



**Global and China Silicon-based Anode
Material Industry Report, 2017-2020**

July 2017

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

At present, commercial lithium-ion battery anode materials are mostly based on graphite. High-end graphite-based anode materials which have been successfully developed and put into use, have capacity of 365mAh/g, close to the theoretical capacity of graphite (372mAh/g), with compaction density ranging at 1.7~1.75g/cm³. There is seldom an improvement in energy density of anode materials in terms of capacity per gram and compaction density of graphite.

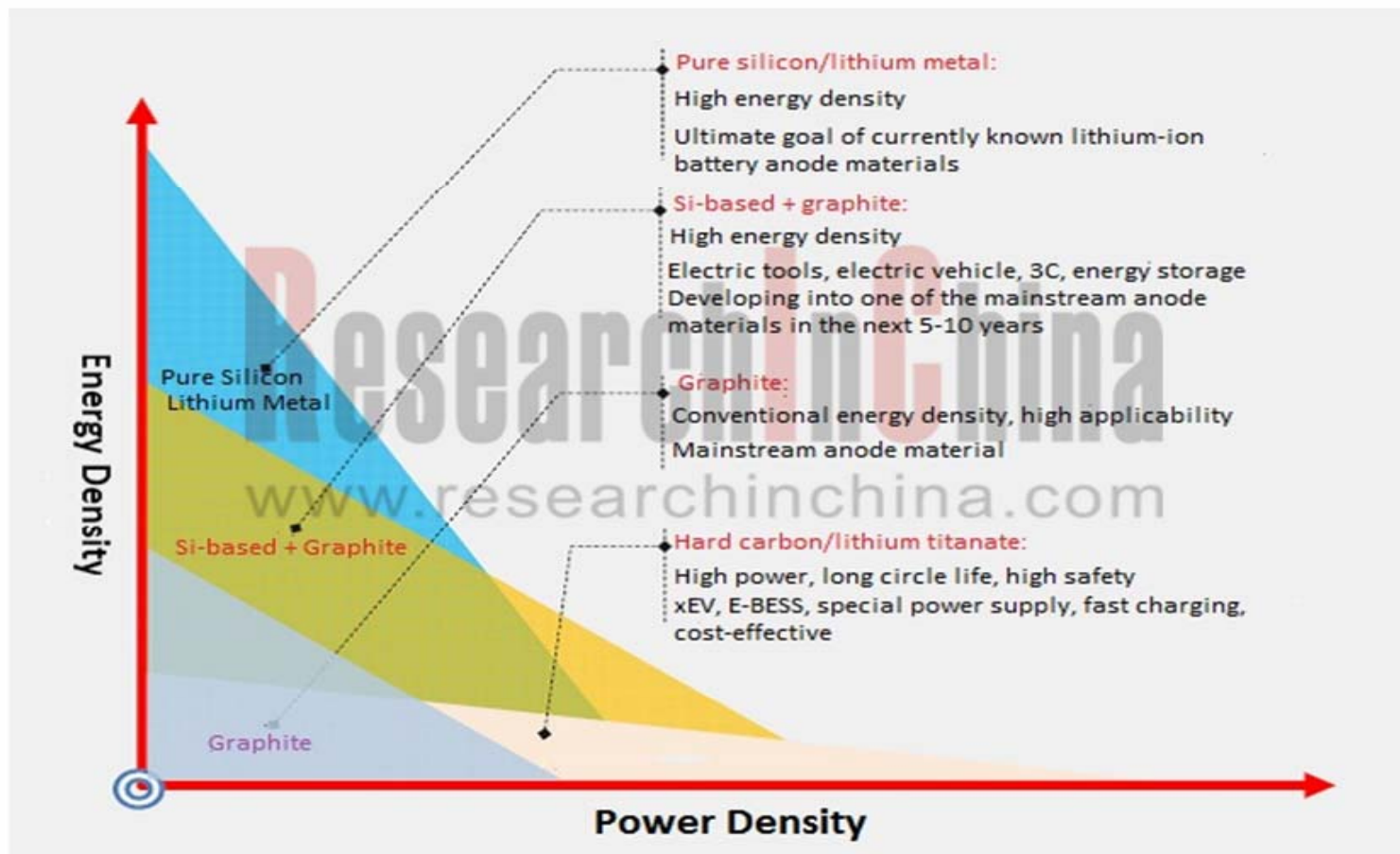
Moreover, in lithium-ion battery market, especially power battery market, requirements on energy density of batteries are increasingly high. According to Chinese government's plan for power battery (as of 2020), specific energy of new lithium-ion power battery cell shall exceed 300Wh/kg and that of the system shall be up to 260Wh/kg. In current stage, mainstream graphite-based anode materials are hardly satisfying the needs of improving specific capacity of batteries. New high-capacity anode materials such as Si-C composite are the future development trend.

Presently, a solution of Si-based materials doped with graphite is common for pure Si-based materials which have great expansion and high costs in spite of energy density of up to 4200mAh/g, and more doping renders higher concentration of silicon in the materials. Silicon carbon anode material (SiC) and silicon oxide anode material (SiO) are the mainstream technical solutions at present.

Currently, around 10% of Si-based material can be added into SiC anode material. In line with the China's plan for specific energy of power battery cell of 300Wh/Kg, that of anode materials shall attain 600-800ah/g. Hence, Si-based material will see a rising share to 25%-35% and above in the anode material in the coming several years.

The output of anode materials reached 122,500 tons in China in 2016, an upsurge of 68.3% from a year ago. As it is still at the infancy of industrialization and features low penetration rate, the SiC anode material demand stands at 300 tons or more. If the average addition of Si-based materials is up to 30% or so in 2020, the demand for Si-based anode materials will soar to roughly 40,000 tons and the overall market size will reach about RMB8 billion.

Anode Material Technology Roadmap



Source: ResearchInChina

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