Ministry of Education and Science of the Russian Federation
International Academy of Medical Engineering Sciences of the Russian Federation
Academy of Engineering Sciences by A.M. Prokhorov
Russian Academy of Natural History
International Academy of Ecology, Man, and Nature Protection Sciences
Taganrog Institute of Technology - Southern Federal University
Center of career planning and professional adaptation

International Youth Competition of Scientific Research Works

«STUDENT AND SCIENCE & TECHNOLOGY PROGRESS»

Dedicated to 60-anniversary of Taganrog Institute of Technology - Southern Federal University (earlier Taganrog Radio Engineering University - Institute)

In order to engage undergraduate and graduate students in the field of innovation and advanced technologies, improving human resources in science, motivate students and graduate students involved in the development of innovative technologies and products, establish contacts between students, graduate students and faculty of universities in different countries and regions, promote the global advancement of youth science in general, Taganrog Institute of Technology - Southern Federal University organizes **International Youth Competition of Scientific Research Works «Student and Science & Technology Progress»**

Important dates of Competition**: April, 27 – June, 27, 2012.**

- Applications for participation in the competition **from April, 27 up to May, 20, 2012.**
- Submission of abstracts of scientific papers – **up to June, 3, 2012 г.**
- Expert evaluation of research works submitted for the competition – **up to June, 10, 2012.**
- Results of the competition – **up to June, 20, 2012.**

To participation in the competition are invited:

- Undergraduate, graduate and post-graduate students - the authors of research papers on scientific trends of the competition;
- Young scientists (researchers, teachers) - the leaders of student's creative teams.

To have the opportunity participate in the competition the next events must be sent to the Organizing Committee by e-mail sprogress@fep.tti.sfedu.ru:

1. **Application** containing primary and secondary research area of competition.
2. Competition **Questionnaire** in .xls format (attached file).
3. **Abstracts** of scientific work (2 - 4 pages). The following structure of the presentation is recommend:
   - Introduction
   - Review
   - Basics of research (essence, methods, ways and means of solution, results)
   - Conclusion

Abstracts and extended versions (on the recommendation of the qualifying competition commissions) of scientific research works will be published in the form of Competition Proceedings.

The text runs in a text editor Microsoft Word; font Times New Roman, 10 pt, line spacing - single, indent 1 cm, width adjustment. Drawings, formulas, tables are placed inside the text.

APPLICATION

- Full name of the author (s) (unlimited number)
- The name of the primary and secondary research area of the competition.
- Title of research
- Country, Federal District, city, high school / organization - full name, faculty, department, group
- Full name, academic degree, position of the supervisor (for students)
- Address for correspondence, e-mail, phone.

Abstract's sample

TRANSCRANIAL MAGNETIC STIMULATION

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On magnetic stimulation (MS) electromagnetic pulse is generated in the coil stimulator. Penetrating through the adjacent tissue, it reaches the nervous system. As a result of electromagnetic induction alternating electric field is generated in the neural tissues, which leads to the appearance of the current pulse (Hall effect) [1].

Languages of the competition: **Russian, English**

RESEARCH AREA OF COMPETITION (SCIENTIFIC TRENDS)

1. Fundamental science: a contribution to the progress

1.1. Mathematical modeling in engineering, life sciences, economics and sociology
1.2. Technical Physics
1.3. The general theory of signals: New Approaches
1.4. New physical principles and methods of generation, amplification, transformation and propagation of electromagnetic and acoustic radiation
1.5. Theory and Methodology of innovative engineering and technical information protection
1.6. The fundamental problems of new types of communication
1.7. Engineering Design and Ergonomics
1.8. Methods and techniques of knowledge management and intellectual capital formation
1.9. New Methods and Technologies for Information Management

2. Nano Industry

2.1. Computer simulation of nanomaterials, nanodevices and nanotechnology.
2.2. Diagnosis of nanomaterials and nanodevices.
2.3. Nanodevices and Microsystem Technology.
2.4. Acquisition and Processing of Structural Nanomaterials.
2.5. Getting and processing of functional nanomaterials.

