



Technology of Battery Grade Lithium Carbonate from domestic spodumene raw materials for lithium electrode materials

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Rapid development of the market for battery-powered devices, especially electric and hybrid cars and renewable energy over the past 10 years has led to a sharp demand for new high-capacity materials for LIB. Today, lithium is becoming a new strategic material capable of influencing the sustainable development of the world economy. The prices for lithium carbonate, one of the most important energy materials for obtaining lithium electrodes, rose sharply. Large automakers predict that the sector of hybrid and full electric vehicles will grow steadily and will reach a share in the car market at 10-30% by 2020. As a result, the demand for lithium will increase by 100-200%.

Kazakhstan has large reserves of various rare earth metals and associated lithium, mainly concentrated in East Kazakhstan. Confirmed lithium reserves in the bowels of foreign countries according to the USGS as of early 2013 show that even according to the preliminary data of the explored reserves, Kazakhstan is included in 10 world leaders.

In this paper, we present the preliminary results of the development full technology of the battery grade lithium carbonate (99.5% purity) from the Kazakhstan spodumene raw material and perfected technology of obtaining innovative lithium-ferro-phosphate cathode materials on the base of it for the new generation LIB [1]. The effective cathode material LiFePO_4 was synthesized by spray-pyrolysis method on the basis of the products of NAC Kazatomprom [2]. All of this will be the key to the creation scientific and technological bases for the development of a high-tech lithium cluster in Kazakhstan to manufacture products with a high degree of readiness for the end user under the scheme: Spodumene ores \rightarrow Lithium concentrate \rightarrow Lithium carbonate \rightarrow Lithium cathode materials \rightarrow Batteries.

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[2] Research Report on the topic “Development and experimental testing of a complex of effective technologies for the production of materials for chemical sources of electric current”, Almaty, “Institute of High Technology” LLP "NAC"Kazatomprom" JSC, 2014 – 32 p.