

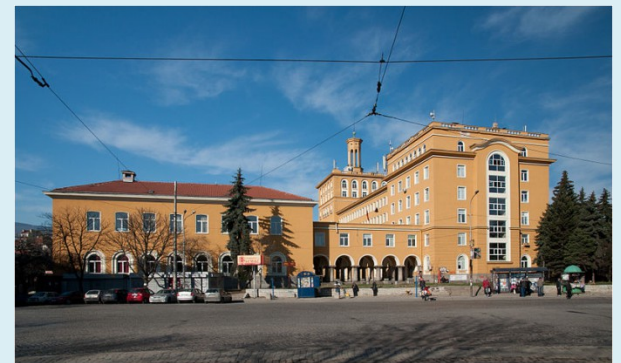


SOFIA UNIVERSITY "ST. KLIMENT OHRIDSKI"

RESEARCH ACTIVITIES and FUNDING OPPORTUNITIES

Prof. Dr. Nikolay V. Vitanov

Vice Rector for Research and Project Affairs



About Sofia University

- Established in 1888
- The oldest and the largest university in Bulgaria, with several campuses spread across the capital city Sofia
- Structure: 16 faculties, 3 departments and over 35 research centres
- Total number of employees: 4749
- 1731 full time teaching and research staff and 1 800 part time researchers

About Sofia University

- The total number of BA and MA students is over 23 000, and the PhD students are 1 600
- Teaching and research cover a broad range of subjects in the fields of:
 - humanities, social sciences, law
 - natural sciences
 - computer sciences and mathematics
 - medicine
 - economics

Faculties

Faculty of History

Faculty of Slavic Philologies

Faculty of Classical and Modern
Philologies

Faculty of Philosophy

Faculty of Education

Faculty of Pre-School and Primary
School Education

Faculty of Theology

Faculty of Journalism and Mass
Communication

Faculty of Law

Faculty of Economics and Business
Administration

Faculty of Mathematics and
Informatics

Faculty of Physics

Faculty of Chemistry and Pharmacy

Faculty of Biology

Faculty of Geology and Geography

Faculty of Medicine

Research centers

The most active research centers are:

- Center for Slavo-Byzantine Studies “Prof. Ivan Dujčev”
- Center of Excellence in the Humanities “Alma Mater”
- Joint Genomic Center
- Center for Space Research and Technologies
- Center for Polar Research
- University Botanic Gardens

National Rating System

- **1st**: Biology, Biotechnology, Chemistry, Earth sciences, Economics, Education, History, Informatics, Mathematics, Pedagogy, Philology, Philosophy, Physics, Political science, Psychology, Public communications, Religion and theology, Social work, Sociology, Tourism
- **2nd**: Administration and management, Health care
- **4th**: Medicine

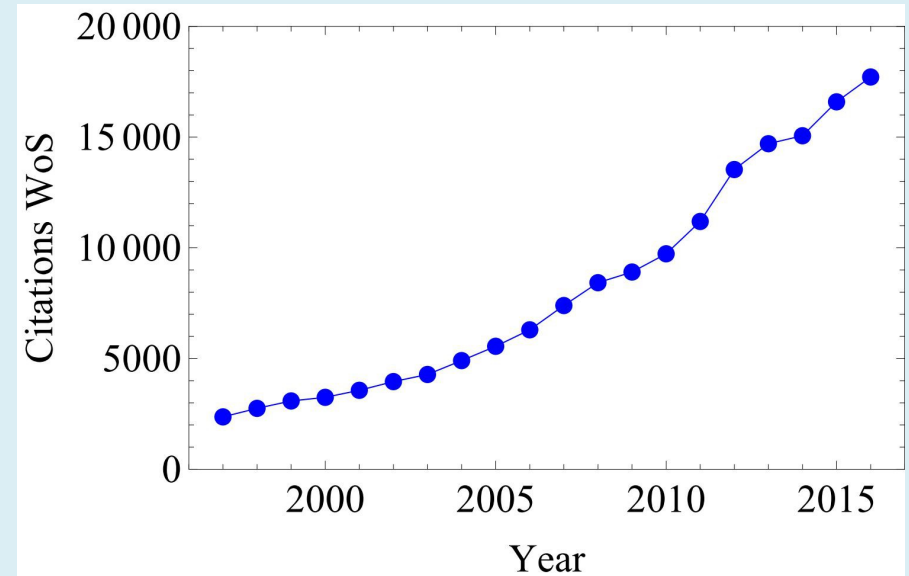
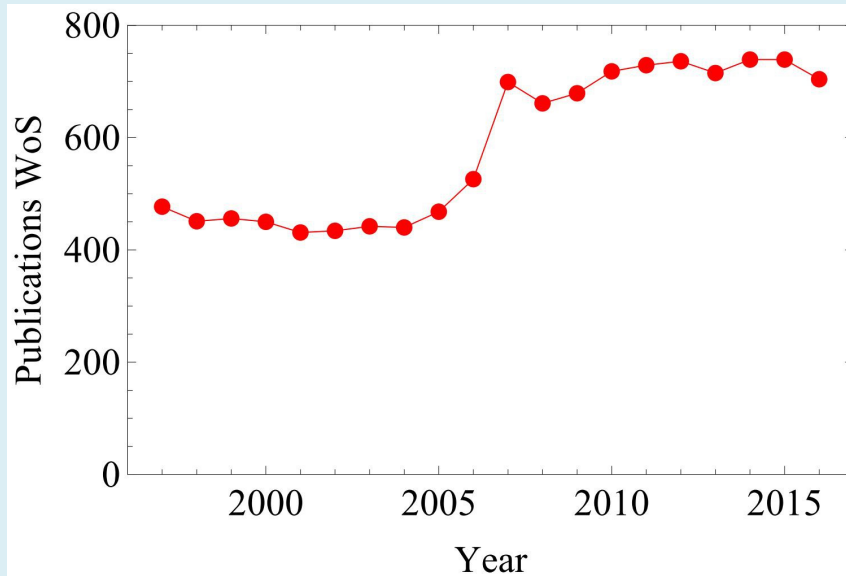
Rankings

