

Plasma technologies in research and development of modern materials and power sources

National Research Nuclear University MEPhI (Moscow Engineering Physics Institute)

Degree or qualification is awarded: **Master degree**

Language of study: **Russian**

Mode of study: **full-time**

Duration: **2 years**

Availability of free education: **yes**

Price: **196 820 rubles per semester**

Programme curator: **Valeriy A. Kurnaev**

Tel.: **Contact name: Olga N. Petukhova, Phone number. +74957885699, ext. 8045.**

E-mail: ONPetukhova@mephi.ru

Field of study: "Nuclear Physics and Technologies".

Duration of training: 2 years, 120 credits.

Course delivery language: russian.

Basic department: Plasma Physics (No. 21).

The program of continuous training: Master of Science – Post Graduate.

The aim of the programme – training in the field of plasma physics, including physics of stationary and pulse discharges, development of the plasma diagnostic methods, plasma surface and particles interaction, plasma technologies.

Programme manager – V. A. Kurnaev – The head of the Plasma Physics Department of MEPhI, Doctor of Science in physics and mathematics, Professor, Russian Federation Government Prize Laureate (2010).

The Master Program is aimed at solving problems of fundamental and applied science, including:

- study of the reduced pressure discharge physics and a new plasma technology engineering;
- research of plasma surface interactions and the development of plasma particle stream methods of exposure on the surface of materials to controlled modify its properties;
- engineering and production of plasma sources used for new technologies;
- searching of materials and coatings and their working conditions for the first wall of fusion reactors;
- development of new diagnostics of plasma processes and plasma interaction with condensed matter.

Part of the curriculum is also implemented in English.

The competitive advantages of the programme are:

- leading Scientific School (№ NS-6751.2012) on the plasma surface interaction;
- highly qualified researcher team and wide area of research;
- the modern analytical instruments for research;
- extensive academic and scientific relations with leading domestic institutions of State corporation “Rosatom” and the Russian Academy of Sciences and foreign laboratories and universities in Germany, the USA, Japan, France and other countries.

Research work is possible in various branches of physics from astrophysics to plasma nanotechnology. Experiments, theoretical studies, computer modeling, and technological developments are performed by students. There is also a broad academic and scientific cooperation with leading national institutions including state corporation Rosatom and

the Russian Academy of Sciences, as well as with foreign institutions in Germany, Italy, Kazakhstan, China, Poland, the USA, France, Sweden, and Japan.

List of enterprises for internship and employment

NRC "Kurchatov Institute", State Atomic Energy Corporation 'Rosatom': Russian Federal Nuclear Center, TRINITY, ITER, Federal Agency of Scientific Organizations: General Physics Institute of Russian Academy of Sciences, Physical Institute of Russian Academy of Sciences, Joint Institute for High Temperatures of Russian Academy of Sciences, Space Research Institute of Russian Academy of Sciences, Institute of Applied Mathematics of Russian Academy of Sciences, as well as various companies performing scientific research.

Specializations within this programme

Nuclear Physics and Technologies

Objects of professional activity: Hot plasma and controlled fusion with magnetic confinement; inertial fusion (as a part of research groups of the leading centers and institutes of Russian Federation in this field; studies and development of gas discharge plasma and its application in lasers, ecology and medicine; development of ion-plasma technologies for modification of materials and items; participation in research of plasma phenomena in space, atmosphere and condensed media; computer simulation of complex physical phenomena; development and application of various methods of plasma diagnostics.