

# The Global Market for Graphene in Batteries and Supercapacitors

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## Abstracts

With global energy demands ever increasing, allied to efforts to reduce the use of fossil fuel and eliminate air pollutions, it is now essential to provide efficient, cost-effective, and environmental friendly energy storage devices. The growing market for smart grid networks, electric vehicles (EVs), autonomous and Human Driver Interface (HDI) EVs and plug-in hybrid electric vehicles (PHEVs) is also driving the market for improving the energy density of rechargeable batteries and supercapacitors.

Rechargeable battery technologies (such as Li-ion, Li-S, Na-ion, Li-O<sub>2</sub> batteries) and supercapacitors are among the most promising power storage and supply systems in terms of their wide spread applicability, and tremendous potential owing to their high energy and power densities. LIBs are currently the dominant mobile power sources for portable electronic devices used in cell phones and laptops.

Although great advances have been made, each type of battery still suffers from problems that seriously hinder the practical applications for example in commercial EVs and PHEVs. The performance of these devices is inherently tied to the properties of materials used to build them.

With renewable energy sources at peak interest in the scientific research community, technologies for storing high amounts of electric charge and energy are much sought after. Electric vehicles, and enabling lithium-battery (LIB) technology, will become a progressively larger market-with estimates of CAGR of over 20% through to 2025.

Graphene is enabling batteries and supercapacitors with many new features that do not exist with current technology. Due to intrinsic properties such as high surface area and high conductivity, graphene is an excellent candidates to improve the performance of

conductive materials in energy storage/conversion devices (e.g., Li ion batteries, supercapacitors, fuel cells, and solar cells).

The use of graphene can enable faster charging without accelerating the degradation of a battery, extending battery life. It can also reduce the requirement for complex and costly heat management systems required for high battery charge and discharge rates. Graphene supercapacitors can serve as a replacement for the Lithium-ion batteries or can be used to complement them. They can potentially hold the same energy as a Lithium-ion battery and can recharge in a fraction of the time.

Report contents include:

Tabular data on current graphene products.

Assessment of graphene in the batteries and supercapacitors markets including applications, key benefits, market megatrends, market drivers for graphene, technology drawbacks, competing materials, potential consumption of graphene to 2030 and main players.

In depth-assessment of graphene producer and distributor pricing in 2020.

Global market for graphene in tons, by sector, historical and forecast to 2030. Global graphene market size split by market in 2019 and for each application to 2030.

Full list of technology collaborations, strategic partnerships, and M&As in the graphene market.

In-depth profiles of graphene battery and supercapacitor producers and product developers.

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