

EXPERIENCE

SCIENCE

TECHNOLOGY

FUTURE

THE BULLETIN

OF THE SILESIAN UNIVERSITY OF TECHNOLOGY

ISSN 2956-7475

No. 4 (010) 2024

**PASSION
IN A WORLD
OF SILENCE**
p. 38

**LABORATORY
SECRETS
REVEALED**
p. 6

**EDUCATION
IN THE NETWORK
OF MARKET NEEDS**

p. 18





FROM THE EDITOR



The Silesian University of Technology is a university that defines itself as a modern, European technical university, focusing on interdisciplinary education, scientific research, and comprehensive development of students, combined with shaping entrepreneurial attitudes. To what extent does this vision written in the most important documents of the University describe the reality of the only research university in the region, which is famous for its exemplary cooperation with industry? Do the possibilities offered by such symbiosis translate into opportunities for graduates of the Silesian University of Technology in the labour market? How innovative methods of education used at the University support the development of students and position them on the global market of educational services? In the April issue of the Silesian University of Technology Bulletin, our readers will find reports from many important university events and read about the effects of breakthrough projects that help in the effective diagnosis and treatment of civilization diseases. The issue will also feature stories of exceptional people who conquer all limitations.

I wish you an interesting reading.

Iwona Flanczewska-Rogalska

THE BULLETIN OF THE SILESIAN UNIVERSITY OF TECHNOLOGY

No. 4 (364) 2024
APRIL

Editorial address: The Promotion and Communication Centre,
2A/297a, Akademicka Street, 44-100 Gliwice
Tel. 32 237 18 62; e-mail: RI2-CPIK@polsl.pl

Printing: Columbus Printing House. Chorzow

Editorial office: Iwona Flanczewska-Rogalska (editor-in-chief),
Martin Huć, Katarzyna Siwczyk,
Jolanta Skwaradowska, Anna Świdorska

Graphic design, cover design and layout: Maciej Mutwil

Translation: Roman Gardela

Editing and proofreading: Hanna Brdyś

On the cover: Damian Le Thanh, Li Zhengqi, Jesica Ponichtera

Author of the photo: Maciej Mutwil

The editors reserve the right to make changes and shorten texts as well as change their titles. The transfer of materials is tantamount to consent to the dissemination of texts, photos, and graphic materials, in paper and electronic versions. Photographs and graphic materials in the submitted texts are placed under the responsibility of the author.

The editors are not responsible for the content of advertisements and announcements. Reprinting and use in any other form without written permission is prohibited.



TABLE OF CONTENTS

Spotlight on science and higher education	4
Laboratory secrets revealed	6
From the Silesian University of Technology to conquer the USA	8
Promoting academic entrepreneurship	12
To the Fair! For jobs and knowledge	14
Education in the network of market needs	18
Will the Scientists from the Silesian University of Technology help the cardiologists?	22
Balance training for health	24
How to fight cyber-attacks?	28
Open yourself to physics	32
National lesson on materials	34
The voice of the Student Council	37
Passion in a world of silence	38
Positions, degrees, and academic titles	41
Light from stone	42
In brief Events	45
In brief Successes	47
In brief Projects	48
May repertoire of the Student Culture Centre "Mrowisko"	50
Publishing news	51

SPOTLIGHT ON SCIENCE AND HIGHER EDUCATION

*text: Anna Świdarska
photo: Maciej Mutwil*

ON 13TH -15TH MARCH, A CONFERENCE OF THE COLLEGE OF VICE-RECTORS FOR GENERAL AFFAIRS, ORGANIZATION AND RELATIONS WITH THE SOCIO-ECONOMIC ENVIRONMENT AND THE COLLEGE OF VICE-RECTORS FOR SCIENCE AND DEVELOPMENT OF PUBLIC TECHNICAL UNIVERSITIES WAS HELD AT THE SILESIAN UNIVERSITY OF TECHNOLOGY. REPRESENTATIVES OF THE UNIVERSITY AUTHORITIES, THE MINISTRY OF SCIENCE AND HIGHER EDUCATION EXCHANGED EXPERIENCES AND DISCUSSED PLANS AND CHALLENGES IN THE FIELD OF SCIENCE.

The conference was attended by thirty-seven vice-rectors representing technical universities, who came at the invitation of Prof. Janusz Kotowicz, President of the College of Vice-Rectors for General Affairs, Development and Contacts with the Socio-Economic Environment. The Silesian University of Technology also hosted Dr Hab. Maria Mrówczyńska, Prof. of the University of Zielona Góra, Undersecretary of State in the Ministry of Science and Higher Education. In the Ministry, Prof. Mrówczyńska is responsible for matters related to innovation and development. Participants of the conference heard what the priorities of the ministry in the coming months are – among them the amendment of the Law on Higher Education and Science, after consultation and coordination with the academic community.

“We collect proposals for changes from all units that operate within the higher education system and will proceed further on the basis of the collected information. In the next six months, we plan to make small changes, the larger ones, mainly related to the evaluation

of scientific units, will probably be postponed until the end of this year and the beginning of the next.” – said Minister Mrówczyńska.

The scientific community is already actively involved in shaping the law – so far, the Ministry of Science and Higher Education has received more than seven hundred proposals for amendments, which will be examined by the General Council of Higher Education. Prof. Mrówczyńska also mentioned the debate on the change concerning the Polish Academy of Sciences – expected for a long time by the scientific community as one of the current priority activities of the Ministry. The Minister also stressed efforts to increase spending on science, which currently amounts to just over 1% of GDP.

“We will try to reach 3%, but it will not be easy. It is good that from the 7th of March, the National Centre for Research and Development is again under the responsibility of the Minister of Science and Higher Education, we will make sure that the academic community and universities have their share as the beneficiary of the funds” – added Prof. Mrówczyńska.

Many participants of the conference took part in the discussion, making comments to the Minister and Mr. Marcin Czaja, the director of the Department of University Organization, Education and Student Affairs, present at the conference.

– This is a very important initiative, the participants of the conference are those Vice-Rectors who are responsible for the operational activities of the university in these extremely important areas, such as cooperation with the socio-economic environment, university management or development strategies – said Prof. Arkadiusz Mężyk, Rector of the Silesian University of Technology. – It is also an opportunity to present our University, our achievements, solutions that we have already implemented, and those that we intend to implement.

The Rector of the Silesian University of Technology, who also serves as the chairman of the Conference of Rectors of Academic Schools in Poland, discussed the role of CRASP in the development of the education system in Poland.

Dr Hab. Renata Frączek, director of the Silesian University of Technology Library, which will soon open

after a thorough reconstruction, presented the participants of the meeting with information on how the unit supports the scientific, research, and didactic activities of the University. The library, which has undergone a thorough reconstruction, will soon be fully accessible to the academic community. In turn, Prof. Sebastian Werle from The Faculty of Energy and Environmental Engineering, coordinator of the 6th POB (Priority Research Area) Climate and Environmental Protection, Modern Energy,

gy. – We host an excellent group of vice-rectors of technical universities in the walls of the Silesian University of Technology. We are pleased with their words that we can be a model for them in many cases. This day today is full of discussions, especially since we are hosting two deputy ministers of science and higher education – added the Vice-Rector.

The participants of the conference visited the Guido mine, and then met with Prof. Marek Gzik, Deputy

of science and higher education will create the policy of the ministry, probably there are no people who understand universities more, who know what needs to be corrected, which direction to go, who come from within our ranks, and, I hope, a lot of good things can happen in higher education in the near future.

– The participation of two deputy ministers in our conference is extremely important for us – said Prof. Janusz Kotowicz - Vice-Rector for



gave the guests an insight into how the Silesian University of Technology implements the Sustainable Development Goals.

“We meet with people who understand the changes that are taking place at the university, can appreciate them, but can also suggest, share their thoughts, good practices from their universities,” said Professor Marek Pawełczyk – Vice-Rector for Science and Development of the Silesian University of Technolo-

Minister of Science and Higher Education, who is responsible for investments in the Ministry.

“We can work out a common front, exchange experiences, which is very important at the moment when so much is happening in higher education,” said Artur Bejger, Chairman of the College of Vice-Rectors for Science and Development and at the same time Vice-Rector for Science of the Maritime University of Szczecin. – It seems that the deputy ministers

Collaboration with the Civic and Economic Environment of SUT. – We discussed the university’s problems and issues that need to be resolved urgently; this discussion also moved toward the change of the law. However, there are issues that require wider consultation with the academic community before introducing changes to the law – concluded Vice-Rector Kotowicz.

Participants of the conference were hosted in a historic palace in Koszęcin. ■

LABORATORY SECRETS REVEALED

text: Anna Świdarska
photos: Maciej Mutwil, Krzysztof Gronowicz

PRESENTATIONS, WORKSHOPS, LECTURES, AND OPEN LABORATORIES – FOR TWO DAYS SILESIAN UNIVERSITY OF TECHNOLOGY HOSTED SECONDARY SCHOOL PUPILS, WHO COULD SEE UP CLOSE WHAT THE WORK OF SCIENTISTS IS LIKE. THE YOUTH HAD THE OPPORTUNITY TO TALK WITH LECTURERS AND STUDENTS, VISIT THE LABS, SEE WHAT THEY ARE USED FOR, AND HOW MODERN LABORATORY EQUIPMENT WORKS. THE INTEREST WAS ENORMOUS.



This year, two-day long, second edition of LabOpenDays was attended by scientists from all faculties of the Silesian University of Technology. They have prepared a number of interesting activities for young people.

– We presented our guests with a popular science lecture, wanting to introduce them to what biomedical engineer-

ing is about – said Aleksandra Badura, PhD student and organizer of LabOpenDays at the Faculty of Biomedical Engineering. The pupils also visited the laboratories of scan-

ning microscopy, minimally invasive surgery, virtual technology, and biomedical signal recording. They could feel like surgeons, lab technicians and try our equipment,” she added.

– We presented the most interesting laboratories connected with the fields of education offered by our Faculty, we focus on those aspects that are expected from us by the labour market, i.e. modern technologies, materials, and production systems – said Dr Eng. Sandra Grabowska from the Faculty of Materials Engineering.

All teaching units of the Silesian University of Technology showed what they do on a dai-

We have presented the most interesting laboratories related to the fields of education offered by our faculty; we focus on those aspects that labour market expects from us



University of Technology, giving secondary school pupils the opportunity to get to know places where students have classes, and scientists conduct research.

ly basis. The young people learned, among other things, how air pollutants are measured, what the chromatograph is used for, and under the microscope they saw microplastics or nanomaterials. Pupils learned about modern measurement technologies used in geodesy, such as tachometers, code levels, GNSS receivers, laser scanners, or drones, visited laboratories where scientists deal with the design of digital and microprocessor systems, electronic circuits, or research on the use of superconductors. Young people could independently test the strength of materials, get acquainted with virtual reality, prepare natural cosmetics or program robots during workshops.

– We also invited an Intel representative to give pupils a lecture on what skills candidates in the area of new technologies are most valued for by the labour market, we also prepared IT workshops, we show our laboratories. Young people who visited us know that it is worth studying at the Silesian University of Technology, which makes us very happy – said Dr Eng. Krzysztof Simiński from the Faculty of Automatic Control, Electronics and Computer Science.

The visit of secondary school pupils was also an opportunity to present an offer of education, and for pupils it was the opportunity to contact students and lecturers. Natalia Pepkow came to visit the laboratories of the Faculty of Transport and Aviation Engineering, where she tried her hand at a train driving simulator.

– Very nice experience, although I would prefer to try it live – said Natalia, stressing that she plans to study at the Silesian University of Technology. – I am interested in railway transport, I have not had time to ask about everything, but I really like it at this university, and also in Silesia – it is a great place to study.

LabOpenDays complement the Open Days of the Silesian

“The foundation of engineering science is experimentation, which takes place in laboratories. This is a place where a young, beginning engineer can develop his skills, and build his competences, basically in any direction - emphasized Dr Hab. Eng. Tomasz Trawiński, Vice-Rector for Infrastructure and Promotion. – The Silesian University of Technology has a lot to show, we open our modern laboratories and tell young people, future engineers, what is worth investing in – added the Vice-Rector.

Silesian University of Technology, one of ten research universities in Poland, has world-class equipment. The opportunity to see it for oneself will come during the next edition of LabOpenDays – in a year. ■



FROM THE SILESIA UNIVERSITY OF TECHNOLOGY TO CONQUER THE USA

text: *Martin Huć*
photos: *Tomasz Stokłosa, private archive*

MIRELLA FUHRMANN, JAKUB KARWATKA AND ALEKSANDER SKIBA, FIFTH-YEAR STUDENTS OF ENVIRONMENTAL ENGINEERING AT THE FACULTY OF ENERGY AND ENVIRONMENTAL ENGINEERING, REPRESENT THE SILESIA UNIVERSITY OF TECHNOLOGY IN THE PRESTIGIOUS INTERNATIONAL AEC GLOBAL TEAMWORK PROJECT ORGANIZED BY STANFORD UNIVERSITY IN CALIFORNIA.


Mirella Fuhrmann, Jakub Karwatka and Aleksander Skiba were among the thirty students from all over the world who qualified for the AEC Global Teamwork. The project brings together students, lecturers, and industry practitioners from five disciplines – architecture, civil engineering, construction management, financial management, and environmental engineering (MEP - Mechanical Electrical Plumbing). Students act as MEP Engineers and deal with HVAC installations, i.e., heating, ventilation and air conditioning, as well as systems with renewable energy sources, environmental conditions and water systems.

The task of the participants, divided into groups, is to create an innovative project of the educational building with the possible use of the most widely understood new technologies, with a great emphasis on the quality of the internal and external environment.

– Students of the specialization Heating, Ventilation, Air Conditioning and

Air Protection for four years regularly qualify for this program – explains Dr Eng. Jan Kaczmarczyk, prof. SUT and Dr Hab. Eng Joanna Ferdyn - Grygierek, Prof. SUT, coordinators of the AEC Global Teamwork project at the Silesian University of Technology. – This is due to their high motivation and previous participation in PBL projects at the University. The qualification takes place during direct interviews with Dr Renate Fruchter, the director of the PBL Laboratory and the coordinator of the program. The fact that students are well prepared to solve tasks, i.e., designing HVAC systems and proposing innovative solutions in this area, allows them to achieve very good results. During their education at the University, they receive knowledge and skills in the practical use of the latest design tools including BIM techniques, for example, Revit program, modelling, and simulation of thermal buildings, e.g., EnergyPlus,

Mirella Fuhrmann, Aleksander Skiba (left) and Jakub Karwatka are among thirty students from all over the world who have qualified for AEC Global Teamwork.



IDA ICE, ESP-R. In addition, part of the classes is conducted in English, thanks to which students will get acquainted with the industry technical vocabulary.

