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<b>Position, Department/Faculty</b>	Dean, Faculty of Aircraft Engines
<b>Academic Degree, Academic Title</b>	Doctor of Philosophy, Associate Professor
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<b>ResearchGate:</b>	[ <a href="https://www.researchgate.net/profile/Yurii-Shyrokyi?ev=hdr_xprf">https://www.researchgate.net/profile/Yurii-Shyrokyi?ev=hdr_xprf</a> ]

## EDUCATION:

### Basic education (university, major, year of graduation):

Diploma of Specialist in Aircraft Engines  
Kharkiv Aviation Institute [February 1998]

### Postgraduate/Doctoral studies:

Associate Professor  
Department of Theoretical Mechanics, Engineering and Robotic Systems [December 2014]

Candidate of Technical Sciences (PhD) in Physical and Technical Treatment Processes  
National Aerospace University “Kharkiv Aviation Institute” [October 2007]

### Additional training, certification programs:

Certificate of international skills development (Webinar):  
“Non-Formal Education and Academic Integrity in Preparing Bachelors and Masters in the EU Countries and Ukraine” *Lublin (Republic of Poland)* [22/01 – 01/02/2024]

Certificate of international distance scientific and pedagogical internship  
“Management of Transfer of Educational Technologies in the European Union Countries” *Danmark* [12/02 – 08/04/2024] 6 ECTS credits



## **WORK EXPERIENCE:**

### **Professional Career (Workplace, Years, Position):**

**Dean, Faculty of Aircraft Engines, *National Aerospace University “Kharkiv Aviation Institute”*** [April 2022 – Present]

**Associate Professor, Department of Theoretical Mechanics, Engineering and Robomechanical Systems, *National Aerospace University “Kharkiv Aviation Institute”*** [September 2009 – 2022]

**Senior Lecturer, Department of Robotic Systems, *National Aerospace University “Kharkiv Aviation Institute”*** [September 2008 – 2009]

**Assistant Professor, Department of Robotic Systems, *National Aerospace University “Kharkiv Aviation Institute”*** [September 2007 – 2008]

**Senior Research Fellow**

***National Aerospace University “Kharkiv Aviation Institute”*** [January 2006 – 2007]

**Research Fellow**

***National Aerospace University “Kharkiv Aviation Institute”*** [January 2000 – 2006]

**Engineer**

**Kharkiv Aviation Institute** [March 1998 – 2000]

### **Teaching Experience:**

**Professor, Department of Theoretical Mechanics, Engineering and Robomechanical Systems, *National Aerospace University “Kharkiv Aviation Institute”*** [December 2023 – Present]

**Associate Professor, Department of Theoretical Mechanics, Engineering and Robomechanical Systems, *National Aerospace University “Kharkiv Aviation Institute”*** [September 2010 – December 2023]

**Senior Lecturer, Department of Robotic Systems, *National Aerospace University “Kharkiv Aviation Institute”*** [January 2008 – August 2010]

**Assistant Professor, Department of Robotic Systems, *National Aerospace University “Kharkiv Aviation Institute”*** [September 2007 – December 2007]

### **Experience in International or National Projects:**

**Investigator**



***Development of a Vacuum Arc Thruster for CubeSat Satellites (0124U001264)***  
[2024–2026]

**Investigator**

***Development of Methods and Equipment for the Formation of Oxide and Carbon Nanostructures by Plasma Flows (0122U001160)*** [2022 – 2023]

**Investigator**

***Contribute to grants of National Research Foundation of Ukraine: Scientific Foundations of the Root of Oxide and Carbon Nanostructures in the Minds of the Plasma Center (0120U105422)***, [2020 – 2024]

**Project Leader**

***Creation of a Methodology for the Formation of Nanostructures on the Surface of Materials (0121U108892)***, [2021 – 2023]

**Principal Investigator**

***Development of Effective Coating and Combined Changeable Balls for the Advancement of Robotic Properties of AT and AD Parts*** [2018 – 2020]

## **RESEARCH ACTIVITIES:**

### **Main Research Areas:**

Plasma physics and nanotechnology (nanostructures in solid materials), laser hardening, PVD coatings, magnetron and vacuum arc deposition, plasma control and diagnostics in technological setups, mechanical properties of materials and coatings, surface treatment with ionizing radiation, and robotics.

