



**Global and China Graphene Industry
Report, 2015-2018**

Nov. 2015

STUDY GOAL AND OBJECTIVES

This report provides the industry executives with strategically significant competitor information, analysis, insight and projection on the competitive pattern and key companies in the industry, crucial to the development and implementation of effective business, marketing and R&D programs.

REPORT OBJECTIVES

- ◆ To establish a comprehensive, factual, annually updated and cost-effective information base on market size, competition patterns, market segments, goals and strategies of the leading players in the market, reviews and forecasts.
- ◆ To assist potential market entrants in evaluating prospective acquisition and joint venture candidates.
- ◆ To complement the organizations' internal competitor information gathering efforts with strategic analysis, data interpretation and insight.
- ◆ To suggest for concerned investors in line with the current development of this industry as well as the development tendency.
- ◆ To help company to succeed in a competitive market, and

METHODOLOGY

Both primary and secondary research methodologies were used in preparing this study. Initially, a comprehensive and exhaustive search of the literature on this industry was conducted. These sources included related books and journals, trade literature, marketing literature, other product/promotional literature, annual reports, security analyst reports, and other publications.

Subsequently, telephone interviews or email correspondence was conducted with marketing executives etc. Other sources included related magazines, academics, and consulting companies.

INFORMATION SOURCES

The primary information sources include Company Reports, and National Bureau of Statistics of China etc.

Abstract

Graphene, a “miracle material” discovered in 2004, has always drawn people's attention, and is still in the critical stage of R&D and industrialization with the whole industry chain having not fully taken shape.

Global graphene market size is only USD24.4 million in 2015, and most of demand comes from semiconductor electronics, lithium battery and composite materials industries, which seize a combined 60.1% share. As progress is made in the industrialized application of graphene, global graphene market size is expected to hit USD65 million in 2018.

China is a late starter in graphene research, but has achieved some results driven by policies on new materials industry. Meanwhile, China, through the setup of China Innovation Alliance of the Graphene Industry, establishes 5 graphene industrial parks (Changzhou, Wuxi, Ningbo, Qingdao, and Chongqing) to accelerate the industrialization of graphene. China is the country with the most graphene patents in the world, having cumulatively applied for 7,900 patents by the end of Mar 2015.

Propelled by the achievements and industrialization advancement, it is expected that the Chinese graphene market will preliminarily take shape in 2018 with a market value of around RMB200 million.

Driven by favorable policies and being bullish about graphene prospects, Chinese manufacturers speed up their presence in graphene industry via capital increase for capacity expansion and active cooperation with colleges & universities and downstream producers.

The most representative companies are The Sixth Element (Changzhou) Materials Technology, 2D Carbon (Changzhou) Tech, Beijing Moxi Holdings, and Fangda Carbon New Material.

The Sixth Element (Changzhou) Materials Technology: The current 100 tons/a graphite/graphene oxide/graphene powder production line is planned to be boosted to 1kt/a in 2016. The company acquired a 100% stake in Wuxi Graphene Film Co., Ltd. and set up a joint venture- Changzhou Boke Graphene Testing Technology Co., Ltd. in 2015.

Beijing Moxi Holding: Two graphene subsidiaries (Ningbo and Chongqing), with the former boasting capacity of 2 million m²/a graphene-coated foil and 300 tons/a graphene nanoplatelet and the latter 1 million m²/a graphene conductive film.

Fangda Carbon New Material: Enhances graphene research and production capability via cooperation with colleges & universities and research institutes (e.g. nuclear graphite research center jointly established with the Institute of Nuclear and New Energy Technology, Tsinghua University). The company was capable of producing 10 kilograms of graphene end products daily by the end of Oct 2015.

Der Future Science & Technology: Started to fully get involved in graphene industry in 2014 via raw material strategy (establishment of Der Graphene Mining), technology R&D strategy (cooperation with Wuhan University and Xiamen University), platform strategy (setup of Der graphene industry fund), and industrialization strategy (proposed construction of graphene industrial park).

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Business Layout of Major Global and Chinese Graphene Manufacturers

Company	Investment Time	Industrial Distribution
 ANGSTRON MATERIALS	2007	In May 2015, it teamed with Stryke Industries LLC to accelerate development and commercialization of graphene products for military and defense applications.
 GRAFOID	2011	In August 2014, the company created MesoGraf platform with which to produce high-purity, high-density graphene; In May 2015, it made a wholly-owned acquisition of MuAnalysis Inc., an electronic component analytical service provider.
 The Sixth Element Inc.	2011	In 2014, it acquired a 100% stake in Wuxi Graphene Technologies Co., Ltd.; In addition, it also set up a joint venture Changzhou Boke Graphene Detection Technology Co., Ltd.
 MX	2012	In April 2015, the company signed a tripartite agreement with Nanjiang Space and Nanjiang Robotics to jointly develop the application of graphene in near space aircraft and robots.
 KDX	2014	The company set up graphene R&D and production subsidiary; In collaboration with BAIC Capital, it set up a fund for graphene development; It also introduced Xi'an National Aviation Industrial Fund Investment Management Co. to expand R&D of graphene products for military and defense applications.
 Der 德尔	2014	It bought shares in Browah, a graphene heat abstractor manufacturing company; It established Der Future graphene industry fund and graphene investment platform; It also partnered with Xiamen University to set up Del Graphene Research Institute.

Source: Global and China Graphene Industry Report, 2015-2018; ResearchInChina

Global and China Graphene Industry Report, 2015-2018 highlights the followings:

- Development of upstream and downstream industries of graphene, including graphite, graphene device processing, etc.;
- Global graphene industry (market size, industrialization development, R&D patent, downstream market segments (lithium battery, supercapacitor, transparent electrode), etc.);
- Graphene industry in China (policy environment, industrialization development, R&D patent, layout of enterprises, downstream market segments, etc.);
- Operation, graphene business, etc. of 21 global and 10 Chinese graphene companies.

1 Overview of Graphene Industry

- 1.1 Definition
- 1.2 Preparation Method
- 1.3 Industry Chain
- 1.4 Applications
 - 1.4.1 Integrated Circuit
 - 1.4.2 Sensor
 - 1.4.3 Transistor
 - 1.4.4 Transparent Electrode
 - 1.4.5 Sea Water Desalination
 - 1.4.6 Supercapacitor

2 Overview of Upstream and Downstream Industries

- 2.1 Graphite
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3 Development of Global Graphene Industry

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- 3.4 Market Segments
 - 3.4.1 Lithium Battery
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