3. Information and telecommunication systems

3.1. System-wide problems of telecommunications
3.2. Management in telecommunication systems
3.3. Access technology to broadband multimedia services.
3.4. Information, control, navigation system.
3.5. Hardware and software of distributed and high performance computing systems.
3.6. Information security in telecommunication systems
3.7. New wireless technology

4. Life Sciences

4.1. Biocatalytic, biosynthetic and biosensor technology.
4.2. Genomic, proteomic and post-genome technologies.
4.3. Cellular technology.
4.4. Biomedical electronic equipment, devices and systems
4.5. Processing of biomedical information
4.6. Biomedical nanotechnology
4.7. Biocompatible materials
4.8. Biophysics
4.9. Biomechanics
4.10. Biochemistry

5. Efficient nature management

5.1. Monitoring and forecasting of the environment prevent and eliminate pollution.
5.2. Survey, exploration, mining and extraction.
5.3. Warning system and emergency of natural and man-made situations.
5.4. Simulation modeling of hazardous and harmful environment factors
5.5. Methods and means of protection against occupational hazards
5.6. Monitoring of the environment
5.7. Information and modeling systems in the environment and civil security

6. Electronics and Instrumentation

6.1. Power electrical engineering: New Approaches
6.2. Modern electronic components of micro- and nanoelectronics
6.3. Electronic data processing and signal conversion
6.4. Electronic means of alternative power
6.5. New electronic means of of information display
6.6. New means of diagnosis and imaging of materials and objects
6.7. Hydroacoustic equipment and marine acoustics.
6.8. Micro- and nanoelectronic sensors and transducers

6.9. Technical means of intelligent devices
6.10. Software and hardware interfaces, remote control electronic devices
6.11. Laser systems, optoelectronic and microwave devices
6.12. "Smart" home electronic appliances

7. Automation and Control

7.1. High technology and automation in radio electronic instrument
7.2. Intelligent manufacturing processes and production
7.3. Flexible computerized and robotic systems
7.4. Electronic equipment and systems for automation of business processes
7.5. CAD/CAM/CAE
7.6. Decision-making system of production and logistic support
7.7. Automation, adaptation and intellectualization of the diagnosis and monitoring of electronic equipment and production facilities
7.8. System analysis and management of complex techno-economic systems
7.9. Intelligent control and decision-making in economics and business

8. Humanities and philosophical aspects of scientific progress

8.1. Media Culture in Information Society
8.2. The transformation of values in information and scientific society
8.3. Progress and problem of liberty and responsibility
8.4. Social and cultural aspects of global information and scientific progress
8.5. Young people in risk society
8.6. Issues of socialization in the information and scientific society
8.7. Globalization and democratization of the modern world: interrelationship and interdependence
8.8. Psychological aspects of adaptation of the individual in information and scientific society
8.9. Problems of image formation of the modern specialist

SUMMARIZING OF COMPETITION

On the basis of the results of the qualifying examination and representations of competitive commissions the title of winners of the International Competition will be assigned for research projects in 8 categories of the main scientific trends of the competition. Winners will be awarded with **Diplomas of I, II, III degree** and special gifts. All participants will receive **Certificates**.

SPECIAL NOMINATION OF THE COMPETITION

The Organizing Committee announces the **special nomination**: "**Logo Design** of the International Youth Competition of Scientific Research Works "Student and Science & Technology Progress". **Logos** must be sent on the Organizing Committee e-mail sprogress@fep.tti.sfedu.ru. **Logo** will be displayed on the website of the competition http://fep.tti.sfedu.ru/russian/conferenc/sprogress with the possibility of online voting. So you, dear participants themselves choose your favorite Logo! Exclusive prize is waiting for the winner ;)

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