IN CASE OF A BLACKOUT

The 31st edition of the project started in January this year and will end in May. Students of the Silesian University of Technology were allocated to different groups. Each of them deals with a different location, where the planned building will be erected. These are places with completely different climatic conditions, natural hazards, and regulations.

Mirella Fuhrmann is part of the Ridge group, which is tasked with designing a modern building of the University of Nevada faculty in Reno. There is a harsh climate and there is a high elevation angle.

“This makes it much more difficult for each of us to design such an innovative construction,” says Mirella Fuhrmann. – In summer temperatures reach up to 40 degrees Celsius, and in winter there are frost and huge snowfall. Reno has a very low percentage of humidity. We must meet these requirements and create a place that is technologically innovative. Therefore, we want to launch a prefabrication laboratory, where students will be able to make materials themselves, which will then be used to create other buildings. And at this point, I have to face the challenge of constructing industrial ventilation with the use of local suction and filter stations, and in the further part of the building a ventilation and air conditioning system that will allow heating, cooling and humidification of the air throughout the year. This is to ensure the highest possible comfort for future users. As an MEP engineer, I also have to propose the best possible energy source, which will primarily cover the energy demand of equipment in the prefabrication

laboratory. We want to take advantage of the possibilities offered by an air heat pump and photovoltaic panels with improved technology, i.e. a combination of heating system and the use of so-called solar trucks, which cause the panels to move in relation to the degree of insolation, along with the possibility of removing snow from them during winter.

Alexander Skiba joined Team Central. The building will be part of the University of California, Los Angeles campus. The local climate is characterized by hot summers with heat up to 45 degrees Celsius, very high insolation, fre-

quency of droughts due to a lack of rainfall, air pollution associated with transport, and periodically with forest fires in the area.

years., We can expect violent storms with heavy downpours that can cause flooding, greater pollution caused by smoke, and longer periods with extremely high temperatures. To ensure our building is efficient, we have spent a lot of time exploring where California – the most developed region in green technology to date – is heading, and how energy efficiency and renewable

tors – explains Jakub Karwatka. – High humidity may result in mold formation in a building due to poorly designed ventilation and air conditioning systems. We conducted a survey that showed that students in Puerto Rico, despite high temperatures, are sceptical about the air conditioning system, which resulted in the creation of a hybrid ventilation system. It is a combination of mechanical and natural ventilation, depending on the external conditions in the building. Due to natural disasters, there are blackouts in this area, i.e., power outages. Therefore, using renewable sources and electricity storage facilities, we also adapt the building to serve as a shelter, in which, despite the lack of electricity and water in the water supply network, we will try to provide these utilities. In addition, the water will be collected in underground water tanks, so that it can be used during a crisis situation.

We are also trying to analyse how the climate will change over the next hundred years. We can expect violent storms with heavy downpours that can cause flooding, greater pollution caused by smoke, and longer periods with extremely high temperatures.

energy regulations are set to change. California is expected to be carbon neutral by 2045.

“The pollution is further exacerbated by the Santa Ana Winds, which are strong desert winds that carry dust,” says Aleksander Skiba. The building is designed to last as long as possible. Therefore, we are also trying to analyse how the climate will change during the next hundred

Jakub Karwatka’s group is called An Island, and the building will be located in Puerto Rico, San Juan. The climate of this region is extremely difficult – high temperatures, high humidity, and natural disasters such as hurricanes and earthquakes.

– These are obstacles that cause us to create a building that is resistant to these fac-

– These are obstacles that cause us to create a building that is resistant to these fac-

VR GOGGLES HELP TO VISUALISE THE PROJECT

Students emphasize that the project is based 99% on the ideas of the participants. It is a constant search for new solutions to real problems in

civil engineering. This is their great adventure, but even greater opportunity and challenges, which they did not even assume when starting their studies at the Silesian University of Technology.

Thanks to participation in the program, students have contact with mentors, i.e., people representing, among others, large companies implementing large-scale projects. Moreover, they also participated in previous editions of AEC Global Teamwork. This proves the prestige of the whole project and the prospect of interesting employment.

– This motivates us to work – says Aleksander Skiba. – Mentors, paradoxically, are volunteers, to whom no one pays for the time spent with us. They are very keen to educate a new generation of good engineers who will push the construction industry forward in the future. They also say that they like to participate in the project, because sometimes they learn from students.

The key word in the project is teamwork. International form of teamwork. There is no leader in the group. Everyone has their own task, which is why conscientiousness and responsibility count.

Thanks to the PBL form of education, students gain practical skills of interbranch cooperation, learn about problems and specifics of work in other specialties – explains Prof. Jan Kaczmarczyk and Prof. Joanna Ferdyn - Grygierek

– In the case of building design – architecture, construction and installation industries are three basic industries that need to work together. For students, participation in the PBL project, coordinated by such a prestigious centre as Stanford University, is undoubtedly a great asset and increases their competitiveness on the labour market.

Three AEC Global Teamwork participants emphasize that they can use the latest software available, but also move to the world of the project using VR goggles.

“Thanks to them, we can enter the building in the project phase with the whole team to spot errors, shortcomings... In such moments, new ideas are born” – explains Mirella Fuhrmann.

– Not always the visualization or projection reflects to such a large extent what we design, as the entrance to the building in a virtual way – says Jakub Karwatka. – Another aspect is the opportunity to meet with team members who come from different regions of the world. For example, using VR goggles, we can organize a meeting in a conference



More about the AEC Global Teamwork project with the participation of three representatives of the Silesian University of Technology can be heard in the podcast “Let’s talk about science.”



room while everyone is sitting at a table. This gives you the opportunity to feel more interaction.

Stanford University was visited by our students in January. They stayed there for a few days during the inauguration of the project. For a longer period of time, they will fly back to the United States in May, to sum up the project and for five months of hard, creative, developing work. ■

For students, participation in the PBL project, coordinated by such a prestigious centre as Stanford University, is undoubtedly a great asset and increases their competitiveness on the labour market.

SUPPORTING ACADEMIC ENTREPRENEURSHIP

text: Jolanta Skwaradowska
photos: Maciej Mutwil

THE SCIENCE AND TECHNOLOGY PARK "TECHNOPARK GLIWICE" CELEBRATED THE 20TH ANNIVERSARY. THE CEREMONY, WITH THE PARTICIPATION OF THE AUTHORITIES OF THE SILESIA UNIVERSITY OF TECHNOLOGY, THE KSEZ, GLIWICE AND TECHNOPARK, TOOK PLACE ON 15TH MARCH 2024. THE SPECIAL GUESTS WERE: THE DEPUTY MINISTER OF SCIENCE AND HIGHER EDUCATION PROF. MAREK GZIK, AND FORMER PRIME MINISTERS OF THE REPUBLIC OF POLAND: PROF. JERZY BUZEK AND PROF. MAREK BÉLKA.

"Technopark Gliwice" was established in April 2004. The company was founded by three entities: The Silesian University of Technology, the City of Gliwice, and the Katowice Special Economic Zone.

"By creating Technopark, we were learning modern forms of technology transfer. Currently, this model is quite common, especially where we observe advanced development of research and transfer of the results of this research to the economy. This is done primarily by creating start-ups, companies, spin-offs, various forms of activity of employees, students or PhD students who develop projects that are implemented later in practice – said the Rector of the Silesian University of Technology, Prof. Arkadiusz Mężyk.

The main goal of Technopark in Gliwice is to support academic entrepreneurship.

- During this time, many interesting companies were incubated here, and we hope that there will be more and more of

them. We are also very pleased that Technopark is managed by people working at the Silesian University of Technology, in close proximity to the university and every employee, student or PhD has the opportunity to take advantage of a wide range of programs supporting the development of entrepreneurship – added the Rector.

The Science and Technology Park supports the creation of modern and innovative technology companies by young people completing technical studies, as well as doctoral students and academic staff of universities, mainly from the IT industry, pneumatics, automation, robotics and electronics.

It is a place where what is born in the minds of scientists is transformed into a specific product, which then goes to the market. Technopark offers not only financial support, but also access to offices, laboratories, or participation in projects – said Prof. Jan Kosmol, President of the Board

of the Science and Technology Park "Technopark Gliwice."

In the opinion of the president of Gliwice, the Science and Technology Park is an important unit on the economic map not only of the city, but also of the region.

"This is our leading company when it comes to economic development and development of new technologies. This is the place where we put into practice the so-called golden triangle, that is, the cooperation of public authorities with science and business. This place serves to incubate modern scientific and technological thought, to strengthen, and then to power the free market of goods and services – emphasized Adam Neumann, the President of Gliwice.

- You can say Technopark is our little brother. During these 20 years, it changed not only the face of science and Gliwice, but also of the entire Silesian Voivodeship, just like the Katowice Special Economic Zone. Technopark is a very important

partner for us in all projects related to social, economic, technical and economic transformation – adds Dr Janusz Michątek, President of the Katowice Special Economic Zone.

The current Deputy Minister of Science and Higher Education, Prof. Marek Gzik was associated with Technopark in Gliwice.

– In this place, 15 years ago, I launched the first 3D cave in Poland, also here, together with

two friends we created a company that prepared 3D models for operations performed by Professor Adam Maciejewski from the National Institute of Oncology in Gliwice. It was here, that we met as the Scientific Council of the Centre for Biomedical Engineering of the Silesian

University of Technology, here I took part in meetings and training sessions. All this gave me knowledge and experience, which I use, already serving as a Deputy Minister - emphasized Prof. Marek Gzik.

The special guests of the 20th anniversary of the Science and Technology Park “Technopark Gliwice” were also MEPs and former prime ministers of the Republic of Poland: Prof. Jerzy Buzek and Prof. Marek Belka.

– What is happening in Gliwice

is an absolute leadership in Poland. Here, the idea was born to connect the three poles of the golden triangle: Self-government, entrepreneurship, and science. At the Silesian University of Technology, there was never any doubt that real ideas flowing to industry which deal with innovation and creation of the best technological solutions can come only from science – said Professor Jerzy Buzek.



In turn, Prof. Marek Belka pointed out that such places as Technopark in Gliwice are of great importance for the economic development of the region. People know very well what their needs are. No one will come from Brussels or Warsaw to tell the citizens of Gliwice what the city and the region needs, added Prof. Marek Belka.

During the ceremony, the guests gave lectures. Prof. Buzek delivered one entitled “The future of Silesia – energy transformation,”

and Prof. Marek Belka “World economy – and what will be the flashpoints leading to the next crisis?”

During the 20th anniversary of Technopark, the project “IT hub Gliwice” was initiated, which assumes the extension of the existing infrastructure with two new buildings. Construction of the first one will begin in 2024. The end of the investment is planned for 2028. The buildings will be

powered using green energy.

The resulting infrastructure will contribute to the improvement of the business and consumer environment, as well as to the modernization and development of the industrial base. The new buildings will support companies from the modern technology industries that are part of the “Regional Innovation Strategy of the Silesian Voivodeship 2030”, including automation, ICT, modern energy generation sources, and medical devices. ■

TO THE FAIR! FOR JOBS AND KNOWLEDGE

text: Jolanta Skwaradowska
photos: Maciej Mutwil

ALMOST 120 EXHIBITORS, TWO THOUSAND JOB OFFERS AND THOUSANDS OF VISITORS – ON THE 30TH OF MARCH, THE HALL OF THE SILESIAN UNIVERSITY OF TECHNOLOGY SPORTS CENTRE HELD THE 11TH SPRING EDITION OF THE ENGINEERING FAIR OF JOBS, ENTREPRENEURSHIP, TECHNOLOGY AND ACCESSIBILITY.

The fair enjoys great interest not only among students, but also among secondary school pupils who are faced with the choice of professional and educational path. Here they can talk with employers, get acquainted with particular professions or the needs of the labour market – said the Rector of the Silesian University of Technology, Prof. Arkadiusz Mężyk, during the event.

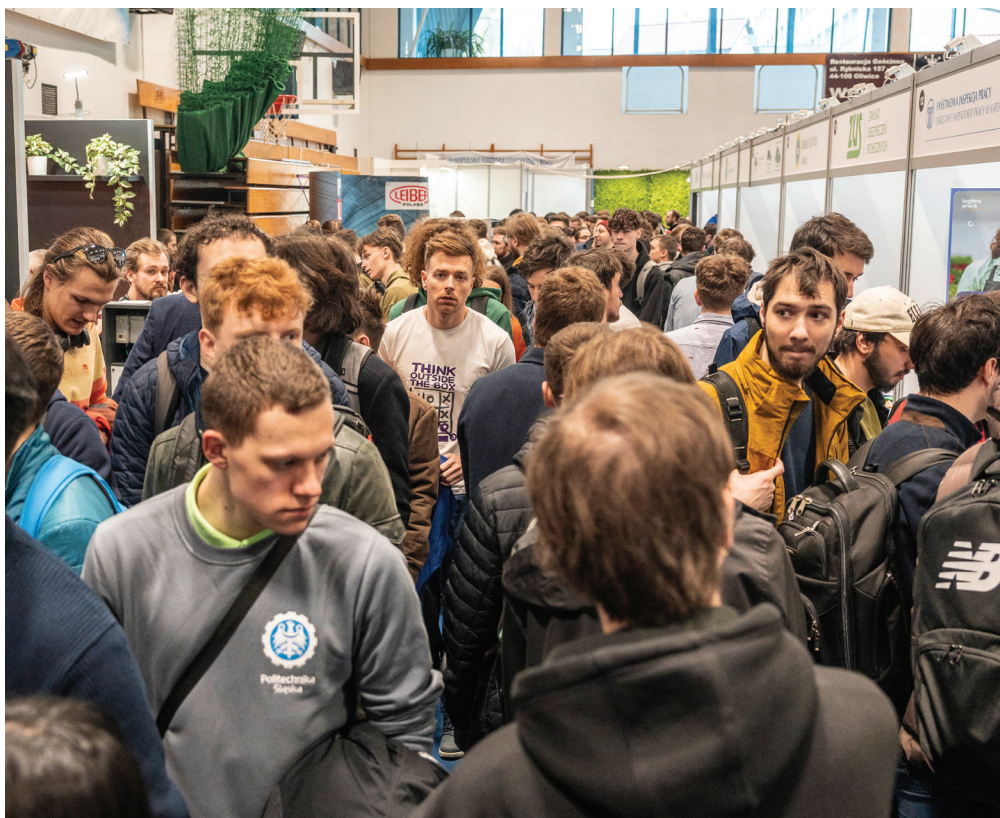
At the grand inauguration, Prof. Marek Gzik, Secretary of State at the Ministry of Science and Higher Education was present. “The companies that are present at this fair not only create new jobs, but also contribute to the economic development of our region and country. Remember that we are in a period of profound economic transformation. What is particularly important for our region is the

energy transformation and the development of companies in this area, and thus the need to employ competent staff – said Prof. Gzik.

