



Titanosilicate minerals of the khibiny mountains and the search for practical applications of their synthetic analogues in the regional nanomaterials research centre

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Abstract

Alkaline and alkaline-ultrabasic massifs of the Kola Peninsula are one of the world leaders in mineral diversity. Nowadays, the list of minerals found in these massifs includes more than 200 mineral species and is annually increasing by another 5-10 species. Many minerals discovered in the Khibiny-Lovozero complex attract the attention of scientists as prototypes of new functional materials. Synthetic analogues of zorite, sitinakite, strontiofluorite minerals and some other minerals have already served as prototypes for creating functional materials used for separation of gas mixtures, catalysis, preservation of radioactive waste, the manufacture of pharma drugs, coating of optical lenses, lasers.

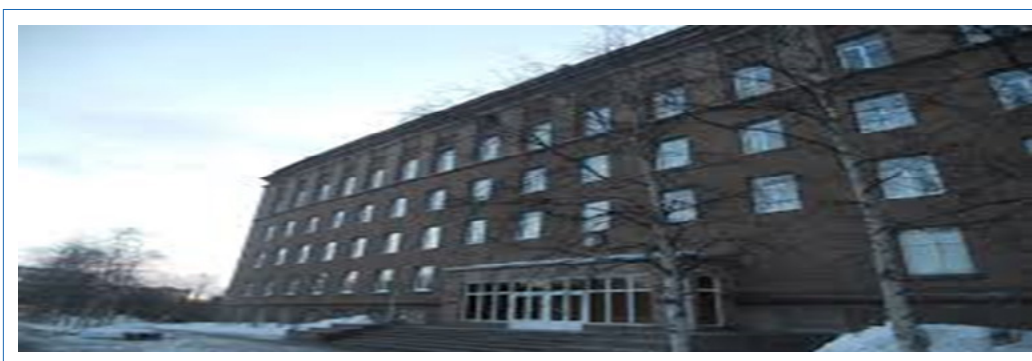
This prompted the Kola Science Center in 2010 to raise the question of creating a nanomaterial Science center in its structure, the main aims of which are:

1. The directed search and study of the properties of minerals - potential prototypes of new functional materials (catalysts, sorbents).
2. Obtaining precursors from mineral concentrates and synthesis based on them nanoporous titanosilicate minerals of interest to modern materials science.

The main objective of this report is to give a general idea of the specifics of the work carried out at the Center for Nanomaterial Science of the Kola Science Center of the Russian Academy of Sciences and also to show, by the example of the lintsite and ivanyukite minerals family, a transition scheme from laboratory studies of a natural mineral to its synthetic analogue, which can be obtained by more complex processing of titanium-containing raw materials processing enterprises and apply to create modern materials.

Biography

Galina Olegovna Kalashnikova is a researcher in Kola Science Centre, The nano-science center in Russian Federation. He is expertized in the research of inorganic chemistry, chemical technology, Titanosilicates, Hydrothermal synthesis, microporous materials, nanostructured materials. The research is supported by the Kola Science Center of the Russian Academy of Sciences (0226- 2019-0009) and the Russian Foundation for Basic Research (18-29-12039).



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