

Global Silicon Germanium Materials & Devices Market: Focus on Material Type (Source, Substrate & Epitaxial Wafer), Device Type (Wireless, Radio, FOT) & End-User (Telecommunication, Consumer Electronics, Automotive) - Analysis & Forecast 2017-2021

<https://marketpublishers.com/r/GD3700358FFBEN.html>

Date: April 2018

Pages: 231

Price: US\$ 4,599.00 (Single User License)

ID: GD3700358FFBEN

Abstracts

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Over the last decade, process enhancements have played a crucial role in the evolution and progress of the semiconductor sector globally. Due to the known restrictions of conventional silicon-based semiconductor materials, such as low electron mobility, temperature sensitivity and volatility, researchers have been working on substitute semiconductor materials. Silicon-based manufacturing process of modern microchips does not provide a competitive edge when it comes to enormously high-performance levels needed for some emerging wireless communications, signal processing, and radar applications. Several highly customized and cost-effective semiconductor materials such as silicon germanium, indium phosphide, gallium arsenide and gallium nitride, currently hold a significant share in these highly demanding application areas.

Concept of combining germanium with silicon materials to produce silicon-germanium alloy has been available for several years, yet the technology is only used in some niche applications. In SiGe technology, slight quantities of germanium are introduced into silicon substrates at the atomic scale to boost the semiconductor performance considerably. SiGe HBT technology was initially industrialized by IBM in the early 90s for the high-end computing and communications market. SiGe technology is the propelling factor behind the advancement of low-cost, lightweight, communications devices, and automobile collision avoidance systems. By the incorporation of SiGe

technology, device performance attributes such as low-noise, high yield, smaller size, high-durability and temperature resistance, are enhanced. These multifunction, cost-effective and advanced features of SiGe materials allow them to be used in varied end-markets.

Silicon germanium technology is expanding into varied end-markets such as telecommunications, computers, consumer electronics, automotive and military and aerospace. New developments in silicon germanium market such as expansion of bandwidth, high frequency applications and thermoelectric capabilities is expected to further boost the commercialization process. Moreover, rapid expansion of internet, high mobile adoption and growth in the global autonomous driving industry are the major opportunities lined up in the silicon germanium market in coming future. Several semiconductor companies are extensively tracking market opportunities for SiGe technology by forming partnerships along the value chain, with auto OEMs, telecom sector giants and wireless network providers.

Market growth over the forecast period will be driven by certain factors such as increasing internet traffic requiring high bandwidth functionality, increasing smartphone adoption and rising demand for advanced radio frequency (RF) devices in various industries. One of the major factors restraining the growth of SiGe market is the high competition from III-V semiconductors.

The report is a compilation of the different segments of the global silicon germanium materials & devices market, including market breakdown by material type, device type, and different application areas. Herein, the revenue generated from the different materials and device types in different end-users such as; telecommunication, computers, consumer electronics, automotive, aerospace & defense are tracked to calculate the overall market size. While highlighting the key driving, and restraining forces for this market, the report also provides a detailed summary of the market.

The report answers the following questions about the global silicon germanium materials & devices market:

What was the size, in terms of value (\$million) of the silicon germanium materials & devices market in 2016, and what will be the growth rate during the forecast period, 2017-2021?

What are different materials & devices being supplied by the key players in the silicon germanium materials & devices market?

What was the revenue generation of silicon germanium materials & devices market for different end-uses in 2016, and what is their growth prospect?

What is the market size of different materials and devices, in terms of value and their respective growth prospects and key developments?

What is the silicon germanium materials & devices market size for different regions, on the basis of various types and end-users?

What are the key trends and opportunities in the market, pertaining to the countries included in different geographical regions?

How attractive is the market for different stakeholders present in the industry by analyzing the futuristic scenario of silicon germanium materials & devices market?

What are the major driving forces that tend to increase the demand for silicon germanium materials & devices market during the forecast period?

What are the major challenges inhibiting the growth of the global silicon germanium materials & devices market?

What kind of new strategies are being adopted by the existing market players to expand their footprint in the industry?

What is the competitive strength of the key players in the silicon germanium materials & devices market by market share analysis?

Who are the key market players in the market, along with their detailed analysis & profiles (including company snapshots, their financials, key products & services, and SWOT analysis)?

The report puts special emphasis on the market share of the leading companies in the silicon germanium materials & devices market, owing to the changing paradigms in the industry. The report further includes a thorough analysis of the impact of the Porter's Five major Forces to understand the overall attractiveness of the industry. The report also focuses on the key developments and investments made in the silicon germanium

materials & devices market by the key players.

The commonly used strategy adopted by the key players to enhance their geographical presence is product launch & development, followed by partnerships & collaborations. Moreover, the company profiles section highlights significant information about the key companies involved, along with their financial positions, key strategies & developmental activities since the past few years.

Further, the report includes an exhaustive analysis of the geographical split into North America, Europe, Asia-Pacific (APAC), and Rest of the World (RoW). Each geography details the individual push and pull forces in addition to the key players from that region. The prominent players operating in the global Silicon germanium materials & devices market are IBM, Infineon Technologies, NXP Semiconductors, Texas Instruments, TowerJazz, IQE Plc, MACOM, TSMC, Hitachi, RIBER, GlobalFoundries, Toshiba and Aixtron, among others

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