In the market hall of the Silesian University of Technology Sports Centre, 120 exhibitors were present, among them employers interested in cooperation with representatives of the academic community, institutions providing substantive and

financial support to young entrepreneurs, as well as student scientific clubs and organizations enabling young people to develop their scientific passions.

– At the fair, almost two thousand job offers from various industries were proposed, including civil engineering, automotive, automation and robotics, new technologies, green energy





or industrial installations, and gas industry – said Barbara Odozewska from the Student Career Office at the Silesian University of Technology.

Labour market institutions, such as employment offices, were also present, and within the Special Advisory Zone, it was possible to consult application documents, take part in a simulated recruitment conversation and get feedback on one's presentation directly from employment experts.

– “This event is a good opportunity for students who are looking for work, internships, or work placements. Many secondary school graduates also consider their choice of studies, and they can confront their plans with employers. Graduates can ask the employers

who they plan to employ in the future, what courses are worth studying, what courses to take. Thus, it is an excellent opportunity to confront one's ideas with reality” – emphasized Dawid Mordarski, the chairman of the Student Self-Government of the Silesian University of Technology.

As every year, the market hall was adapted to the needs of people with traffic dysfunctions, assistants for people with disabilities were also available,

and all video materials were transcribed.

“We must strive to ensure that there is no distinction between healthy people and people with disabilities, so that there is no division between students with disabilities and those who can enter everywhere. This type of trade fair shows that we have the right to draw on technological novelties, but also from procedures and useful strategies that are being created in the world, in Europe, and in Poland” – em-

The companies that are present at this fair not only create new jobs, but also contribute to the economic development of our region and country - said Prof. Marek Gzik, Secretary of State at the Ministry of Science and Higher Education



phasized Lukasz Krasoń, Secretary of State, Government Plenipotentiary for Disabled Persons. During the event, the Year of Economic Education in the Silesian Voivodeship was inaugurated. Economic knowledge is very much needed. It is not just for business executives or managers. Today, economic knowledge is used in ordinary, everyday situations, so we should

learn it from an early age, so that young people in adult life will consciously make decisions, and manage their own budget and finances well - said Prof. Celina Olszak, the Rector of the University of Economics. During this year's fair, we also met the winners of the 20th edition of the "My Idea for Business" competition. Its aim is to reward innovative student

projects and promote entrepreneurship in the academic environment of the Silesian University of Technology. This year, the jury awarded twelve projects.

"The ideas that have been awarded are based on sustainable technologies, they create new, innovative products and services, and will also create new jobs during the implementation phase. Companies that have entered the market thanks to the competition are now increasing the competitiveness and investment attractiveness of the whole region, and their activities enable the public to access modern technologies," said Aleksandra Mateja - Kochańczyk, an entrepreneurship advisor at the Student Career Office of the Silesian University

of Technology. This year's winner of the competition was a student of Technical Physics from the Institute of Physics of the Silesian University of Technology - Dawid Dragon - with the idea titled: "EPOS- design, manufacture and assembly of systems to improve the efficiency of photovoltaic installations." The winner was also awarded by Engie Sp. z o.o "I designed an installation





that increases the productivity of photovoltaic panels in the morning and evening. Then the sun falls on the panels at a sharp angle, which reduces their efficiency. The idea for this device has been on my mind for a long time. When I found out about this competition, I decided that this is the moment to make it real” – said the winner. The second prize – ex aequo – was awarded to students from the Faculty of Mechanical Engineering: Paulina Gołuch, Patryk Gańczorz, Maciej Stec and a graduate of the Faculty of Mechanical Engineering Konrad Biątek for the idea of "PureCup: Biodegradable disposable cup" and a student of the Faculty of Energy and Environmental Engineering – Daria Zach for the idea of "MarketSparkle – marketing services". The third place, also ex aequo, was won by: Konrad Biątek, Patryk Gańczorz – graduate and

student of the Faculty of Mechanical Engineering for the project “ShowyY– mobile application – social portal” and students of the Faculty of Applied Mathematics – Mariia Hrytsenko and Kateryna Dryzhakova, who proposed “a platform offering internship programs, work placements and trainings in the Silesian region”. The jury also gave seven awards.

The My idea for Business competition is organized by the Silesian University of Technology and coordinated by the Student Career Office of the Silesian University of Technology. The next edition of The Engineering Fair of Jobs, Entrepreneurship, Technology and Accessibility of the Silesian University of Technology will take place in October. ■



EDUCATION IN THE NETWORK OF MARKET NEEDS

*text: Jolanta Skwaradowska
photo: mat. arch. pryw.*

ALMOST 80% OF STUDENTS IN POLAND COMBINE STUDIES WITH WORK – ACCORDING TO THE REPORT OF EUROSTUDENT VII, AN INTERNATIONAL RESEARCH PROJECT, THE AIM OF WHICH WAS TO DEVELOP STATISTICAL INDICATORS ON THE CONDITIONS OF STUDY IN EUROPE. THIS RESULT IS VERY CLOSE TO THE AVERAGE IN ALL ANALYSED COUNTRIES (78%). TWENTY-EIGHT COUNTRIES PARTICIPATED IN THE STUDY.

Both students and university researchers realize that nowadays a diploma is not enough to find a good job. Employers are looking for graduates with professional experience who have completed additional courses or obtained certificates. Soft skills, which can be developed during internships and courses, are also important. Therefore, students of the Silesian University of Technology can count on support in this area. At our University, the organization of internships, work placements and trainings are handled by the Student Career Office, and there is also a Business School. The participation of the Silesian University of Technology in the Erasmus+ project and the consortium of European universities EURECA-PRO allows students to acquire new skills at foreign universities. A Fair of Labor, Entrepreneurship, Technology and Accessibility, organized at the Silesian University of Technology twice a year is also a good opportunity to look for work, internships, work placements, and training.

This rich offer is very willingly used by students, as well as doctoral stu-

dents. One of those people is Dr Eng. Nikolina Poranek, who after graduating from our University, completed her PhD at the Faculty of Energy and Environmental Engineering and the Faculty of Civil Engineering. – As a student, I had the opportunity to learn about the cooperation of the Silesian University of Technology with industry, thanks to which I found a job, and this resulted in an idea of the doctoral thesis. It concerned the management of waste from the combustion of municipal fraction in concrete – says Dr Eng. Nikolina Poranek.

The researcher also took part in the “My idea for Business” competition, organized by the Student Career Office, which supports the development of academic entrepreneurship, promotes projects

based on sustainable technologies and creates innovative products and services.

Dr Poranek and Adrian Czajkowski entered to the competition the world’s first cavitation peeling device for scalp and facial hair under the name CAVIO. The invention won the first place.

– “The help I received in the contest was invaluable. Especially in terms of creating a business plan and marketing strategies, which undoubtedly helped to implement the product on the market,” – adds Dr Eng. Poranek.

The device of our graduate is already patented and sold on the Internet at www.cavio.pl.

Dr Eng. Nikolina Poranek is currently sharing her knowledge on the YouTube channel – Knowledge

Interns are representatives of a new generation, with their vision of development, expectations, and views. For employers, it can be very educational and motivating to open up to new resources, but also new technologies or market expectations.

Unforged.

Damian Le Thanh, currently a second-cycle student of Mechatronics at the Faculty of Electrical Engineering, also participated in additional trainings and internships. Thanks to them, a student can supplement and expand knowledge in the fields of interest, enriching his experience – he emphasizes. – I have been able to develop my skills in soft skills such as negotiation, project, team and working time management, as well as acquire hard skills in the field of PLC drivers. I use all these skills in my professional career, he adds. Damian Le Thanh is currently combining science with a job at Rockwell Automation as a technical support engineer.

Internships and work placements that our students can take during their studies are not only a chance for them to gain experience and additional skills. It is also a benefit for companies cooperating in this respect with the Silesian University of Technology.

- “I think the benefits are always mutual. Interns are representatives of a new generation, with their vision of development, expectations, and views. For employers, it can be very educational and motivating to open up to new resources, but also to new technologies or market expectations. The possibility of acquiring new staff is also an additional, obvious benefit.” – says Katarzyna Kudlek, Human Resources Specialist at Fluor S.A.

“During internships, the employer can influence the knowledge, skills, or competences of these students from the very beginning. Every intern is under the care of our engineers who are their mentors and guides in the company. In addition, we organize soft skills trainings for

them, such as: How to write a CV, what to pay attention to and how to prepare for an interview, how to communicate in a team, or how to set goals” – emphasizes Joanna Zając HR Manager at Blumenbecker Engineering Polska.

“Internships and work placements allow students to verify their expectations for their future work, while the employer has the opportunity to assess the potential of a future employee. “During the internship, we can assess the student's approach, whether it is a work on the principle of “tick-off” for him or something that interests him and can be his passion” – adds Joanna Zając.

– “Motivation to work, commitment, and willingness to learn

are the factors that we pay the most attention to. The previous professional experience gained may prove a good organization of time, ambition, and approach to one's development, but it is not the most important “– says Katarzyna Kudlek.

Engaged, open to new knowledge students, after completing internships or work placements, can count on permanent employment. – “The premise of the internship, with all the time and materials devoted to conducting the internship, is the desire to infect young people with the passion that our employees have and invite them to permanent cooperation after the in-



ternship” – emphasizes Katarzyna Kudlek.

An ideal place where employers can meet a potential employee, and where a student can meet an employer, is an Engineering Fair of Jobs, Entrepreneurship, Technology and Accessibility organized at the Silesian University of Technology twice a year. Students and PhD students can find job offers, internships, as well as training courses in one place – professional advisors are also available on site. The event is becoming increasingly popular every year. During the last edition of the event, in March 2024, almost 120 exhibitors appeared, and visitors could choose from two thousand job offers.

– “We are regularly present at the

An ideal place where employers can meet a potential employee, and a student with an employer, is an Engineering Fair of Jobs, Entrepreneurship, Technology and Accessibility organized at the Silesian University of Technology twice a year.

Job Fair organized by the Student Career Office of the Silesian University of Technology. Here we can talk to students, find out what they expect, what they are interested in. By the way, we are building our branding, that is, company recognition, we can present ourselves, tell others what our work is like. I think that cooperation with the university in this area is very fruitful and beneficial for both parties” – says

Joanna Zajac HR Manager at Blumenbecker Engineering Polska.

Internships and work placements are not the only form of support in the field of additional education offered by the university.

The Silesian University of Technology Student Career Office, in cooperation with the business and industrial environment, also offers courses strengthening technical skills, closely related to engineering tasks, as well as a whole range of courses improving soft skills,

such as the ability to communicate, organize work, manage time, cope with stress and change that inevitably await young people at work. Students and doctoral students can also count on support and consultations in the field of intellectual property rights or academic entrepreneurship offered by the Centre for Incubation and Technology Transfer.

– “During studies, the basic course of education is a seed, a good beginning. At the university, we gain knowledge, we learn theory. However, in order to have a good job in the future, you need experience, which can be gained during internships or work placements. Additional courses are also important. In my case, they allowed me to develop my natural predisposition, and the knowledge I gained from them helped me in the recruitment process” – emphasizes Damian Le Thanh.

“Studies are the foundation that opens the door to multilateral cooperation and development and research projects. In addition, units operating at the university, such as the BKS or the Centre for Incubation and Technology Transfer, allow for the implementation of research results and establishing cooperation with the business and industrial environment. Skills and knowledge from studies can be like a closed book, but these entities allow it to be opened and disseminated contained in it” – concludes Dr Eng. Nikolina Poranek. ■



STUDENT CAREER OFFICE OF THE SILESIAN UNIVERSITY OF TECHNOLOGY

Student Career Office of the Silesian University of Technology provides high-quality support services for students and graduates in the field of professional development and competence improvement. The activity of the office is based on the belief that graduates of the Silesian University of Technology can take attractive jobs on the labour market, thanks to matching their competences and individual professional predispositions to the positions offered.

The unit organizes high-quality internships and work placements, constantly monitored in the context of the skills and experience required in the new work environment. The offer of the office also includes training courses enabling candidates to improve professional and social skills, which are necessary to succeed on the labour market.

Student Career Office (BKS) has modern tools enabling the diagnosis of competences selected from a wide catalogue or concerning professional profiles. It helps students identify their strengths or areas that require improvement. It

ensures optimal adaptation of the training path to the candidate. As part of individual services, interested parties can meet with professional advisors and have psychological consultations.

Students can also participate in face-to-face meetings with employers, during which they can present not only their candidacy, but also needs and ideas about their dream career. These meetings take the form of study visits to companies, workshops, seminars, and conferences.

Twice a year, Student Career Office organizes the Engineering Fair of Labour, Entrepreneurship, Technology, and Accessibility. Another of BKS's flagship projects is the "My idea for Business" competition, which aims to stimulate innovation and entrepreneurship among employees, students, and graduates of the Silesian University of Technology.

Recently BKS, on behalf of the University, has obtained funds from the European Union for the implementation of internships, trainings, study visits and high-quality professional advice in the field of ecology and the use of modern technologies for sustainable development. The project is addressed not only to students but also to secondary school pupils. Its key result will be the University obtaining the status of an entity of the higher education and science system, which adapted education to the needs of the development of the economy and green and digital transformation.

THE CENTRE FOR INCUBATION AND TECHNOLOGY TRANSFER

Entrepreneurship support is also offered by the Centre for Incubation and Technology Transfer. The unit is implementing the initiative called "Project Room," thanks to which a designated space in CITT was developed for the needs of cooperation with students. The main task of the multifunctional creative room, located on the second floor of the CITT building, is to stimulate and inspire employees and students of the Silesian University of Tech-

nology to think creatively and solve problems. The combination of these functionalities is ensured by the designation of appropriate zones. The space for cooperation provided in CITT for the entire academic community is a place for meetings in any situation when research teams or scientific circles want to work together on new ideas or projects.

CITT also offers consultations in the field of intellectual property rights or academic entrepreneurship. Particularly important is the involvement of CITT in explaining the procedures taking place during the process of protection of results / effects obtained during the course of the diploma thesis. Support is provided by both CITT Innovation Brokers and by CITT Patent Attorneys.

WILL SCIENTISTS FROM THE SILESIAN UNIVERSITY OF TECHNOLOGY **HELP** THE CARDIOLOGISTS?

text: Katarzyna Siwczyk
photo: Maciej Mutwil

A GROUP OF SCIENTISTS FROM THE SILESIAN UNIVERSITY OF TECHNOLOGY IS IMPLEMENTING THE PROJECT IN COOPERATION WITH THE NORWEGIAN UNIVERSITY OF SCIENCE AND TECHNOLOGY IN TRONDHEIM AND CARDIOLOGISTS FROM THE MUNICIPAL HOSPITAL NO. 4 IN GLIWICE. THE RESULTS OF THE PROJECT MAY AFFECT THE DIAGNOSIS OF CARDIOVASCULAR DISEASES.

