

Hugely reduce the energy consumption of refrigerators? SibFU scientists find a way to do so

A research team from Siberian Federal University and L.V. Kirensky Institute of Physics, SB RAS, is developing materials that can be used as cooling elements in refrigerators and miniature devices for electronics and will help refrigerators be dozens of times more energy-efficient. This study was referred by the correspondents of the scientific editorial office of TASS.



Household and industrial refrigerators today operate on the basis of compressor cooling systems with freon as a cooling agent which accelerates the destruction of the ozone layer of the atmosphere. At the same time, electronic devices today need micro- and nanoelements capable of cooling operating equipment effectively. The team has been developing special materials with unique properties to solve these problems.



'The solution to both problems is in the development of solid-state refrigerants with significant caloric effects which are associated with temperature rise and are manifested under the influence of an external electric, magnetic field or pressure. Being the parts of devices, they consume dozens of times less energy and have no impact on the environment. Their use will also reduce the size of refrigerators and cooling elements for electronics,'

told **Mikhail Gorev**, professor at the Department of Thermal Physics of Siberian Federal University.

Having studied the properties of such coolants as in the case of ammonium hydrosulfate crystals, the team made sure that these materials with caloric effects are suitable for the development of a new type of solid-state refrigerants. Fluorides and oxyfluorides can also be as much promising for using, the researchers say. An article with the results of the team's work has been published in the [Journal of Alloys and Compounds](#).

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