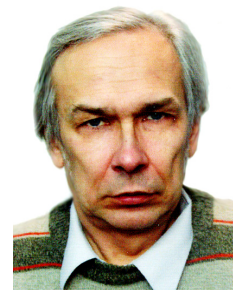

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**INTERNATIONAL LABORATORY
“DIRECT ENERGY CONVERSION AND NANOENGINEERING OF
THERMOELECTRIC STRUCTURES”**

In 2013 the Government of the Russian Federation developed and approved a plan of measures on the development of the Russian universities and improving their competitiveness among leading world scientific-educational centres. As a result of implementation of this plan, by 2010 at least five Russian universities are to be inside the top hundred of leading world higher educational institutions.

Saint-Petersburg National Research University of Information Technologies, Mechanics and Optics (ITMO University) [1] was selected on a competitive basis to join a group of 15 leading Russian universities that are supported by the government for the implementation of the program of improving their international competitiveness.

In conformity with the “roadmap”, a number of international laboratories have been organized at the ITMO University. In particular, we initiated creation of the International Laboratory “Direct Energy Conversion and Nanoengineering of Thermoelectric Structures” [2]. The Laboratory was opened on September 10, 2013 on the basis of the Electrical and Electronic Engineering Chair, ITMO University and Physics of Thermoelements Laboratory, Ioffe Physical-Technical Institute.

The Laboratory is headed by L.P.Bulat, D.Sc. in Physics and Mathematics, Head of the Electrical and Electronic Engineering Chair, ITMO University; M.I.Fedorov, D.Sc., Head of the Physics of Thermoelements Laboratory, Ioffe Physical-Technical Institute and Dr. Gerald Jeffrey Snyder, Head of the Caltech thermoelectrics group [3].

More than 20 well-known foreign scientists and company leaders are Associate Members of the Laboratory [4]. Involved in the work are students studying at the ITMO University according to master’s program 141200.68.04 “Thermoelectric energy conversion”, as well as postgraduate students.

International Laboratory “Direct Energy Conversion and Nanoengineering of Thermoelectric Structures” actively cooperates with the following Russian organizations: “GIREDMET” JSC, the National University of Science and Technology “MISiS”, Technological Institute for Superhard and Novel carbon Materials (FSBI TISNUM), KRYOTHERM Scientific Production Company, etc.

The main line of research in the Laboratory is creation of high-performance thermoelectric materials, including those based on nanostructures, and development on their basis of a new generation of ecologically clean coolers and generators.

The applications of developed thermoelectrics include:

1. Ecologically clean solid-state cooling – the best technical solution for problems of temperature reduction and thermal management of the components of microelectronics, optoelectronics and lighting technology, cooling of medico-biological objects, laboratory devices and

scientific equipment.

2. Thermoelectric generation of electric energy from low-grade heat sources makes it possible to use waste heat from transport units and energy plants, to provide power supply to telecommunication systems, space stations and to use the thermal part of solar radiation spectrum.

The Laboratory is interested in participating in various international scientific or educational programs or projects, in creating joint educational programs in master and postgraduate courses with leading world universities, in attracting Russian and foreign master and postgraduate students, young scientists to the work in the Laboratory.

International Laboratory “Direct Energy Conversion and Nanoengineering of Thermoelectric Structures” is ready to cooperate with all interested colleagues in the pursuance of research works and organization of teaching process for master and postgraduate students.

1. <http://en.ifmo.ru/>
2. http://irc.ifmo.ru/en/87791/history/main_info.htm
3. <http://thermoelectrics.caltech.edu/>
4. <http://www.its.org/content/laboratory-direct-energy-conversion-and-nano-engineering-thermoelectric-structures>