Sofia University is the leading institution for higher education and research in Bulgaria.

- QS World University Rankings: 651
- QS-EECA University Rankings: 46
- Times Higher Education: 801
- Times Higher Education BRICS & Emerging Economies: 201
- CWUR 2016 - World University Rankings: 854
- Webometrics: 681 among 20 000 universities

Ranking based on criteria such as number of students and teachers and number of scientific publications.

Publications of Sofia University



2000 other publications (incl. >200 books)
about 20-22% of research output of Bulgaria
(50-55% Bulgarian Academy of Sciences)
40-45% of research output of Bulgarian universities
(10% of students)
Faculty of Physics ranked at #1 in Bulgaria in 2016 (ISI)

Main funding sources

National funding 35%

EC funding 25%

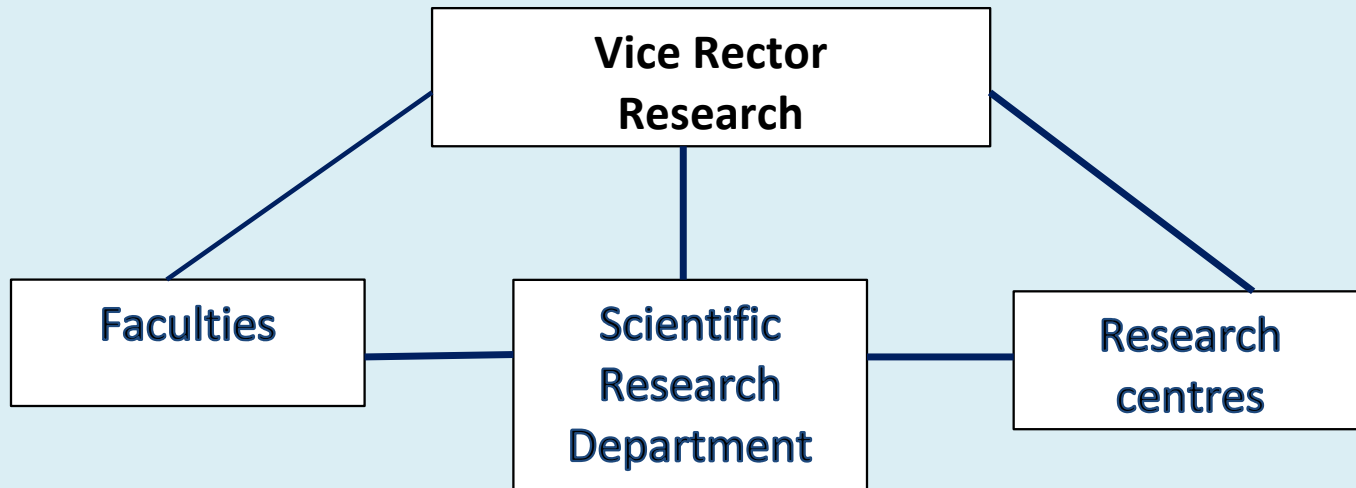
Industry 40%

In the period 2011–2016 various teams of researchers have participated in more than 500 research and applied projects with total budget exceeding 60 million BGN.

Collaborations

- Relations with 200+ universities from 70+ countries in Europe, Asia, America, Middle East and Australia
- **Sofia University is a member of:**
 - UNICA (Network of Universities from the Capitals of Europe)
 - AUF (Agence universitaire de la francophonie)
 - SCAR (Scientific Committee on Antarctic Research)
 - BSUN (Black Sea Universities Network)
 - EMUNI University (Euro-Mediterranean University)

Organisation of the research activities



Scientific Research Centre (SRC)

- Responsible for administration and support of the research and project activities on a contract basis.
- Annually, it administrates over 300 project contracts with a total value of about 10 Mio BGN. Projects are funded on a contract basis by national funds (35%), EC Programmes (25%), and by the industry (40%). Over 500 researchers, mainly from the academic staff of Sofia University and over 120 researchers from the SRC take part in these activities.
- A structure of the SRC is the **Technology Transfer Office** - an interface between the research and industry, stimulating the establishment of spin-offs and entrepreneurial spirit among the researchers. Member of the CERN HEPtech Network.