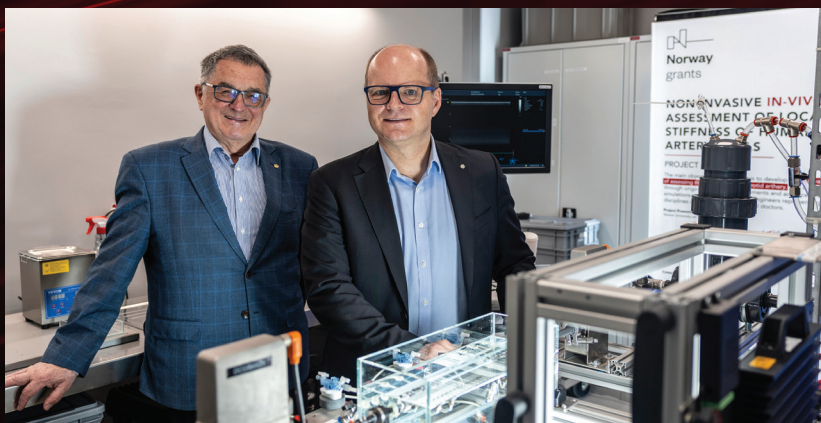
A glass box with a colourless liquid, with a few tubes, some sensors, and a seemingly inconspicuous machine. At first glance, the device in the laboratory located in the Department of Thermal Technology of the Silesian University of Technology does not make much impression. Only the ultrasound equipment standing next to it allows us to speculate that someone is carrying out research for medicine in this room.

The scientists dispel all doubts.

– This project, with the acronym ENTHRALL, funded by the Norwegian Financial Mechanism, may change the diagnosis of cardiovascular diseases. Our research work is close to completion – said Dr Hab. Eng. Ziemowit Ostrowski, Prof of Silesian University of Technology.

“We have developed a calculation algorithm that, based on measured deformations, flows and pressures, reproduces the me-

chanical properties of the materials studied. We have transferred these calculations and numerical simulations to controlled conditions – measured by a carotid phantom – to our laboratory. We checked whether the specific parameters of deformation recorded using ultrasound image and fast cameras, carotid artery flows, and pressure allow to reproduce the mechanical properties of the material simulating the carotid artery – explained Prof. Dr Hab. Eng. Ryszard Białocki. – At the last stage, the same study, already



From the left: Prof. Dr Hab. Eng. Ryszard Białocki and Dr Hab. Eng. Ziemowit Ostrowski, prof of Silesian University of Technology

Current imaging diagnostics of cardiovascular diseases do not provide sufficient information about the impact of the pathology on the risk of adverse events in the patient.

proven in vitro by a method, as part of a medical experiment, was carried out in clinical conditions – added Professor Białecki.

The solution proposed by our scientists is innovative.

“In our project, we want to examine the stiffness of the carotid artery locally by measuring the deformation of its walls during the heart cycle. Existing methods for measuring arterial stiffness are based on estimating the speed of movement of the pressure wave in blood vessels. These methods determine the averaged values of vessel stiffness in the circulatory system. However, many diseases locally change the stiffness of the vessel walls, which cannot be detected by standard methods. Generally speaking, the study proposed by us is more precise and detailed - explained Dr Hab. Eng. Ziemowit Ostrowski.

To conduct the research, the researchers have already established another cooperation with doctors from the Municipal Hospital No. 4 in Gliwice – they have been conducting joint projects for 10 years. This time they were also interested in research.

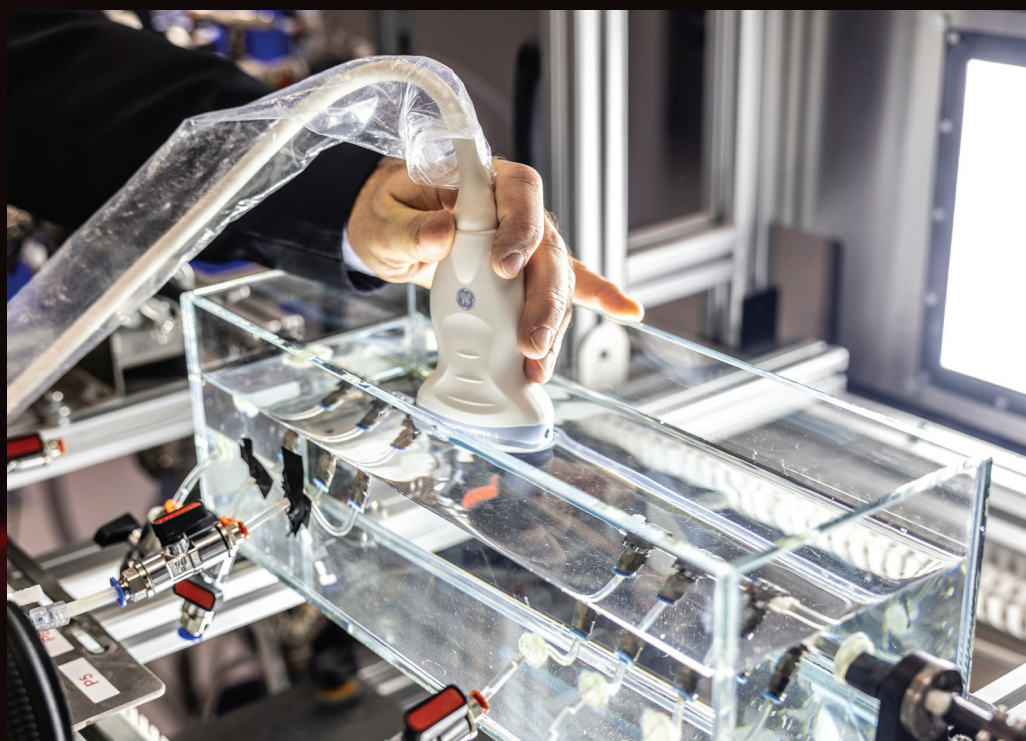
– The current diagnostic imaging of cardiovascular diseases does not provide sufficient information about the impact of the pathology on the risk of adverse events in the patient. There is a very large grey zone in which clinicians are forced to make sometimes difficult therapeutic decisions – said Dr Adam Golda, cardiologist from the Gliwice Hospital. – Sup-

plementing imaging studies of the circulatory system with a simulation of its functioning in vitro may contribute to more reliable and more accurate therapies for the benefit of the patient. The field of blood flow modelling is slowly coming into use in clinical practice, but it seems that these are the beginnings for now, and this simulation-based imaging

ty, are replaced by less elastic collagen fibres, which reduces their elasticity. In this case, the development of kidney diseases, hypertension, diabetes, or atrial fibrillation, strokes, and strokes may occur.

The first results of the research conducted on patients are optimistic.

The obtained results show different functioning of the carot-



branch will continue to grow strongly,” said Dr Golda.

Why is this project focused on the carotid artery?

The walls of healthy arteries show great flexibility, which means that their cross-section changes under the pressure produced by the heart. With the age of the patient or as a result of certain diseases, changes occur in the walls of the arteries, resulting in a loss of elasticity. Elastin fibres, the main building block of walls responsible for their elastic-

id wall during the heart cycle in people with heart failure. “We are already thinking about expanding the group of subjects to other diseases, which would mean its continuation in the near future for the project” – admits the cardiologist. ■

“The project is financed from the Norwegian Financial Mechanism for the years 2014–2021 under the agreement No. UMO-2019/34/H/ST8/00624”.



BALANCE TRAINING FOR HEALTH

*text: Martin Huć
photo: priv.arch.*

THERE IS A REAL CHANCE TO REDUCE THE RISK OF INJURIES IN BASKETBALL PLAYERS OF AZS SILESIAIAN UNIVERSITY OF TECHNOLOGY AND IN OTHER ATHLETES. THIS IS THE RESULT OF RESEARCH CONDUCTED AT THE FACULTY OF BIOMEDICAL ENGINEERING OF THE SILESIAIAN UNIVERSITY OF TECHNOLOGY.

Details can decide about the performance in sports at the highest level. In many sports, however, athletes compete more and more often, which makes it necessary to have tests, such as those carried out by scientists of the Silesian University of Technology, which are to help maintain health and high form in athletes.

– We want to show that science is able to support sport – says M.Sc. Eng. Marta Chmura from the Department of Biomechanics at the Faculty of Biomedical Engineering of the Silesian University of Technology. – It is very important that athletes training at the Silesian University of Technology know that we have the necessary equipment and knowledge to perform research and monitor training at the level used by the best sports teams in the world.

“Balance training as a tool to prevent falls – assessment of the impact of selected training methods on improving posture stability in dynamic conditions” – this is the full name of the pro-

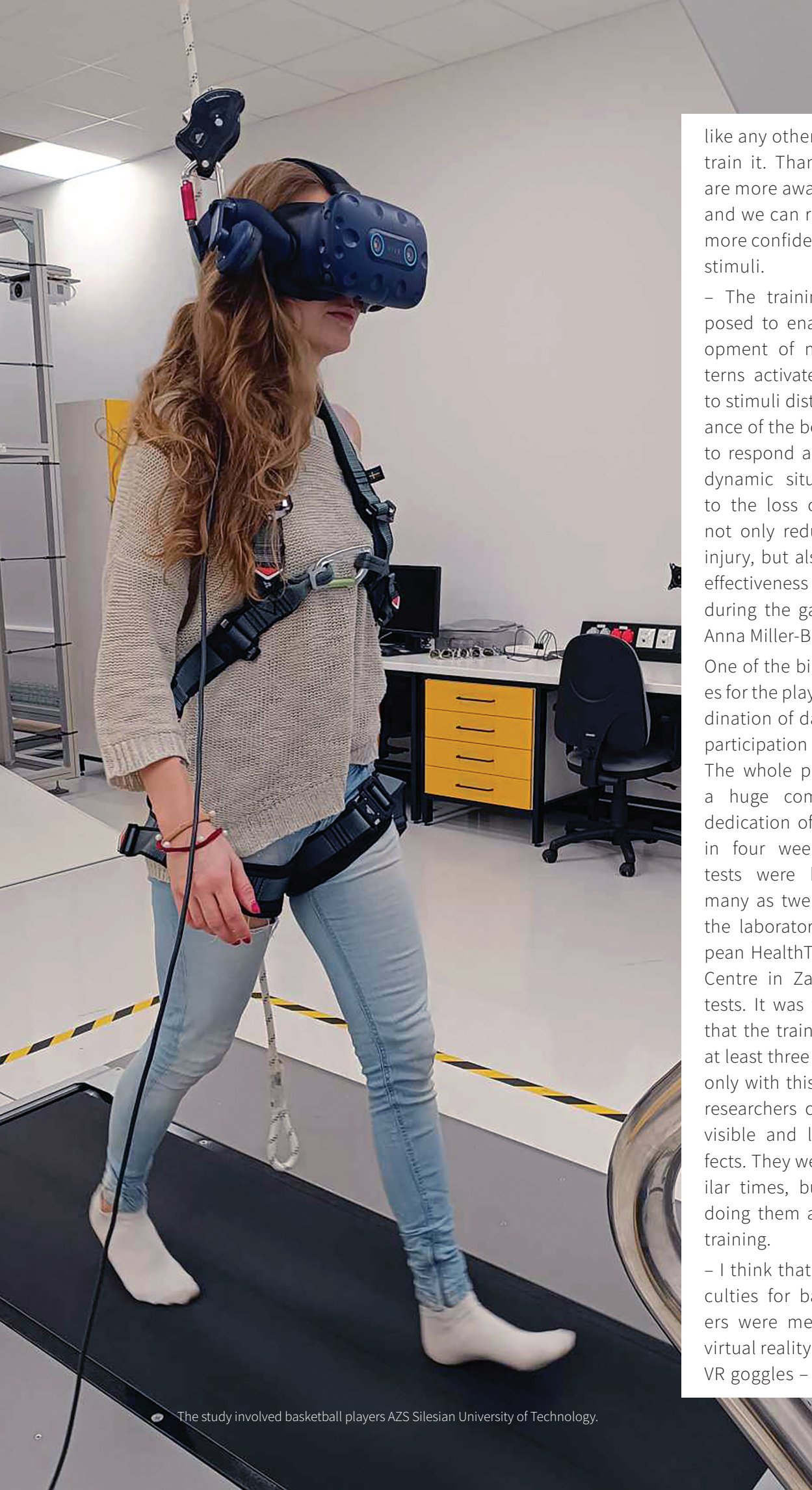
ject, which started last year.

I was contacted by Dr Eng. Piotr Wodarski from the Faculty of Biomedical Engineering and asked if I would be interested in cooperation – says Patryk Niczke, coach of the basketball team of AZS Silesian University of Technology, which this season debuted in the second league of women. – Then Mrs. Marta Chmura appeared at our training and presented the players with an idea to which they reacted very positively. The rest went quickly, and by the end of the year we had already completed the research and training conducted as part of the project.

It was attended by six players aged 16 to 28. According to the coach, basketball players are at a similar level of advancement. Substantive care over the project was provided by Dr Hab. Eng. Jacek Jurkojć, Prof. SUT and Dr Eng. Piotr Wodarski, whereas from the group of scientists, M.Sc. Eng. Marta Chmura and M.Sc. Eng. Anna Miller-Banaś were involved in the project.

The whole project consisted of three parts – tests of the balance of the players before starting training, four weeks of balance training and subsequent tests of balance after its completion. The studies included measurements of muscle activity responsible for stable body posture using electromyography, measurements of movement kinematics using IMU sensors, and measurements of displacement of the centre of pressure of the feet on the stability platform.