### **Number of Publications (Scopus, WoS, others):**

Over 140 scientific publications, including indexed articles in Scopus and Web of Science databases; multiple conference proceedings and applied research outputs.

### **Monographs, Textbooks:**

Co-author of one monograph and 11 textbooks on industrial robot design, automated production equipment, scientific and engineering innovations, and intellectual property.

### **Participation in Scientific Conferences:**

Regular participant (over 70) and speaker at international and national scientific conferences in materials science, mechanical engineering, and advanced manufacturing technologies (Ukraine, Poland, Germany, Hungary, Israel, and online forums).

## **TEACHING ACTIVITIES:**

### **Courses Taught:**



“Scientific and Engineering Developments and Intellectual Property”, “Design of Industrial Robots”, and “Design of Equipment for Automated Production”

**Author Courses, Academic Programs:**

Author of the courses “Scientific and Engineering Developments and Intellectual Property”, “Design of Industrial Robots”, and “Physical and Technical Aspects of Combined Ion and Plasma Technologies”. Co-author of interdisciplinary educational modules on production automation.

**Methodological Materials, Textbooks:**

Co-author of textbooks in the fields of intellectual property, manufacturing technologies, and robotics. Developed electronic resources and video materials for hybrid and online teaching (Mentor, Moodle).

**GRANTS AND PROJECTS:**

**Participation in International and National Projects:**

Contribute to grants of Ministry of Education and Science of Ukraine:

Vacuum-Arc Thruster for CubeSat Satellites for the Development of an Efficient Data Collection and Exchange System (0124U001264) (Project Investigator) [February 2024 – December 2026]

Development of Methods and Equipment for the Formation of Oxide and Carbon Nanostructures by Plasma Flows (0122U001160) (Project Investigator) [February 2022 – December 2024]

Creation of a Methodology for the Formation of Nanostructures on the Surface of Materials (0121U108892) (Project Leader) [February 2021 – December 2023]

**Contribute to grants of National Research Foundation of Ukraine:**

Scientific Foundations of the Root of Oxide and Carbon Nanostructures in the Minds of the Plasma Center (0120U105422) (Project Investigator) [September 2020 – December 2024]

**PROFESSIONAL ACHIEVEMENTS AND AWARDS:**

**Honorary Titles:**

Certificate of Appreciation from the National Aerospace University “Kharkiv Aviation Institute” – National Aerospace University “Kharkiv Aviation Institute” [2025]

Honorary Certificate from the National Aerospace University “Kharkiv Aviation Institute” – National Aerospace University “Kharkiv Aviation Institute” [2024]

Certificate of Appreciation, Kharkiv Regional Council and Kharkiv Regional State Administration [2023]

**Membership in Professional Associations:**

Academic of Engineering Sciences of Ukraine, Corresponding Member [2024]

## INTERNATIONAL ACTIVITIES:

### Internships:

Certificate of international distance scientific and pedagogical internship  
“Management of Transfer of Educational Technologies in the European Union  
Countries” *Danmark* [12/02 – 08/04/2024] 6 ECTS credits

## SELECTED PUBLICATIONS:

### Key Articles (Scopus, WoS, others):

Iurii Sysoiev, Yurii Shyrokyi, Kseniia Fesenko System for measurement the product surface Temperature for vacuum-arc coatings (2025) *Problems of Atomic Science and Technology* (PAST), 2(156), 171-176. <https://doi.org/10.46813/2025-156-171>

Anton V. Onopchenko, Maksym O. Kurin\*, Yurii V. Shyrokyi, Oleksii O. Horbachov (2024) Investigation the plastic flows in the metalstamping-drawing process at the die corner *Acta Polytechnica* 64(4),385–397. <https://doi.org/10.14311/AP.2024.64.0385>

Yurii Shyrokyi, Iurii Sysoiev, Yevhen Fesenko (2024) Modeling the conditions for obtaining nanostructures during ion-plasma processing taking into account the quantum-mechanical properties of electrode material. *Aerospace Engineering and Technology*, 3(195), 68-76. <https://doi.org/10.32620/akt.2024.3.06>

