

**INVENTOR AND INNOVATIVE WORK  
AT THE SPACE RESEARCH AND TECHNOLOGY INSTITUTE —  
BULGARIAN ACADEMY OF SCIENCES**

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***Abstract***

*The current article attempts to present the created inventions at the Space Research and Technology Institute — Bulgarian Academy of Sciences during the last 40 years. In view of this long period of time, there exist patents and awards that were omitted from mentioning.*

*The current paper elaborates on the different types of patent and utility model documents that were issued from Bulgarian Patent Office and other foreign patent offices where Space Research and Technology Institute — Bulgarian Academy of Sciences has registered their inventions. A list of recent awards from local and international forums for inventors has been shown. Mentioned were some of the prominent inventors who worked at the Institute.*

*Finally, the article concludes the need for development of specialized information system to store the patent documents of the Institute and to deliver to the public comfortable means of thorough, detailed and quick inquiries.*

In the National Recovery and Resilience Plan of Republic of Bulgaria [1] two entities are implicitly incentivized: the important role of patent protection of intellectual and industrial properties, and the need for fast transfer of inventions to the industry.

Patent and innovation work is recognized as key activity for the Bulgarian Academy of Sciences (BAS) and one could not with pleasure that gains more and more essential presence in the Institutes of the Academy.

According to a report issued by the Inventor and Innovative Work commission at the BAS's General Assembly, about 67% of all registered inventions in Bulgaria are created in BAS [2]. A motivation supporting the inventor work at BAS is also the funding stimulus for the inventors. The augmentation of the latter has been under consideration lately.



Fig. 1. Different kinds of our patent protection documents

The Space Research and Technology Institute at the Bulgarian Academy of Sciences (SRTI-BAS) has long standing traditions and results in the inventor and patent activities. Those are largely incentivized and instigated by the subject and methods of aerospace research and technologies, by the necessity to implement non-standard technological and technical solutions, and last but not the least — by the affinity of our scientists and specialists for innovations. SRTI-BAS occupies one of the leading places in the Academy by the number of patents and utility models. For

example, during 2019 the Institute has registered 19 utility models of 27 for the whole Bulgarian Academy of Sciences, while during 2020 — 4 of 19 for BAS [2].

In the course of about 50 years, scientists at the Institute have created more than 100 developments that have received author certificates and patents, as well as over 25 utility model registrations. Besides in Bulgaria, our patents have been registered in USA and Ukraine. Patents authored by scientists from SRTI-BAS have been announced by Bulgarian Patent Office for “Invention of the Month”, and have been nominated for “Invention of the Year”.

Over the years, 5 innovations have been selected for top scientifically applied achievements of SRTI-BAS.

Two inventors from our Institute — Acad. Dimitar Mishev and prof. DSc Garo Mardirossian are winners of the title “Honoured Inventor” and have been written in the “Golden Book” of the Bulgarian discoverers and inventors.

Here we shall mention some of our inventors: Acad. Dimitar Mishev, Acad. Kiril Serafimov, Cor. Mem. Petar Getsov, Prof. Garo Mardirossian, Prof. Zhivko Zhekov, Prof. Yulika Simeonova, Prof. Dimitar Teodosiev, Prof. Boycho Boychev, Prof. Roumen Nedkov, Prof. Georgi Sotirov, Prof. Tsvetan Dachev, Prof. Dimo Zafirov, Prof. Eugenia Roumenina, Prof. Georgi Jeleu, Assoc. Prof. Svetoslav Zabunov, Assoc. Prof. Stavri Stavrev, Assoc. Prof. Doyno Petkov, Assoc. Prof. Stefan Chapkanov, Assoc. Prof. Stilian Stoyanov, Assoc. Prof. Stoyan Tanev, Assoc. Prof. Tania Ivanova, Assoc. Prof. Todor Nazarski, Ch. Asst. Prof. Angel Manev, Ch. Asst. Prof. Yuri Matviichuk, Ch. Asst. Prof. Medi Astrukova, Ch. Asst. Prof. Tinka Grozdanova, Ch. Asst. Prof. Rumen Shkevov, etc.

The inventors of the Institute have participated with patents and utility models in a large number of local and international innovation forums in Bulgaria, Belgium, Czech Republic, Hungary, Kuwait, Poland, Portugal, Republic of North Macedonia, Russia, Serbia, Taiwan, etc. High accolades have been received from almost all participations. These include special awards, diplomas, medals, award cups and so on. The following is a part of all participations in national and world forums where the inventors from SRTI-BAS have won bronze, silver and gold medals, diplomas and other distinctions.