“During the measurement sessions, basketball players had to face unexpected and expected stimuli that would throw the body out of balance – standing with eyes open, closed, in virtual reality using VR goggles and while walking,” says Marta Chmura. Each session lasted twenty minutes, and the level of difficulty, understood by the amplitude and frequency of disorders, increased each week. The sense that is responsible for the awareness of the arrangement of our body in space is proprioception, and,

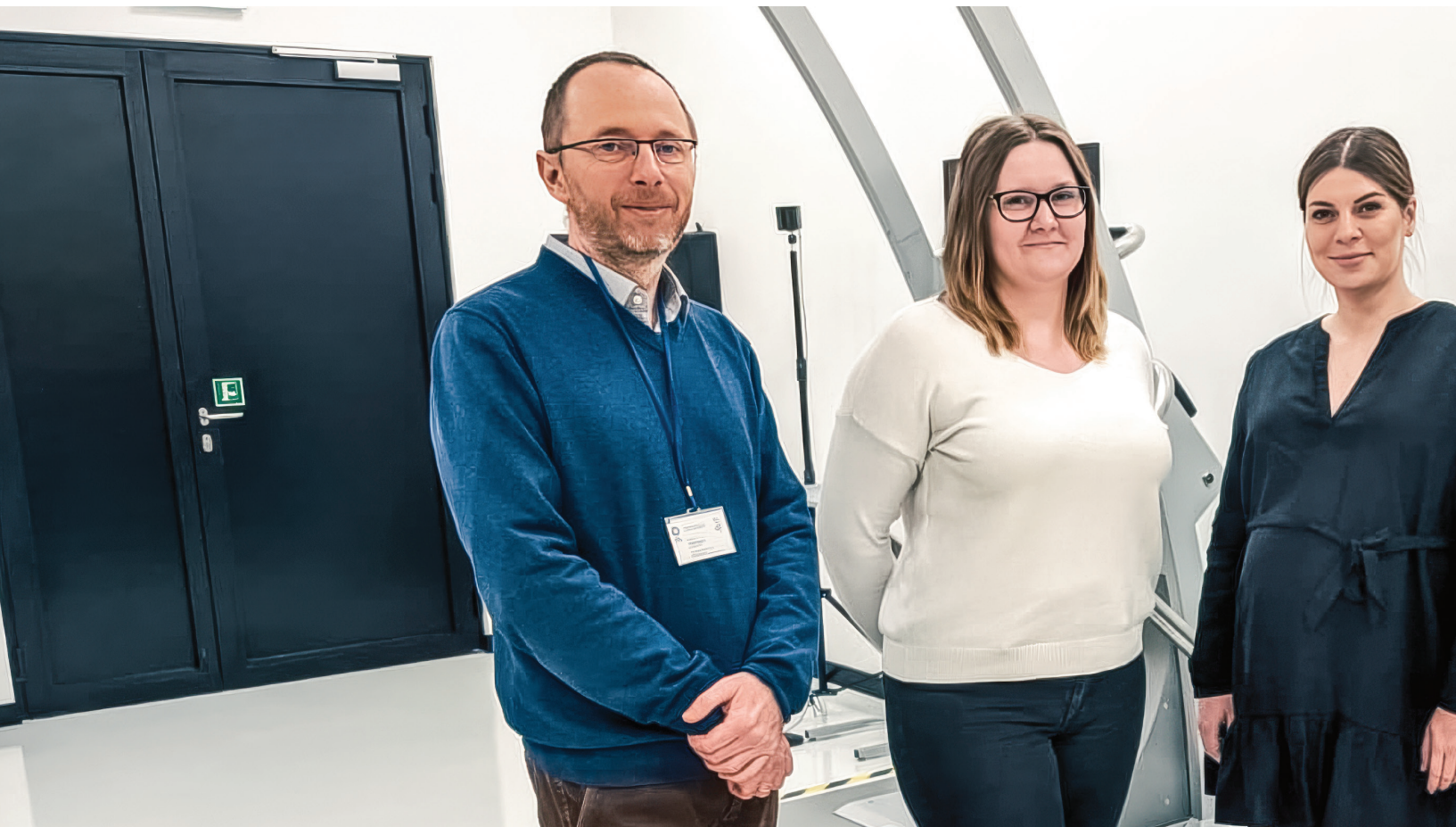


like any other sense, we can train it. Thanks to this, we are more aware of our body, and we can react faster and more confidently to external stimuli.

– The trainings were supposed to enable the development of movement patterns activated in response to stimuli disturbing the balance of the body. The ability to respond appropriately to dynamic situations related to the loss of balance will not only reduce the risk of injury, but also increase the effectiveness of the player during the game – explains Anna Miller-Banaś.

One of the biggest challenges for the players was... coordination of daily duties with participation in the project. The whole project required a huge commitment and dedication of time, as within four weeks preliminary tests were held, then as many as twelve trainings in the laboratory of the European HealthTech Innovation Centre in Zabrze and final tests. It was very important that the trainings were held at least three times a week – only with this frequency the researchers could count on visible and long-lasting effects. They were held at similar times, but we avoided doing them after basketball training.

– I think that the most difficulties for basketball players were measurements in virtual reality when they had VR goggles – explains Marta



In the picture from the left: Dr Hab. Jacek Jurkojć, prof. SUT, M.Sc. Eng. Marta Chmura, MSc. Eng. Anna Miller-Banaś, Dr Eng. Piotr Wodarski

Chmura. – The very fact of cutting off the sense of sight from the external world destabilizes a person, and additional visual disturbances generated in the virtual reality in the form of rocking, introduced the subject into a situation of sensory conflict.

Among the basketball players who took part in the study was, among others, Natalia Krzywińska.

– I am impressed by the professional equipment and the super approach of the project managers – says Natalia Krzywińska. “The study looked at body reflexes and the time to return to full balance when trying to get me out of it. Each time, a different frequency or

intensity of stimuli was added. It surprised me that we can feel such a big difference in our reflexes when we know when the treadmill will jerk, and our body reacts differently when it is unexpected. With each subsequent training, however, the reflexes were more trained, and I did not feel such large imbalances anymore.

The research and training itself were done by scientists for the first time. Practicing reaction to external stimuli (a jerk of the treadmill is, for example, a simulation of tripping or touching by a rival on the playfield) gives a real chance to reduce the risk of injuries in basketball players. What is more, it can increase their chances during direct clashes with rivals on the playfield.

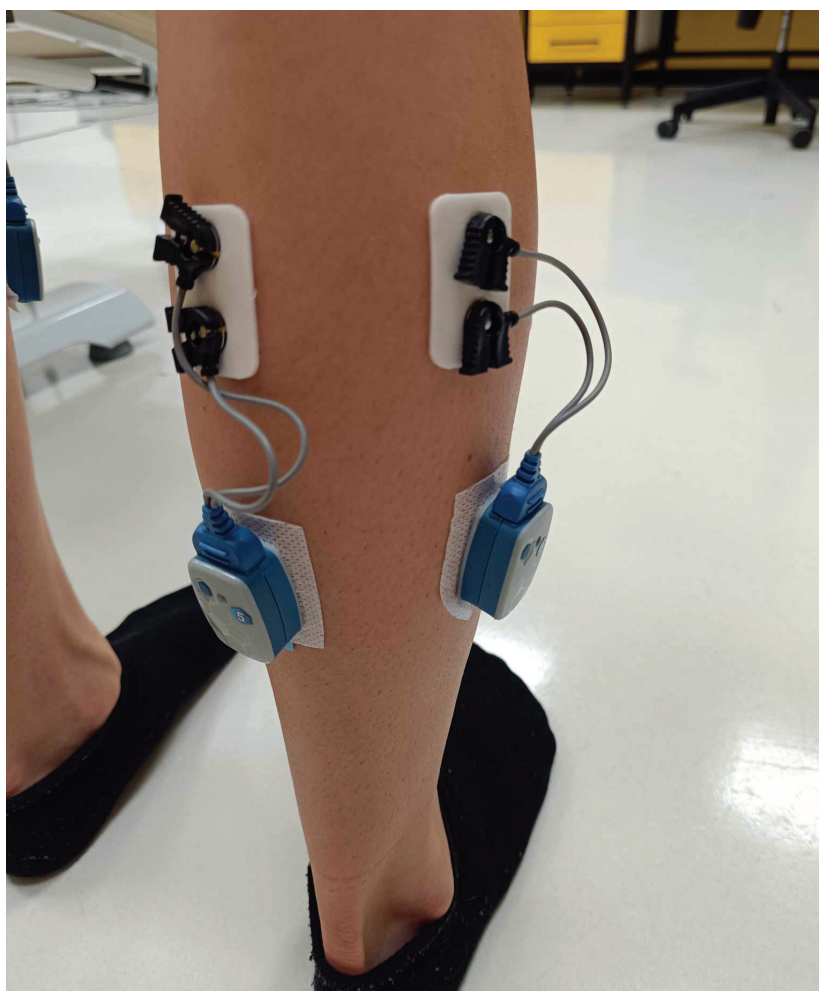
After the first analysis of the results obtained, the researchers can already conclude that after participating in four-week balance training, they managed to catch certain changes in muscle activity in response to an external disorder. – We noticed the biggest differences in the work of muscles in the lumbar spine. It seems that the training had a positive effect on their relaxation. In the majority of participants, which is confirmed by the results, it also affected the reduction of muscle activity within the lower limbs – a new movement pattern was developed that allows a more optimal response of the musculo-skeletal system to the applied stimuli, which are precipitating an imbalance – sums up Marta



cluding Robert Lewandowski,” said coach Patryk Niczke.

– We hope that there will be a certain trend of proprioception practice – I am convinced that it will bring appropriate effects to athletes – explains Marta Chmura. “This research could be used in other sports, such as handball and football, where there are also many unexpected situations. We also conducted similar studies on a large number of students practicing amateur sports, in order to compare the results with regular athletes. However, we still invite athletes from the AZS Silesian University of Technology to cooperate. We have really world class equipment. Everyone can only benefit from it.” ■

Chmura. During the whole project, the fact that I was doing something for someone gave me the greatest satisfaction. As scientists, we often conduct research solely to expand our knowledge. However, when our actions may really affect the training, and later also the performance during matches, it causes great joy and fulfilment. “This is an extraordinary experience for us, which can definitely help players broaden their sports horizons. After all, we are not only a sports team but also an academic team associated with a unique university – a research university. It was a great opportunity for us as well as a challenge. We know that EHTIC has worked with top-notch athletes, in-



HOW TO FIGHT CYBER-ATTACKS?

text: *Katarzyna Siwczyk*
photos: *Maciej Mutwil*

YOUNG PEOPLE ARE INTERESTED IN CYBERSECURITY. TWENTY TEAMS COMPOSED OF SECONDARY SCHOOL PUPILS FROM ALL OVER SILESIA PROVED THIS DURING THE SECOND EDITION OF SILESIAN CYBERHACKHATON 2024. THE COMPETITION WAS ORGANIZED BY THE FACULTY OF MINING, SECURITY ENGINEERING, AND INDUSTRIAL AUTOMATION OF THE SILESIAN UNIVERSITY OF TECHNOLOGY, JSW IT SYSTEMS SP. Z O.O AND THE INFORMATION EXCHANGE AND ANALYSIS CENTRE FOR THE MINING AND ENERGY SECTOR ISAC-GIG.

From kindergarten to university – this idea of education should guide us, especially when we talk about such threats as cyberattacks – with these words the organizers of CYBERhackathon 2024 encouraged young people to participate in the event, which was held for the second time within the walls of the Silesian University of Technology. CYBERhackathon is not an ordinary competition for computer science lovers. In this competition, you have to show extraordinary skills. Pupils of secondary schools who, despite their young age, are well versed in modern technological solutions are taking part in this competition. The competition participants proved their skills by designing websites and applications, and all this in

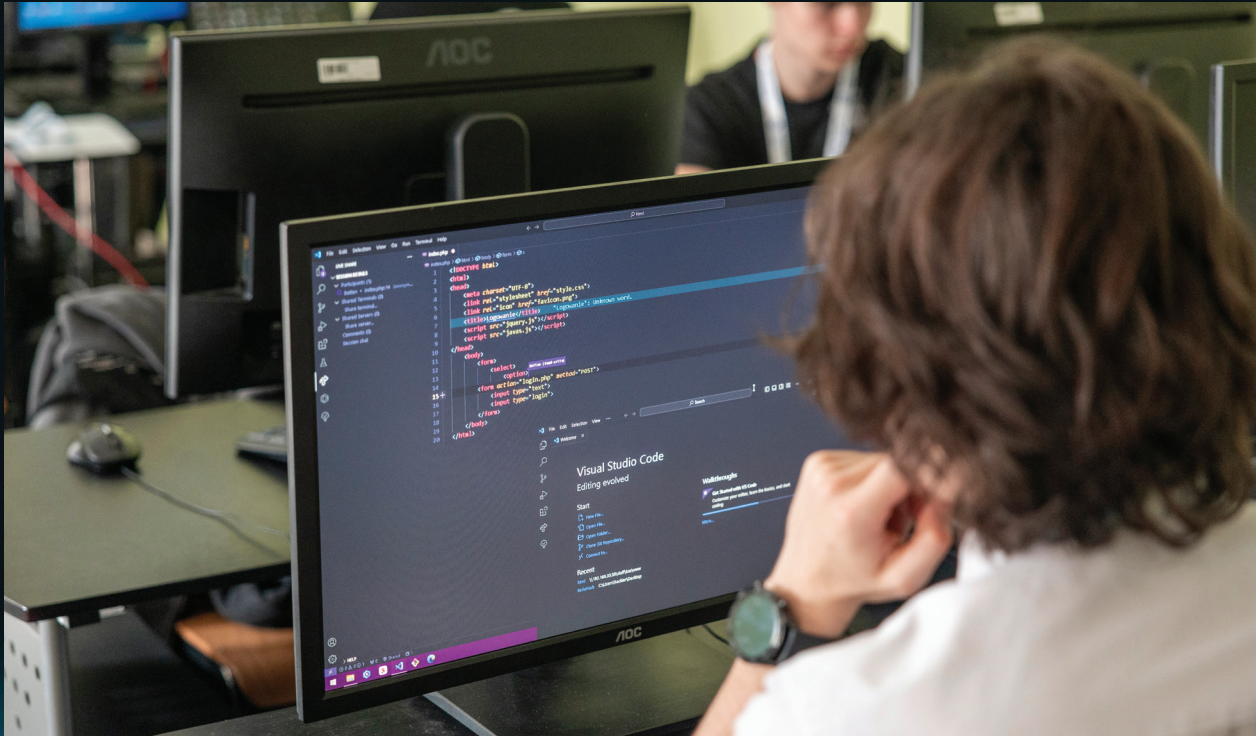
just a few hours, because that is how long the competition lasted.

– “Cybersecurity is a very serious challenge we face, so we should get used to it from an early age. We want to educate in this area and build the sensitivity of all users of the network, which is why we join the organization of events such as CYBERhackathon” – said Dr Hab. Eng. Tomasz Trawiński, Prof. SUT, Vice-Rector for Infrastructure and Promotion while opening the competition.

The patronage over the CYBERhackathon at the Silesian University of Technology was taken over by Ministry of Digital Affairs, Ministry of National Education and Ministry of Science and Higher Education.

–“ I believe that participation of Silesian youth in this event will contribute





to effective building of digital awareness among young inhabitants of Silesia and better understanding of key problems related to ensuring IT security in modern society” – said Piotr Toś, chairman of the Management Committee of ISAC GIG and president of JSW IT Systems Sp. z o.o., one of the co-organizers of the competition. “I would like our young people to be the first line of defence against cyber threats in their family homes, to support parents, grandparents, and younger siblings. We all have to remember that cybersecurity is a team game – added President Toś.

Young people are very eager to play this game. The second edition of CYBERhackathon was attended by twenty teams from the Silesian Voivodeship.