Onopchenko A.V., Kurin M.O., and Shyrokyi Yu. V. (2024) Ensuring Quality of Stamping Sheet Aviation Parts *Progress in Physics of Metals*, 25, No. 2, 320–363 <https://doi.org/10.15407/ufm.25.02.320>

Pulsed vacuum-arc plasma source with laser arc excitation. [Text]/ Iurii Sysoiev, Yurii Shyrokyi, Kseniia Fesenko. // *Problems of Atomic Science and Technology* (PAST), 2024, № 1 (149), pp. 110-115. <https://doi.org/10.46813/2024-149-110>

Iurii Sysoiev, Yurii Shyrokyi, Kseniia Fesenko (2023) Life pulsed vacuum-arc plasma source. *Problems of atomic science and technology* (PAST), (147), 152-157 <https://doi.org/10.46813/2023-147-152>

Myglovets I., Rudenko N., Sysoiev Iur., Shyrokyi Y. 2023. Development of a manipulator for fully automated the process of charging electric vehicles *Aerospace Engineering and Technology*. 97, 80-93. <https://doi.org/10.32620/oikit.2023.97.05>

Ihor Myhlovets, Yurii Shyrokyi, Nataliya Rudenko (2022) Design of the manipulator control system for charger complex for electric vehicles. 15th International Doctoral Students Workshop on Logistics Magdeburg, 2022, 50. <http://dx.doi.org/10.25673/85925>

Kostyk, K., Chen, X., Kostyk, V., Akimov, O., Shyrokyi, Y. (2023) New Complex Treatment to Ensure the Operational Properties of the Surface Layers of Machine Parts. *Advanced Manufacturing Processes IV*. InterPartner 2022. Lecture Notes in Mechanical Engineering Springer, Cham. 284–293 [https://doi.org/10.1007/978-3-031-16651-8\\_27](https://doi.org/10.1007/978-3-031-16651-8_27)

Shyrokyi Y., Kostyuk G. (2022) Investigation of the Influence of Crystallization Energy on the Size of Nanostructures During Copper Ion-Plasma Treatment. In: Nechyporuk M., Pavlikov V.,



Kritskiy D. (eds) Integrated Computer Technologies in Mechanical Engineering - 2021. ICTM 2021. Lecture Notes in Networks and Systems, vol 367. Springer, Cham.

[https://doi.org/10.1007/978-3-030-94259-5\\_6](https://doi.org/10.1007/978-3-030-94259-5_6)

Kostyk K., Kostyk V., Akimov O., Kamchatna-Stepanova K., Shyrokyi Y., (2022) Ensuring the High Strength Characteristics of the Surface Layers of Steel Products. In: Tonkonogyi V., Ivanov V., Trojanowska J., Oborskyi G., Pavlenko I. (eds) Advanced Manufacturing Processes III. InterPartner 2021. Lecture Notes in Mechanical Engineering. Springer, Cham. Vol. 9, 292-301 [https://doi.org/10.1007/978-3-030-91327-4\\_29](https://doi.org/10.1007/978-3-030-91327-4_29)

Ruslan Avdeev, Yurii Shyrokyi, Irina Romanova (2021). Automated navigation system for a marking machine. 14th International Doctoral Students Workshop on Logistics. 22 June 2021 Magdeburg. Institute of Logistics and Material Handling Systems, 7-11. Doi: 10.25673/36839

Kostyuk G., Popov V., Shyrokyi Y., Yevsieienkova H. (2021) Efficiency and Performance of Milling Using Cutting Tools with Plates of a New Class. / In: Tonkonogyi V. et al. (eds) Advanced Manufacturing Processes II. InterPartner 2020. Lecture Notes in Mechanical Engineering. Springer, Cham. [https://doi.org/10.1007/978-3-030-68014-5\\_58](https://doi.org/10.1007/978-3-030-68014-5_58)

Kostyuk G., Melkoziorova O., Kostyuk E., Shyrokyi I. (2020). Prospects for producing nanostructures in the volume of parts under the action of plasma flows Cutting and Tools in Technological Systems. – Kharkiv: NTU “KhPI”. 92. 107-121. <https://doi.org/10.20998/2078-7405.2020.92.12>

Dmytro Shtanko, Yurii Shyrokyi, Nataliya Rudenko Robotic bicycle parking with autonomous electric power system (2020) 13th International Doctoral Students Workshop on logistics., June 16, Magdeburg, p. 97-101. ISBN 978-3-94472-94-8

Kostyuk G.I., Shirokiy Yu. V. (2018). Experimental study of the flat details temperature fields at the laser beam motion and nanostructures formation Proceedings of XIII international conference on modern achievements of science and education September 6-13 2018. – Netanya (Israel), 78-80.

