



ENERGY



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Brief History

1918

Moscow Academy of Mines
(MAM)
(including the Metallurgical
Department)

1930

Moscow Institute of Steel
separated from MAM and
became an independent
university

1962

MIS and Institute of Non-Ferrous Metals
and Gold were
combined under the name of Moscow
Institute of Steel and
Alloys (MISiS)



2008

MISiS obtained the status of National
University of Science
and Technology

Russian Academic Excellence Project 5-100

Preserving Traditions, While Staying Ahead of the Times

9 colleges
in Moscow

70
departments
in Moscow

50+ research
labs & centers
in Moscow



>15 000 Students
(Including Professional Vocational
Education)

Main Campus in Moscow,
and 4 Branches

>3,500 Employees

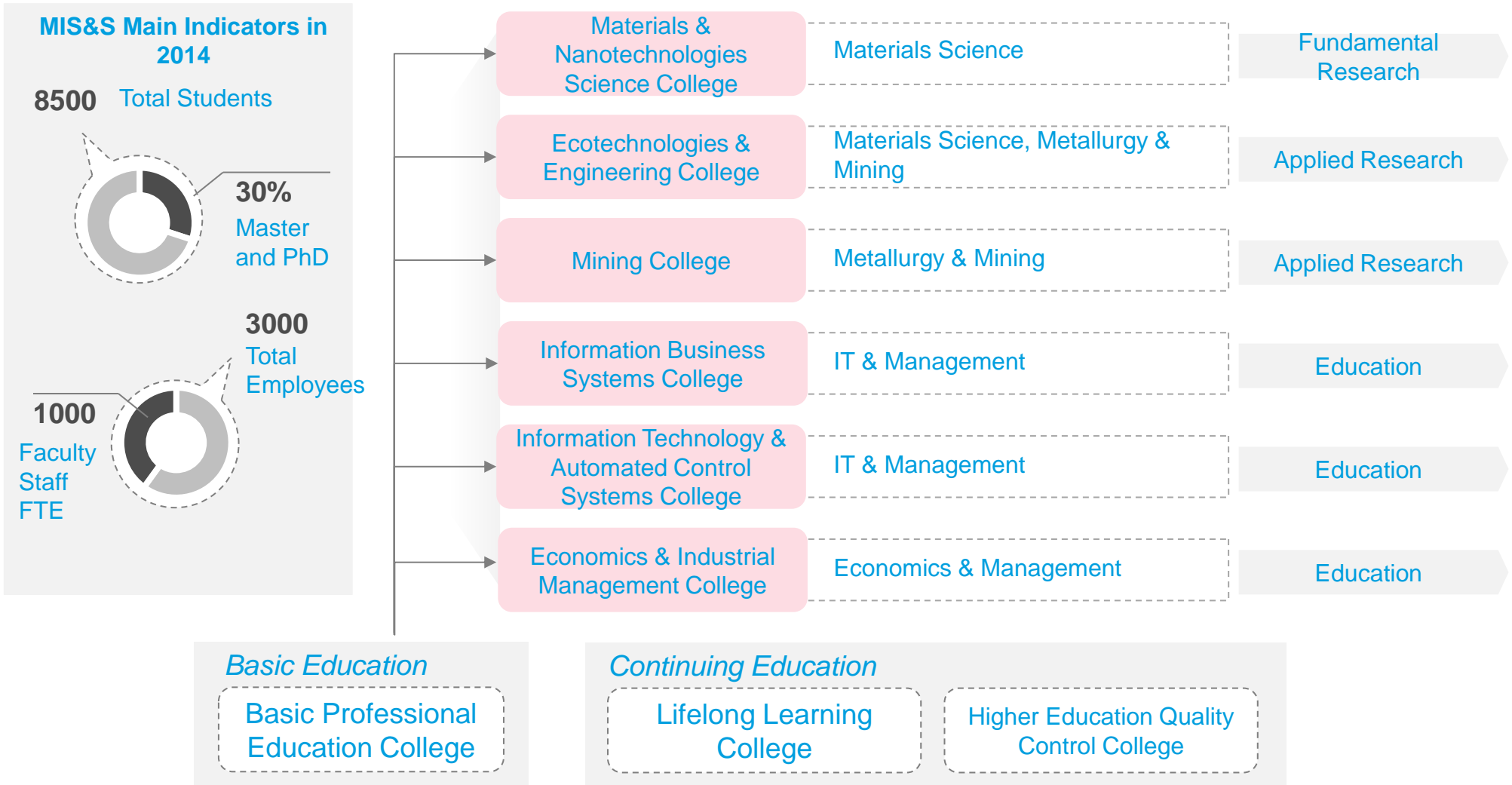
(Including:

- 1,600+ Researchers and Teachers;
- 870+ PhD; and
- 340+ DN).