– “The task of the participants was to propose certain solutions for companies from the

mining and energy sector. We tried to select tasks in such a way that they related to various aspects -, from the safety of people in the plants, to the escape routes. The issues also focused on environmental protection, the use of post-industrial areas or the preparation of solutions using artificial intelligence,” – said Bogdan Czyż from JSW IT Systems, chairman of the jury of CYBERhackathon.

From among the proposed topics, the teams chose one and prepared a project, e.g. a website, computer game or application, and then presented their work to a board of experts composed of representatives of the world of science and industry.

The participants did not hide that this is a great opportunity to check the level of their knowledge in the field of programming.

– “We started preparing two weeks earlier. We met the

The participants' preparations were appreciated. The jury did not hide that it was a high-level competition.

whole team almost every day. We designed the application. We will check whether we are able to act under time pressure, how we are coping with critical thinking, especially under stress," – admitted Denis Bichler - one of the participants of the competition from the Complex of Civil Engineering Schools in Rybnik.

The participants' preparations were appreciated. The jury did not hide that it was a high-level competition.

– "Together with the other members of the jury, we were impressed by the creativity,

ideas, and programming skills of these young people," – emphasized Dr Eng. Artur Dylong, associated with the Department of Electrical Engineering and Industrial Automation, one of the judges in CYBERhackathon. – "My special attention was drawn to the project of the Świdnik team, in which the pupils proposed a solution in the field of safety in mines. I think that some of these projects, once refined, could be implemented," – added the juror.

1st place in this year's competition was won by the team

from the 1st Secondary Comprehensive School named after Władysław Broniewski in Świdnik, second place was won by pupils from Technical School No. 1 from the Complex of Technical and Information Technology Schools in Gliwice, and third place went to the team from the Complex of Technical and Commercial Schools named after Franciszek Kęпка in Bielsko-Biała.

In addition, the jury gave two awards to the 2nd Secondary Comprehensive School with bilingual units named after Emilia Plater in Sosnowiec and to the Complex of Civil Engineering Schools in Rybnik.

However, this is not the end. Participation in this event, gaining valuable experience, and receiving a diploma are not the only benefits for young participants.



– “Many companies that have joined the organization of this event observe these young people, catch more talented people among them and already offer them internships and work placements. In this way, we want to educate the future staff for our enterprises already” – noted Piotr Toś, who represents the Information Exchange and Analysis Centre in the area of Cybersecurity ISAC-GIG – an alliance of the largest state-owned companies from the mining and energy sector for the construction of a coherent policy in the field of cyber defence, and in particular the training of highly qualified specialists in this field.

“We associate the largest companies from strategic sectors for the security of the country, so it is in our interest to promote all initiatives aimed

at raising the level of cybersecurity in Poland through joint trainings, workshops, and exchange of information on incidents, vulnerabilities, and risks. We must constantly educate experts who will be able to deal with increasingly newer threats on the Internet” – stressed President Toś.

There is more and more talk about the need to educate in the field of cybersecurity at the Silesian University of Technology.

– “At the Faculty of Mining, Safety Engineering, and Industrial Automation, we intend to open the Competence Centre in the field of safety, operational analytics, and management of hazardous situations in industry. This is our response to the need to ensure the security of the region, to build a digital economy and



You can read more about cybersecurity education in the podcast “Let’s talk about science.”



just civilizational transformation of Silesia,” said Professor Franciszek Plewa.

The project is to be implemented jointly with the Institute of Mineral Resources and Energy Management of the Polish Academy of Sciences.

– “We are preparing a project, we want to create and equip six laboratories in the Silesian University of Technology, where we plan to educate not only young people who are starting education but also representatives of industry facing the challenges of energy and technological transformation, who should be able to cope with situations of extraordinary threat, including cyber.” – explained Dr Eng. Artur Dyczko, from Polish Academy of Sciences. – Silesian University of Technology is an ideal place for such action. “We have staff, there are young people who already at the school stage show interest in designing solutions for industry, and we want to use this potential,” – added Dr Dyczko. ■



OPEN YOURSELF TO PHYSICS

*text: Anna Świdarska
photo: Tomasz Stokłosa*

UNDER THIS SLOGAN, SCIENTISTS FROM THE INSTITUTE OF PHYSICS - CENTRE FOR SCIENCE AND EDUCATION OF THE SILESIA UNIVERSITY OF TECHNOLOGY ORGANIZED THE OPEN DAY. OPEN LABORATORIES, SHOWS, A FIELD GAME AND A LECTURE BY PROF. ANDRZEJ DRAGAN, PHYSICIST, SCIENCE POPULARISER, AS WELL AS AN ARTIST PHOTOGRAPHER, COMPOSER, AND FILMMAKER WERE WAITING FOR THE VOLUNTEERS.

Every year the Institute of Physics hosts secondary school pupils, who have the opportunity to visit the laboratories and see what the work of a scientist is like. This year's edition of the Open Day, which was attended by many young people, took place on March 22nd.

– The aim of this event is broadly understood popularization of physics and related sciences among pupils of secondary schools – said Dr Eng. Dominika Trefon-Radziejewska, one of the organizers of the event. “We want to show that physics is open to everyone and really close to everyone. We want to do

it in an attractive, accessible, and engaging way for every participant, which is why we organized a number of attractions encouraging interest in physics, which is a fascinating branch of science.

The youth could visit, among others, the Electron Spectroscopies and Functional Materials Laboratory, Microscopy Scanning Laboratory, PVD Thin Film Production Laboratory, C-14, and Mass Spectrometry Laboratory, or Luminescence Dating Laboratory. There were lecturers and PhD students everywhere who conducted experiments and demonstrations and, most importantly, explained physical

phenomena in simple language. Student workshops were open, a young scientist's corner was also organized, where students from abroad encouraged to study physics.

– I was here at the turn of primary and secondary school, then this event convinced me to go toward science subjects, today in secondary school I expand my knowledge of mathematics, physics, and computer science – said Mikołaj Klabis, a student of the Third Secondary Comprehensive School in Zabrze. – Today's shows were very interesting; I do not exclude that I will choose one of the fields of study at the Silesian University of Technology.

– I am the first time at the Silesian University of Technology, and I am pleasantly surprised, all the presentations were very interesting, also a meeting with students from the Science Club – added Maja Czabaj from the Third Secondary Comprehensive School in Zabrze. – I am

There is nothing more interesting than physics, the reality turns out to be so surprising, so crazy, that all fiction or science fiction books fade away. “People don't have such an expansive imagination to imagine how strange the world could be compared to what turns out to be true – said Prof. Andrzej Dragan

still thinking about the choice of studies, but I am considering rather exact sciences field.

– On such occasions, students meet with the organization of the university, and this certainly helps them decide what they would like to do, what the possibilities are – said Anna Bul, a physics teacher at the First Secondary Comprehensive School in Gliwice, whose students are eager to visit the Silesian University of Technology.

– We want to encourage students to study physics and show what education is like in our unit – added Dr Eng. Justyna Juszczyk-Synowiec, one of the organizers of the event. – Institute of Physics - Centre for Science and Education, has a family atmosphere, lecturers involve students and PhD students to participate in many interesting scientific and research projects, which create for them really excellent conditions for development.

This year's Open Days were graced by a popular-scientific lecture by prof Andrzej Dragan, a populariser of physics, as well as a photographer, musician, and filmmaker. Prof. Dragan leads a research group dealing with combining relativity theory with quantum theory at the Faculty of Physics of the University of Warsaw. He is also a visiting professor at the University of Singapore and has won several dozen awards for his scientific, photographic, film, and music activities. The lecture hall in the Centre for New Technologies was filled to the brim. The lecture was about special relativity theory.

“There is nothing more interesting than physics, the reality turns out to be so surprising, so crazy, that all fiction or science fiction books fade away. “People don't have such an expansive imagination to imagine how strange the world could be compared to what turns out to be true,” said Andrzej Dragan, encouraging the participants to explore the truth about the world around us. “Quantum theory or relativity theory are for students who learn this for the first time, first – of all, great shock, surprise, and disbelief. You have to shake it off somehow and move on. The reality is just crazy strange - added Prof. Dragan.

The event was organized

and financed under the program “Social responsibility of science II – popularization of science” Ministry of Science and Higher Education – project POPUL/SP/0406/2023/01. ■



NATIONAL LESSON ON MATERIALS

*text: Jolanta Skwaradowska, Martin Huć
photos: Maciej Mutwil, Martin Huć*

FOR THE SECOND TIME AT THE SILESIA UNIVERSITY OF TECHNOLOGY, THE NATIONAL MATERIALS ENGINEERING DAY WAS HELD. THIS YEAR, FIFTEEN UNIVERSITIES AND SIX RESEARCH INSTITUTES FROM ALL OVER POLAND TOOK PART IN IT. AS PART OF THE EVENT, THE POLISH RECORD WAS BROKEN IN THE "BIGGEST MATERIAL ENGINEERING LESSON." AT OUR UNIVERSITY, 657 PUPILS PARTICIPATED IN IT.



The second National Materials Engineering Day took place on March 22nd, 2024. The aim of the event was to raise public awareness of materials engineering and the role it plays. It is also a great opportunity to encourage young people to study this field.

– Without materials engineering, we won't conquer space, the best surgeon won't make a complicated operation, no car will go on the road, not even the hydrogen-powered one, the athlete will not achieve a high score at the World Cup – and finally– even the most charismatic environmentalist will not clean our planet from garbage. That is why it comes to a simple conclusion that materials engineering is the mother of all technical sciences – said at the beginning of the National Materials Engineering Day Prof. Kinga Rodak, Dean of the Faculty of Materials Engineering in Katowice.

This year, as part of the event, apart from workshops and presentations, the Polish record was broken in the





“Biggest lesson in materials engineering” for the second time. At our university, a lesson entitled: “Materials inspired by nature” took place at the Faculty of Materials Engineering in Katowice and at the Education and Congress Centre of the Silesian University of Technology in Gliwice. The lesson was attended by 657 secondary school pupils – about 145 in Katowice and 512 in Gliwice. In Katowice, the lecture was delivered by Dr Hab. Eng. Grzegorz Moskal, prof. of Silesian University of Technology from the Department of Materials Technologies.

The lesson was divided into theoretical and practical parts. After the lecture, pupils solved the test using a slide calliper and the event itself was recorded in photographs and on film. Then all the record-breaking documentation was transferred to the records office - said Dr Eng. Agnieszka Szczotok from the Faculty of Materials Engineering of the Silesian University of Technology, organizer of National Materials Engineering Day in Katowice.

In addition to participation in the largest materials engineering lesson, pupils could listen

to the lecture entitled “Metallurgy and foundry in culture and art – from prehistoric times to the present” and learn “How to build a house on the moon?” After the lectures, the participants of the event took part in workshops and presentations prepared by scientists and students from scientific clubs operating at the Faculty. The presentations were a good opportunity to encourage young people to study materials engineering.

Materials are everywhere, they surround us, they accompany us in every aspect of our lives. From small, very precise prostheses or materials, which are used, for example, in aorta, to materials used in aviation, power engineering, aerospace. Thus, knowledge and science about materials will continue to develop – said Filip Gajewski from SKN Mater-Tech Science Club at the Faculty of Materials Engineering.

This year, eighteen people were involved in the organization of ODIM at the Faculty of Materials Engineering in Katowice, among them academic teachers, doctoral students and students. The Faculty was visited by pupils from Katowice, Zabrze, Sosnowiec, Mysłowice and Myszków.

Pupils from as many as seventeen schools in our region appeared on that day in the Education and Congress Centre of the Silesian University of Technology in Gliwice. Among the guests from secondary schools in Bytom, Gliwice, Jaworzno, Katowice, Ruda Śląska, Rybnik, Raciborz, Tarnowskie Góry, and Zabrze, there was also a group of sixty pupils from four grades of Primary School No. 8 from Gliwice Bojków. In Gliwice, the Faculty of Mechanical Engineering was the host of the Second National Materials Engineering Day.

Last year, almost four hundred people took part in an attempt to break the Polish record at the Silesian University of Technology. This time we wanted to improve this result – explained Dr Hab. Eng. Janusz Mazurkiewicz prof. SUT of the Department of Engineering Materials and Biomaterials at the Faculty of Mechanical Engineering, co-organizer of the 2nd National Materials Engineering Day. – It is great fun with materials engineering – many workshops and meetings with interesting people. We wanted to encourage pupils to take a positive look at the fields of study related to the



technology of materials production.

In Gliwice, in twenty-seven workshops, meetings were prepared for all participants, including: 3D printing, integrated

Previously, everyone took part in the attempt to break the record – the lesson was led by Dr Eng. Anna Kloc-Ptaszna from the Department of Engineering Materials and Biomaterials.

accessible form, so I can confidently recommend studying in this field to anyone who is simply interested in the world, because material engineering can be found in any field.

The event in Gliwice was supported by fifty-four volunteers and thirty-two employees of the Faculty of Mechanical Engineering.

- We were surprised by the turn-out – boasted Dr Hab. Eng. Marek Płaczek, prof. of Silesian University of Technology, vice-dean for education at the Faculty of Mechanical Engineering - The capacity of the hall has been fully used. We are happy because materials engineering has not been as appreciated by candidates in recent years as much as it deserves. But I hope that such events will change this situation. ■

Without materials engineering, we won't conquer space, the best surgeon won't make a complicated operation, no car will go on the road, not even the hydrogen-powered one, the athlete will not achieve a high score at the World Cup – and finally- even the most charismatic environmentalist will not clean our planet from garbage

production systems, engineering materials testing, automation and industrial robotics, and high-speed tracked vehicles. For the youngest, there were demonstrations in the field of robot construction, secrets of materials and programming.

- I saw that the young people were interested in the lecture and listened to it with great attention - said Mateusz Paluch, a student and volunteer during the Second National Materials Engineering Day. – Knowledge at university is presented in an

We invite all interested parties to the national competition accompanying the 2nd National Materials Engineering Day which started on April the 10th.

Details can be found at materiallove.eu in the competition tab.



THE VOICE OF THE STUDENT COUNCIL

2ND CONGRESS OF TECHNICAL UNIVERSITIES FORUM AT ŁÓDŹ UNIVERSITY OF TECHNOLOGY

On 5-7 April 2024, at the Łódź University of Technology, the 2nd Congress of the Technical Universities Forum took place. The Student Self-Government of the Silesian University of Technology was represented by The Chairman of the University Board of Student Self-Government Dawid Mordarski, Deputy Chairman and Member of the Board Błażej Brudny, Member of the Management Board for Grzegorz Król, Main Organizer OF THE GAMES 2024, Chairman of The Student Council of The Faculty of Automatic Control, Electronics and Computer Science Wiktor Kordala.