- EAST-WEST EURO INTELLECT — EWEI Bulgaria — 1998, 2000, 2001, 2002 and 2003
- Fifth national exhibition “Inventions, Transfer, Innovations” — ITI’2014, 6–8 Nov. 2014, Sofia
- 18th Moscow International Salon of Inventions and Innovative Technologies “ARCHIMEDES”, April 2015, Moscow (Russia) — Silver medal
- “INVENTARIUM SCIENCES” 2015 — FIRST INTERNATIONAL CONGRESS OF INVENTOR’S, INNOVATOR’S AND CREATIVES, PORTUGAL — Lisbon, Parque das Nações, 23–26 April 2015
- 29th International Festival of Innovation, Knowledge and Creation “TESLA FEST”, Oct. 2015, Novi Sad (Serbia) — Diploma and a Gold medal. On this

forum SRTI-BAS received cup GRAND PRIX for overall inventor creativity in 2015.

- 30th International Festival of Innovation, Knowledge and Creation “TESLA FEST”, Oct. 2016, Novi Sad (Serbia) — Diploma and Gold medal.
- 20th Moscow International Salon of Inventions and Innovative Technologies “ARCHIMEDES”, April 2017, Moscow (Russia) — Silver and Bronze medals in the category “Aerospace industry” и “Ground, sea and air transport”, among the presented more than 700 inventions from more than 20 countries.
- XI INTERNATIONAL WARSAW INVENTION SHOW, IWIS 2017, Warsaw, Poland — Gold and Silver medals for inventions in the area of unmanned aerial vehicles.
- Tenth national exhibition “Inventions, Transfer, Innovations” — ITI’2017, 01–03 Nov. 2017, Sofia — Diploma for Gold Plaque.
- “INVENT ARENA” International inventors exhibition, 20–22/June/2018, Trinec/WERK ARENA, Czech Republic — Gold medal for inventions in the area of drones.



Fig. 2. Some of the innovation and inventor work taking place at the Space Research and Technology Institute — Bulgarian Academy of Sciences. Many patents have won international accolades, while further being scrutinized in scientific articles published in SCOPUS and Web of Science indexed international journals and conferences.

Some of the areas the Space Research and Technology Institute — Bulgarian Academy of Sciences has its major scientific research and innovative activity are:

- Space apparatuses innovations
- Astrophysics devices innovations
- Radio communications inventions
- Remote sensing means and methods
- Information processing
- Unmanned aerial vehicles innovations

The inventions are often backed with consecutive high rated scientific journals articles, some of which are published in SCOPUS/Web of Science indexed international journals — for such articles from the last 4 years [6–14].

For the purpose of participation in inventions forums and scientific article submission, many of the patented inventions at the Institute were further developed to prototype stage of testing and laboratory experiments. Others have been implemented as final products.

## **Conclusions**

Due to the ever raising importance of inventions and patents thereof, specifically under the significance of the National Recovery and Resilience Plan of Republic of Bulgaria, the Institute's inventor and innovative activity becomes ever more important. Its demonstration, presentation and encouragement become significant factors influencing positively the scientific, research and development work at the Space Research and Technology Institute. On these grounds, the design and development in the immediate future of an information system where visitors and users alike might freely search and read about Institute's innovation and inventor work is highly recommended.

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## **ИЗОБРЕТАТЕЛСКАТА И ИНОВАЦИОННА АКТИВНОСТ НА ИНСТИТУТА ЗА КОСМИЧЕСКИ ИЗСЛЕДВАНИЯ ПРИ БЪЛГАРСКА АКАДЕМИЯ НА НАУКИТЕ**

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### **Резюме**

В настоящата статия се прави опит да се представят създадените в Института за космически изследвания и технологии при Българска академия на науките изобретения и иновации от последните около 40 години. Естествено

поради дългия времеви период и големия брой патенти някои от тях не са представени.

В публикацията са илюстрирани различни видове документи за патенти и полезни модели, издавани от Патентно ведомство на Република България, а също така и патенти, регистрирани в чуждестранни патентни ведомства, в които Институтът е участвал. Показан е списък на част от последните награди и грамоти от международни форуми за изобретатели. Споменати са някои от известните изобретатели, които са работили или все още работят в Института.

Накрая в статията се заключава, че съществува нужда от разработване на специализирана информационна система за съхранение на патентните документи на Института и за предоставяне на удобство на обществеността при бърз и изчерпателен достъп до справки относно патентните документи със заявител/притежател Институт за космически изследвания и технологии при Българска академия на науките.