National funding

Operational Programmes (EU)

- 350 milion BGN funding for research centers
- 4 Centers of Excellence
- 8 Centers of Competence
- 4 thematic areas (mechatronics and clean tech; ICT; health; culture and recreative industries)

Other operational programmes (innovation, competitiveness, education, human resources etc.)

National Science Fund

Ministry of Science and Education

Success stories: Investigations with the CMS detector at the LHC at CERN

Sofia University team lead by **Assoc. Prof. Leandar Litov** participated in the physics investigations with the Compact Muon Solenoid (CMS) detector at the Large Hadron Collider (LHC) at CERN and contributed to:

- Design, prototypes construction and investigation of the characteristics, production, construction and running of the CMS Hadron Calorimeter;
- Design, production, tests, installation, commissioning and maintenance, and running of the Resistive Plate Chambers system (2000 m²);
- Data taking, analysis and interpretation of physics results.

Investigations with the CMS detector at the LHC at CERN



*The CMS detector.
Installation of the Central Tracker*



The CMS centre at Sofia University

Success stories: Retrospective Measurements of Radon and Thoron by CD/DVD

Prof. Dobromir Pressyanov, from the Faculty of Physics proposed a method for retrospective ^{222}Rn measurements based on the use of home stored **CDs/DVDs**. It is based on the analysis of CD/DVDs stored in buildings and its appearance became possible as a result of the notorious volume of experimental and theoretical results gathered in the application of the method for ^{222}Rn . The material from which the disks are made (polycarbonate), absorbs Radon and the Alpha particles emitted in the decay of its isotopes and their decay products form tracks in its volume that are analyzed in a laboratory. These tracks are examined in two specific depths under the surface of the disk and after data processing the average concentration of each isotope (^{222}Rn and ^{220}Rn) is determined.

This information is of crucial importance for decision making and taking measures to protect the health and life of the population from the Radon hazard.

Retrospective Measurements of Radon and Thoron by CD/DVD



Specimens of CDs/DVDs loaded for chemical and electrochemical etching in the Laboratory of Dosimetry and Radiation Protection at the Faculty of Physics, Sofia University



Alpha-tracks after etching (visible as dark points on the round etched area of the specimen)

Funding Opportunities

- **EU Horizon-2020 networks**
(Excellence, Societal, Industrial)

Examples

ETN (Training networks – ITN, RISE)

FET (Future & emerging tech)

ERA-Net

Regional (INTERREG)

Spreading excellence and widening participation (WIDENING)

- **Bilateral programs**

Sofia University in FP7 and H-2020

FP7: 25 projects in 2011-2014

H-2020: 10 projects in 2015-2016

ICT (16), chemistry (5), physics (3), meteorology (6),
biology (1), medicine (1), geology (1), philosophy (1),
pedagogy (1)

Success stories at Sofia Uni

- Call: INTERREG BALKAN - MEDITERRANEAN 2014-2020
- Thematic Objective: Preserving and protecting the environment and promoting resource efficiency
- Project name: BalkanMed real time severe weather service (BeRTISS)
- Duration: 2 years (2017-2019)

- Lead Partner (LP1) Frederick Research Center, Cyprus
- P2 Hail Suppression Agency, Bulgaria
- P3 Sofia University St. Kliment Ohridski, Bulgaria
- P4 Aristotle University of Thessaloniki, Greece
- P5 Department of Meteorology Cyprus
- P6 National Observatory of Athens, Greece

- Budget total: 1,065,400 EUR

Success stories at Sofia Uni

H2020-WIDESPREAD-04-2017 (TWINNING)

30 of 125 funded

“Big Data for Smart Society”

**Faculty of Math & Computer Sci (Sofia Uni)
+ Chalmers Tekniska Högskola AB**

(the only one funded from Bulgaria)

Horison 2020 - ERA-Net

BiodivERsA: www.biodiversa.org

CHIST ERA: www.chistera.eu

Core Organic: www.coreorganic.org

FLAG ERA: www.flagera.eu

M-ERA: <https://m-era.net>

Quant ERA: <https://ncn.gov.pl/quantera>

Participating countries in QuantERA: Austria, Belgium, Bulgaria, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Ireland, Israel, Italy, Latvia, the Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey, United Kingdom.

QuantERA aims at spreading research excellence throughout the whole European Research Area. Therefore, proposal consortia are **encouraged to include partners from the widening countries participating in the call:** Bulgaria, Czech Republic, Hungary, Latvia, Poland, Portugal, Romania, Slovakia, Slovenia, and Turkey.

THANK YOU!

Благодаря!

Teşekkür ederim!

Faleminderit!

Mulțumesc!

Хвала вам!

Ευχαριστώ!