Three training sessions were held during the meeting: Personal brand on LinkedIn and communication of student activities, Challenges of European higher education, and softs leadership competencies. Thanks to such training, we are constantly devel-



photo: Błażej Brudny

oping our competences and we can do more for the entire academic community.

XXIX NATIONAL CONFERENCE OF THE POLISH STUDENTS' PARLIAMENT IN KOŚCIELISKO

We are pleased to announce that from 11th to 14th April 2024, we had the honour to participate in the XXIX National Conference of the Parliament of Students of the Republic of Poland, which took place in picturesque Kościelisko. This unique event not only pro-

vided us with new experiences but also enabled us to broaden our horizons and establish valuable contacts.

During the conference, our delegation actively participated in trainings and discussions, presenting their own views and conclusions on important issues related to student life and education. Our presence was also an opportunity to exchange experiences with students from other universities and to cooperate for common goals.

The delegation consisted of Dawid Mordarski, Chairman of the University Board of Student Self-Government, Błażej Brudny, Deputy Chairman and Member of the Board, and Michał Szymanowski, Member of the Management Board for Teaching and Benefits.

Contact via student self-government **social media** or by **e-mail** to biuro@samorzad.polsl.pl

FORUM UCZELNI TECHNICZNYCH



photo: Aleksandra Chrapczyńska



PASSION IN A WORLD OF SILENCE

*text: Martin Huć
photos: private archives*

ANNA KRZAK, A PHD STUDENT AT THE SILESIAIAN UNIVERSITY OF TECHNOLOGY, SUCCESSFULLY COMPETES AS A REPRESENTATIVE OF POLAND IN BEACH VOLLEYBALL FOR THE DEAF. RECENTLY, TOGETHER WITH BARBARA KOŁTUN, THEY WON THE INTERNATIONAL TOURNAMENT IN JAPAN. NOW, THEY ARE PREPARING TO TAKE PART IN THE POLISH DEAF CHAMPIONSHIP AND THE WORLD DEAF CHAMPIONSHIPS.

OPPORTUNITY ON THE VENDING MACHINE

– I was born as the only deaf person in the hearing family – starts the story Anna Krzak, a PhD student of the Silesian University of Technology and a representative of Poland in beach volleyball for the deaf. I probably inherited this defect from my great-grandfather, who was also deaf. My hearing loss is between 100 and 110 decibels. I almost never leave my hearing aids. They only “help” to hear the sounds. My hearing loss is profound and in fact only hard work and rehabilitation have allowed me to function. I only worry that I can’t talk on the phone, or I don’t understand conversations in a larger group.

Anna Krzak has always loved volleyball. She trained it in MKS MOS Flame Sosnowiec, and later in Spartacus Zabrze. In the end, however, she opted for beach volleyball in the sport of deaf people, and this is what she is currently focusing on – with success.

– I have been training volleyball and beach volleyball since childhood together with the hearing people. I learned about the existence of sport for the deaf, especially about the Association of the Deaf MIG Gliwice by accident, during my studies at the Silesian University of Technology in 2017, when I noticed a poster on a vending machine with food and drinks.

The rest went very fast. The representative of our University

went to the Polish Deaf Championships. There, she did well enough that she got to the Polish Deaf National Team, and a year later, she was appointed to the European Junior Volleyball Championship and the European Beach Volleyball Championship.

NOW A DOCTORATE

Hearing problems did not interfere with Anna Krzak’s scientific career. And so, in 2021, she graduated from the Silesian University of Technology in the second cycle studies at the Faculty of Chemistry (Chemical Technology, specialization in polymer and plastic technology).

– The teachers were understanding for me – says a graduate of our University. They understood that my flaw

Sometimes, I treat my defect as a plus, for example, when I don’t hear senseless criticism or argument. Since I was a child, I was surrounded by people who heard me, and I always spoke; I never felt alienated. It was only when I joined the deaf sport that I realized the challenges we face. I have been and still am lucky in my life.



was a big barrier. During the last year of studies, the memorable COVID-19 pandemic broke out, and we were all forced to stay at home and switch to remote education. For me, it was a difficult period, mainly because, at the time, applications like Zoom and MS Teams did not yet offer live subtitle transcription. The lecturers either had poor quality cameras or covered their mouths, which made it difficult to read the movement of the lips. Now there are subtitles, and there is no problem with this.

The volleyball player is currently working as a plastics technologist. However, she did not abandon her education because she is pursuing an implementation PhD on composite materials applied in cryogenic conditions at the Silesian University of Technology.

– During the last year of my master’s studies, I joined the PBL project “Development and 3D printing of a thermoplastic insert for a triple injection mold”, where I met my future promoter of the implementation PhD – Dr

Eng. Agnieszka J. Nowak – says Anna Krzak. – The PhD in implementation allowed me to establish foreign cooperation with universities such as the University of Bristol, Lulea University of Technology, and the Ohio State University.

ATHLETES

In deaf sports, national and international championships, athletes cannot wear hearing aids and implants to give everyone equal opportunities. Therefore, the players often communicate using sign language, which Anna also uses, or simply read from the movement of the lips.

In the beach volleyball of the deaf, the doctoral student has been performing together with Barbara Kottun since 2019. In order to develop the duo’s career, the girls set up a profile of “Sportsmenki” on Instagram. They also decided to acquire sponsors such as Daikin and Job Point.

– We are very grateful to these companies, thanks to them we can take part in competitions in distant countries, like Japan – says Anna Krzak. – I also participate in the Sports Association of the Deaf MIG Gliwice, to which I invite all students who are struggling with a similar problem and would like to practice their favourite sports discipline.

At the end of March, the volleyball duo competed in Japan, where they won all five games and reached for gold medals.

– This is a very good forecast for the upcoming Polish Deaf Championships and the World Deaf Championships – says Anna Krzak.



Anna Krzak (right) in beach volleyball creates a duet with Barbara Kottun. At the end of March, the volleyball team won the tournament in Japan.

So, there is a great chance for them to increase the achievements, which are already quite substantial. Beach volleyball is in the first place in the Polish Deaf Championship, the eighth place in the World Deaf Championships, the sixth place in the European Deaf Championships or the first place in the beach volleyball tournament in Columbus, United States. On the other hand, in the volleyball of the deaf, it is in the fifth place in the deaf games and second place in the Polish Deaf

Championships, in which Anna Krzak was chosen the best recipient player.

– Sometimes I treat my defect as a plus, for example, when I do not hear senseless criticism or argument – says Anna Krzak. “Since I was a child, I was surrounded by hearing people and I always spoke, I never felt alienated. It was only when I joined the deaf sport that I realized the challenges we face. I have been and still am lucky in my life – I receive a lot of support from my mother and

grandparents. I also have hearing friends who have known me since a young age My second half supports me every step of the way and is my greatest support. I think it had a big impact on who I am now. I believe that strong determination and motivation allow us to overcome further barriers.

Sometimes, I treat my defect as a plus, for example, when I don't hear senseless criticism or argument. ■



Anna Krzak, despite her hearing impairment, successfully combines beach volleyball with a PhD study at the Silesian University of Technology.

POSITIONS, DEGREES, AND ACADEMIC TITLES

AWARDED DOCTORAL DEGREES

Dr Eng. Weronika AUGUSTYN

Silesian University of Technology – PhD student. Supervisor: Dr Hab. Eng. Joanna Kalka, prof. of Silesian University of Technology Co-Supervisor: Dr Hab. Eng. Wiesław Hreczuch. Thesis topic: 'Biocidal activity of chlorine dioxide in compound disinfectants.' Conferring the degree of Doctor of Engineering and Technical Sciences with distinction. Discipline - environmental engineering, mining, and energy. Resolution of the Environmental Engineering, Mining and Energy Discipline Council of March 21, 2024.

Dr Eng. Łukasz CZIESZOWICZ

Grupa Azoty Zakłady Azotowe Kędzierzyn S.A. Supervisor: Prof. Dr Hab. Eng. Beata Orlińska. Thesis topic: 'Technology for the preparation of 2-ethylhexanoic acid'. Conferring the degree of Doctor of Engineering and Technical Sciences with distinction. Discipline – chemical engineering. Resolution of the Chemical Engineering Discipline Council of March 6th, 2024

Dr Eng. Przemysław DEC

Silesian University of Technology – PhD student. Supervisor: Prof. Dr Hab. Eng. Anna Skorek-Osikowska. Thesis topic: "Optimization of the packaging glass production process to reduce energy consumption and reduce pollutant emissions." Conferring the degree of Doctor of Engineering and Technical Sciences. Discipline - environmental engineering, mining, and energy. Resolution of the Environmental Engineering, Mining and Energy Discipline Council of March 21, 2024.

Dr Eng. Paweł FIC

Silesian University of Technology – PhD student. Supervisor: Prof. Dr Hab. Eng. Adam Czornik. Thesis topic: "Predicting industrial equipment failure based on vibrodiagnostics analysis using artificial intelligence." Conferring the degree of Doctor of Engineering and Technical Sciences. Discipline – automation, electronics, electrical engineering, and space technologies. Resolution of the Automation, Electronics, Electrical Engineering and Space Technologies Discipline Council of March 19th, 2024.

Dr Eng. Weronika JANIK

Silesian University of Technology – PhD student. Supervisor: Dr Hab. Eng. Gabriela Dudek, Prof. of Silesian University of Technology Thesis topic: "Research on improving the strength properties of materials based on biopolymers". Conferring the degree of doctor of exact and natural sciences with honours. Discipline – chemical sciences. Resolution of the Chemical Sciences Discipline Council of March 13th, 2024.

Dr Eng. Katarzyna LEŚNIAK-ZIÓŁKOWSKA

Grupa Azoty Zakłady Azotowe Kędzierzyn S.A. Supervisor: Prof. Dr Hab. Eng. Wojciech Simka. Auxiliary Supervisor: Dr Hab. Eng. Alicja Kazek-Kęsik, Prof. of Silesian University of Technology Thesis topic: "A new generation of bacteriostatic/antibacterial surfaces obtained by the PEO method in suspensions of silver, copper and zinc compounds on implants dedicated to hard tissue." Conferring the degree of Doctor of Engineering and Technical Sciences with distinction. Discipline – chemical engineering. Resolution of the Chemical Engineering Discipline Council of March 6th, 2024

Dr Regina MICHALIK

Grupa Azoty Zakłady Azotowe Kędzierzyn S.A. Supervisor: Prof. Dr Hab. Eng. Ilona Wandzik. Thesis topic: 'Synthesis, characterization and

use of chitosan derivatives for the coating of ammonium nitrate(V) based fertilizers'. Conferring the degree of doctor of exact and natural sciences with honours. Discipline – chemical sciences. Resolution of the Chemical Sciences Discipline Council of March 13th, 2024.

Dr Eng. Damian MIGAS

Pratt & Whitney Kalisz. Supervisor: Dr Hab. Eng. Grzegorz Moskal, Prof. of Silesian University of Technology Auxiliary supervisor - Dr Eng. Agnieszka Tomaszewska. Thesis topic: Effect of selected reactive elements on high temperature oxidation behaviour of γ - γ' Co-based superalloys. Conferring the degree of Doctor of Engineering and Technical Sciences with distinction. Discipline - materials engineering. Resolution of the Materials Engineering Discipline Council of March 19th, 2024

Dr Eng. Monika NYCZ

Silesian University of Technology Faculty of Automatic Control, Electronics and Computer Science - assistant. Supervisor: Prof. Dr Hab. Eng. Tadeusz Czachórski. Thesis topic: "Modelling the dynamics of internet transmissions with liquid approximation." Conferring the degree of Doctor of Engineering and Technical Sciences with distinction. Discipline – technical information technology and telecommunications. Resolution of the Technical Information Technology and Telecommunications Discipline Council of February 20th, 2024.

Dr Eng. Adrian OLCZYK

Eleven Puzzles. Supervisor: Dr Hab. Eng. Adam Gałuszka, Prof. of Silesian University of Technology Auxiliary Supervisor: Dr Hab. Eng. Krzysztof Skrzypczyk, Prof. of Silesian University of Technology Thesis topic: "Multi-criteria and Prediction in Planning Trajectory in Public Transport Networks." Conferring the degree of Doctor of Engineering and Technical Sciences. Discipline – automation, electronics, electrical engineering, and space technologies. Resolution of the Automation, Electronics, Electrical Engineering and Space Technologies Discipline Council of March 19th, 2024.

Dr Eng. Roman PAWEŁCZYK

ALSTOM ZWUS sp. z o.o Supervisor: Dr Hab. Eng. Damian Grzechca, Prof. of Silesian University of Technology Thesis topic: "Machine learning diagnostics for electric corner drive". Conferring the degree of Doctor of Engineering and Technical Sciences with distinction. Discipline – automation, electronics, electrical engineering, and space technologies. Resolution of the Automation, Electronics, Electrical Engineering and Space Technologies Discipline Council of March 19th, 2024.

Dr Eryka PROBIERZ

Research Network Lukasiwicz – ITI EMAG, Agrippa SA, QA Engineer. Supervisor: Dr Hab. Eng. Adam Gałuszka, Prof. of Silesian University of Technology Thesis topic: Modelling social and emotional components in social robotics using robot artificial intelligence. Conferring the degree of Doctor of Engineering and Technical Sciences. Discipline – automation, electronics, electrical engineering, and space technologies. Resolution of the Automation, Electronics, Electrical Engineering and Space Technologies Discipline Council of March 19th, 2024.

Dr Eng. Łukasz PYCLIK

Avio Polska Sp. z o.o. Supervisor: Dr Hab. Eng. Bogusław Mendala, Prof. of Silesian University of Technology Auxiliary Supervisor: Dr Hab. Eng. Radosław Swadźba. Thesis topic: 'Technological basis for increasing the heat

resistance of Rene'N5 monocrystalline alloy'. Conferring the degree of Doctor of Engineering and Technical Sciences with distinction. Discipline - materials engineering. Resolution of the Materials Engineering Discipline Council of March 19th, 2024

Dr Eng. Piotr SOCZÓWKA

Silesian University of Technology, Faculty of Transport and Aviation Engineering – assistant. Supervisor: Dr Hab. Eng. Renata Żochowska, Prof. of Silesian University of Technology Auxiliary Supervisor: Dr Hab. Eng. Grzegorz Karoń, Prof. of Silesian University of Technology Thesis topic: "Modelling the location of public transport stops using spatial analysis methods." Conferring the degree of Doctor of Engineering and Technical Sciences with distinction. Discipline – civil engineering, geodesy, and transport. Resolution of the Civil Engineering, Geodesy and Transport Discipline Council of February 22nd, 2024.

