasing number of researches in these fields.

The success of different nanomaterials including graphene is being debated in many media indicating the difficulties to overcome the challenges. But most of those materials are in research phase and the markets for them are only in the initial days. So it is not wise to come to conclusion or write off them. Furthermore, the properties of graphene make it most amazing among all the nanomaterials and it can adapted to various applications. Analysis of the prospect of graphene connecting current and future markets shows quite positive for its future prospect. A lot of research will still be conducted on this that will only add more features to this expanding the list of potential applications and market as well.

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