Kostyuk G., Shyrokyi Y., Yevsieienkova H. (2017) Features of the thermal and stress state of the hard alloy VOLKAR under femtosecond laser irradiation and under different methods of specifying thermophysical and thermomechanical properties. Proceedings of XII international conference on modern achievements of science and education September 17-24 Netanya (Israel).

### Patents

Pulsed vacuum-arc plasma source: pat. 128916 Ukraine: H05 H1/24, C23C14/24 / Yu. O. Sysoiev, O. O. Baranov, Yu. V. Shyrokyi, A. Yu. Sysoiev. — No. a202301817; appl. 19.04.2023; publ. 20.11.2024, Bull. No. 47.– 1 p. <https://sis.nipo.gov.ua/uk/search/detail/1827848/>

Method of exciting a vacuum-arc discharge with a laser beam: pat. 129003 Ukraine: H01T 1/20, H01J 17/64 / Yu. O. Sysoiev, O. O. Baranov, Yu. V. Shyrokyi, A. Yu. Sysoiev. — No. a 2022 04383 application 21.11.2022; published 18.12.2024, Bull. No. 51/2024 <https://sis.nipo.gov.ua/uk/search/detail/1833179/>

### Books, Chapters in Collective Monographs:

Shyrokyi, Yu. V. (2019). *Introduction to Engineering: Textbook*. Kharkiv: National Aerospace University “Kharkiv Aviation Institute.” 64 p.

Sysoiev, Yu. O., & Shyrokyi, Yu. V. (2020). *Intellectual Property: Textbook* (2nd ed., revised and expanded). Kharkiv: National Aerospace University “Kharkiv Aviation Institute.” 80 p.



Kostiuk, H. I., Baranov, O. O., & Shyrokyi, Yu. V. (2020). *Design of Industrial Robots: Textbook*. Kharkiv: National Aerospace University "Kharkiv Aviation Institute." 136 p.

Shyrokyi, Yu. V., & Postelnyk, T. O. (2021). *Design of Equipment for Automated Production. Gripping Devices of Industrial Robots: Textbook*. Kharkiv: National Aerospace University "Kharkiv Aviation Institute." 88 p.

Baranov, O. O., Rudenko, N. V., & Shyrokyi, Yu. V. (2021). *Mathematical Foundations of Robotic Systems: Textbook*. Kharkiv: National Aerospace University "Kharkiv Aviation Institute." 224 p.

Shyrokyi, Yu. V., Stepanenko, D. R., Torosyan, O. V., & Breus, A. O. (2022). *Fundamentals of Microcontroller Programming: Laboratory Manual*. Kharkiv: National Aerospace University "Kharkiv Aviation Institute." 80 p.

Shyrokyi, Yu. V., Torosyan, O. V., & Stepanenko, D. R. (2025). *Automation of Industrial Objects with Pneumatic Systems: Methodical Guidelines for Calculations and Graphical Work*. Kharkiv: National Aerospace University "Kharkiv Aviation Institute." 56 p.

Sysoiev, Yu. O., & Shyrokyi, Yu. V. (2025). *Manufacturing Technology. Part 1: Electrochemical and Electrical Discharge Machining: Textbook*. Kharkiv: National Aerospace University "Kharkiv Aviation Institute." 128 p.

## **ADDITIONAL INFORMATION:**

### **Language Proficiency:**

Ukrainian, English

### **IT Skills:**

Programming & Mathematical Tools: **MATLAB, Mathcad, Turbo Pascal, C++**

CAD/CAE Software: **SolidWorks, КОМПАС-3D**

Other: **Windows OS**

### **Social and Community Activities:**

President of the Public Organization "International Association of Alumni of Kharkiv Aviation Institute"