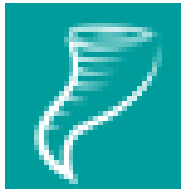
MIS&S Organizational Structure in Moscow in 2015



MIS&S 9 Colleges



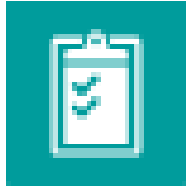
- Major Colleges
 - Service Colleges



Challenges

- Growing demand for alternative energy sources due to the depletion of mineral fuel resources and their negative impact on the environment
- Growing demand for portable power sources to enable the operation of mobile devices for a long periods of time
- Growing demand for materials with new properties





Tasks

- Integrating scientific and educational activities. Involving students in the scientific research
- Creating Honors educational programs and training of specialists, so they can easily obtain employment on the global labor market
- Employing a CDIO comprehensive approach at all of the StrAU's educational programs
- Solving fundamental scientific tasks with respect to autonomous energy and energy efficiency

Activity area



Developing current generation systems through the use of light, radiation and temperature gradients



Developing energy-efficient materials and power storage and control systems



Key areas of focus of academic research projects or important engineering and technical projects



Developing current generation systems through the use of light, radiation and temperature gradients

The current generation through the use of light, radiation and temperature gradients deals with the issues of power generation from alternative sources. These sources include solar power (photovoltaic technologies), radioactive energy (betavoltaics) and temperature gradient energy (thermo-electrics).



Key areas of focus of academic research projects or important engineering and technical projects



Developing energy-efficient materials and power storage and control systems

Alternative energy sources are often dependent on external factors, and do not generate electricity for a given profile. Therefore there is a need to store and accumulate energy using batteries and capacitors and to use it more effectively.

Master's degree program in English



- Harvesting the sun's abundant energy is the future solution of global energy problems
- The program aims to develop the next generation of specialists in the field of Solar Energy
- Applied and relevant industrial knowledge
- High future demand and employability
- Interdisciplinary program which covers science, technology, legal issues, economics, and public involvement



Program

Energy is essential for any human activity. It affects all aspects of our social life, which include science, technology, economics, politics, education, healthcare, and sociology. Global demands for clean and efficient energy solutions require engineers with knowledge and skills which cover fundamentals of current energy sources, whilst capable of specializing in one of the areas of renewable energy industry. The sun is the most abundant energy source known to men. The master's program Solar Energy: Science and Materials provides students with theoretical and practical skills necessary for development and modernization of solar energy harvesting within the renewable energy sector. Upon completion of the program, the students will be capable of using new technologies and innovative ideas for implementation of environmentally friendly solutions to global energy problems.

The aims of the program are:

- To teach the science of solar energy harvesting, generation of electricity, and energy efficiency
- To develop expertise in theoretical and practical aspects of the solar energy industry
- To prepare students for employment in the solar energy industry
- To teach skills for further research at the PhD level



Skills & Career Opportunities

- *Successful completion of the program enables the students with the necessary theoretical knowledge and practical skills.*
- *The students will be aware of various types and constructions of solar cells as well as production techniques and processes deployed by the micro- and nano-electronics industries. They will also gain knowledge about fundamental physical and chemical properties of materials used in the electronics industry for solar cell production.*
- *The program provides knowledge about a wide spectrum of applications and qualities of new materials and structures designed at the nano-scale, which makes successful students highly employable in the renewable energy industry.*



Master's programs in English

- *Advanced Materials Science*
- *Innovative Software Systems: Design, Development & Applications*
- *Communications and International Public Relations*
- *Nanotechnology and Materials for Micro- and Nanosystems*
- *Quantum Physics for Advanced Materials Engineering*
- *Advanced Metallic Materials and Engineering*
- *Inorganic Nanomaterials*
- *Multicomponent nanostructured coatings. Nanofilms*



Conference & Seminars

The annual seminar is held in NUST MISiS, beginning from 2012.

Topic: "Energy-efficient materials and technologies". It will be transformed into the annual international conference "Energy-efficient materials and technologies" (International Conference for Energy-Related Materials (ICERM-2016)) starting in December 2016.