Dr Eng. Katarzyna ŻURAWSKA

Silesian University of Technology, Biotechnology Centre – administrative worker. Supervisor: Prof. Dr Hab. Eng. Krzysztof Walczak. Auxiliary supervisor - Dr Eng. Anna Kasprzycka. Thesis topic: "Synthesis of heterocyclic monosaccharides derivatives and their influence on the viability of cancer cells". Conferring the degree of doctor of exact and natural sciences. Discipline – chemical sciences. Resolution of the Chemical Sciences Discipline Council of March 13th, 2024.

EMPLOYMENT AS A UNIVERSITY PROFESSOR

Dr Hab. Eng. Jakub ADAMEK

RCH4 since March 1st, 2024

Dr Hab. Eng. Sebastian BERHAUSEN

RE3 since March 1st, 2024

Dr Hab. Eng. Anita KAJZER

RIB2 since March 1st, 2024

Dr Hab. Eng. Tomasz KIK

RMT5 since March 1st, 2024

Dr Hab. Eng. Marcin MICHALAK

RAU9 since March 1st, 2024

Dr Eng. Katarzyna MOŚCIŃSKA

RAU11 since March 1st, 2024

Dr Hab. Eng. Krzysztof MUSIOŁ

RE2 since March 1st, 2024

Dr Hab. Eng. Katarzyna NOWIŃSKA

RG1 since March 1st, 2024

Dr Hab. Eng. Katarzyna STOLECKA-ANTCZAK

RIE5 since March 1st, 2024

AWARDING THE ACADEMIC TITLE OF PROFESSOR

Prof. Dr Hab. Eng. Kinga RODAK RM3

Graduate of the Faculty of Materials Engineering of Metallurgy and Transport of the Silesian University of Technology.

Dr – 01 February 2000, Dr Hab. – March 12th, 2013. Position of university professor since September 1st, 2016. Employment at the Silesian University of Technology since October 1st, 1995. Title of professor of exact and natural sciences since February 29th, 2024.

LIGHT FROM STONE

text: Kinga Kwiecień
 Edited by: Jolanta Skwaradowska
 photos: Maciej Mutwil, Kinga Kwiecień

VISITORS TO THE MUSEUM OF DEPOSIT GEOLOGY AT THE SILESIA UNIVERSITY OF TECHNOLOGY CAN ADMIRE FLUORESCENT MINERALS. THIS IS A NEW ATTRACTION PREPARED BY STUDENTS FROM THE GEOLOGISTS' SCIENTIFIC CLUB "SILESIA," OPERATING AT THE FACULTY OF MINING, SAFETY ENGINEERING, AND INDUSTRIAL AUTOMATION OF THE SILESIA UNIVERSITY OF TECHNOLOGY.

The idea to make fluorescent minerals available to visitors was born during the inventory at the Museum of Deposit Geology. Students found many beautiful specimens showing luminescence. The most interesting of them was the calcite from Strzegom. It is characterized by intense orange fluorescence when UV rays with a wavelength of 365 nm fall on it.

Fluorescent minerals, which can now be admired in the museum, were found during expeditions to granite quarries in Strzegom. Students visited the quarries: „Żółkiewka,” „Żbik” and „Zimnik.” They found many interesting minerals and fluorescent calcite. During one of the trips, a meeting was also organized with a well-known collector of Strzegom minerals, Mr. Ireneusz Niemczyk. The collector donated a very impressive specimen of calcite on granite with smoke quartz to the Museum of Deposit Geology.

Both during scientific expeditions and when organizing the collection, students had to use special ultraviolet torches because fluorescent minerals glow under the influence of various types of light. The most popular and most commonly

used is a 365 nm long UV flashlight – (LW) – CONVOY S2+. The 365nm UV wavelength is often used, as it is more universal and eye-friendly, which makes it easier to observe. After some time, two other torches were purchased, the





“colorGEMS” C255-Mini with a wavelength of 254 nm (SW) and the 3-band – way too Cool LLC with three wavelengths LW+MW+SW. Depending on the wavelength of the UV, the mineral may display a different luminescence colour, of

varying intensity. This is the case with calcite from Strzegom: in ultraviolet light with a wavelength of 365 nm, it shows a very strong orange fluorescence, and with radiation with a wavelength of 254 nm, the fluorescence is noticeably weaker but with the same colour.

The final stage of creating the showcase was to select minerals with the most diverse colours and luminescent properties. The main goal was to show how the mineral world is surprising and diverse, and what the differences are when observing in visible light and using ultraviolet radiation of different wavelengths. Students searched the warehouse for weeks, starting with minerals for which luminescence is common. Finally, in addition to calcite, among others, they selected:

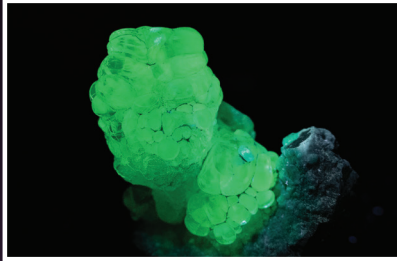
- Hialit (Opal variety) of very intense green colour in UV with a wavelength of 254 nm,

- Cerussite (a rare lead mineral from the carbonate group), characterized by yellow fluorescence in UV with a wavelength of 365 nm,
- Fluorite (from which the name of fluorescence is derived) of blue colour in UV with a wavelength of 365 nm,
- Gypsum (mineral from the sulphate group) with white fluorescence in UV with a wavelength of 365 nm.

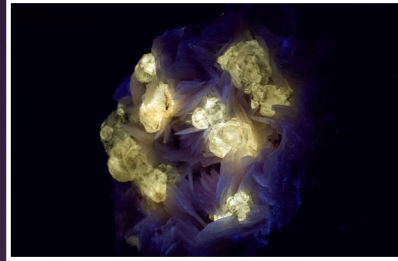
The display case can be seen at the Museum of Deposit Geology, at the Faculty of Mining, Safety Engineering, and Industrial Automation. Since it was created, it has delighted visitors of all ages and represents the Silesian University of Technology at events such as the Silesian Science Festival in Katowice or during the Treasure Week, which takes place as part of 50 weeks in the City of Science Katowice 2024. ■



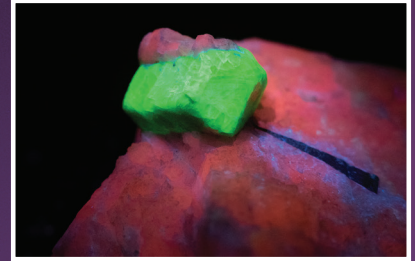
EXAMPLES OF FLUORESCENT MINERALS



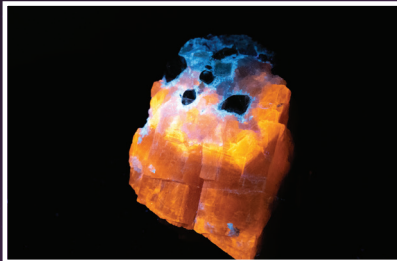
Hialit



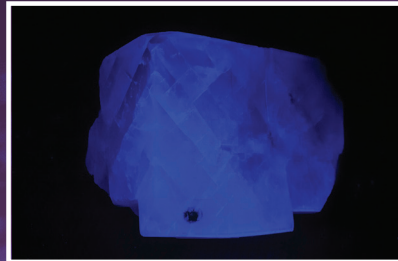
Cerussite on the barite



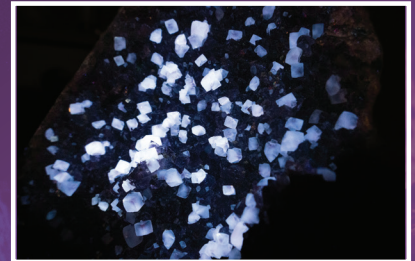
Trustyt (kind of Willemite) on calcite



Calcite with smoke quartz



Fluorspar



Fluorite on amethyst

Fluorescence is a luminescent phenomenon in which a substance absorbs energy in the form of electromagnetic radiation of one wavelength and then emits this light at a different wavelength. The process is that an atom or molecule absorbs a quantum of energy, goes to the excited state, and then returns to its basic state, emitting light. Fluorescence occurs when there are chemical elements called activators in the crystal lattice or when there are network defects. Most activators are metal element atoms that replace the atoms in the parent mineral. Preliminary research shows that the most likely activator in the described calcite is manganese.

The Scientific Club of Geologists "Silesian" brings together enthusiasts from several departments of the Silesian University of Technology. Its members are students of the Faculty of Mining, Safety Engineering and Industrial Automation, the Faculty of Automatic Control, Electronics and Computer Science and Faculty of Energy and Environmental Engineering, which shows that regardless of the chosen field of science, there is a place for all lovers of geology or mineralogy. The Supervisor of the Club is Prof. Małgorzata Labus.

Among the members of the Club are enthusiasts of collecting minerals, uniqueness, and natural beauty of which are a wonderful decoration and a valuable source of knowled-

ge. During field trips, students look for new specimens for their collections, but above all, they learn and gain experience. People belonging to SKN Silesian discover new phenomena and places while exploring the secrets of geology. Thanks to joint work and numerous field trips, the Club becomes not only a place of learning, but also a space for sharing new ideas and spending time together. A phenomenon that particularly attracts the attention of young scientists is the fluorescence of minerals because often, like an undistinguished mineral in visible light, it surprises with its beauty in ultraviolet radiation.



EVENTS

INAUGURATION OF THE ROW 2.0 PROJECT

On Friday, March 22nd, Rybnik hosted the inauguration of the ROW 2.0 project, which represents an important step toward the hydrogen future of the city. ROW 2.0 is a project of the City of Rybnik and Silesian University of Technology. Its goal is to transform the Rybnik Coal District into the Rybnik Hydrogen District, which is to be a centre of modern technologies based on sustainable, effective sources of green energy.

On behalf of the Silesian University of Technology, Prof. Dr Hab. Eng. Janusz Kotowicz, Vice-Rector for Cooperation with Civic and Economic Environment and Dr Hab. Zygmunt Łukaszczyk, Prof. SUT, the head of Continuing Education Centre - a branch of the Silesian University of Technology in Rybnik, participated in the inaugural event. Among the participants were also Piotr Kuczera, the Mayor of Rybnik, a representative of the Ministry of Industry Joanna Pauly, Director of the Department of European Funds and Foreign Affairs, and Maciej Nietopiel, President of the Management Board of PAK-PCE Polski Autobus Hydrogen Sp. z o.o. During the event, the Vice-Rector, Prof. J. Kotowicz presented details of the new SUT project: "Centre for Renewable Energy Sources and Hydrogen Technologies in Rybnik" – of which he is the head. In addition, on the Rybnik campus, an agreement on research and scientific cooperation was signed

between the Silesian University of Technology, the city of Rybnik and the company PAK-PCE Polski Autobus Hydrogen - a leader in the production of hydrogen-powered buses. This agreement aims to explore the operation process and the potential for improvements to hydrogen buses.

Participants of the event could see what the refuelling of a bus at a hydrogen station looks like, then they had the opportunity to take such a bus to the Silesian University of Technology building on Kosciuszko Street in Rybnik.

In the second part of the event, the ROW 2.0 conference was held, which was opened by the Vice-Rector Prof. Kotowicz. The moderator of the conference was Dr Eng. Aldona Rosner. During the conference, experts discussed various aspects related to hydrogen policy, hydrogen technologies and their importance in the process of decarbonization of the economy. ■

THE FOURTH EDITION OF MBA STUDIES AT THE SILESIAN UNIVERSITY OF TECHNOLOGY HAS STARTED.

On 23rd March in the Educational and Congress Centre of the Silesian University of Technology, the inauguration of the fourth edition of the Master of Business Administration studies took place. For more than sixty candidates, the Energy and Digital Transformation study profile has been launched.

MBA studies at the Silesian University of Technology is

an interdisciplinary program of advanced managerial competencies, using the latest achievements of many contemporary disciplines: Economics and finance, management, psychology, law, social communication and media sciences, and many others. Their organizer is the International Centre for Interdisciplinary Research under the leadership of Dr Hab. Małgorzata Dobrowolska, Prof. of Silesian University of Technology. ■

ON IRON DATING- LECTURE BY CHRISTIAN MATTHIAS HUELS

The Institute of Physics – Centre for Science and Education at the Silesian University of Technology held an open lecture, led by Dr Christian Matthias Huels. He is the world-class specialist in C₁₄ iron dating. Dr Christian Matthias Huels conducts research at the Leibniz Radiometric Dating and isotope Research Laboratory, University of Kiel, Germany.



photo Jan Szady

The guest gave a lecture on radiocarbon dating of iron artifacts. The students had a chance to learn about the prerequisites and pitfalls of C₁₄ iron dating on interesting archaeological examples. ■

A CONCERT WITH THE TOUCH OF SPRING

Colourful costumes, great dances, music, and a lot of positive energy – all this happened thanks to the spring concert of the Academic Dance Group of the Silesian University of Technology “Dąbrowiacy,” which took place in the Student Culture Centre Mrowisko.



photo Martin Huć

During the concert, the audience got to know the traditions and customs of Easter, Lent and those related to the arrival of spring, including walking with a goik and drowning Marzanna. Above all, however, they heard melodies and saw dances from various regions of Poland, presented by members of the Academic Dance Group of the Silesian University of Technology “Dąbrowiacy”, which this year celebrates its 50th anniversary. Some of the first members, who participated in the formation of this Group in the seventies, appeared on the stage. ■

EASTER IN THE INTERNATIONAL GROUP

Christmas customs, traditional dishes, competitions, quizzes, lots of kindness and good fun – the International Easter Meeting was held for the fourth time in the Spiral student club. More than a hundred people from all over the world met at a common Easter table. Students and PhD students got to know Polish Easter customs, and their Polish language

teachers from the Foreign Languages Centre of the Silesian University of Technology took care to help to memorize some useful phrases and words. The meeting, the fourth in turn, took place in a warm and joyful atmosphere. The guests competed for the most beautiful Easter eggs, there were quizzes about Polish customs, Marzanna was chased away, and the Easter bunny handed out a lot of gifts. There were also Easter dishes – everyone could try traditional sour soup or cheesecake. ■



photo Tomasz Stokłosa

ACADEMIC SECONDARY COMPREHENSIVE SCHOOL INTRODUCED ITSELF TO THE CANDIDATES

For the sixth time, the Open Day took place in the Academic Secondary Comprehensive School of the Silesian University of Technology. The candidates were shown around by the school’s current pupils, who also prepared workshops presenting the scientific profiles of the institution – polytechnical and architectural.



photo Martin Huć

There were also numerous parents of candidates who could

ask questions about, among others, psychological and pedagogical care at school. ■

SILESIAN UNIVERSITY OF TECHNOLOGY SUPPORTS THE PROMOTION OF HEALTH AND SAFETY ON THE ROAD.

On the campus of the Silesian University of Technology, a family picnic was held promoting safe behaviour on the road. At the Faculty of Civil Engineering, a road traffic town was established. There appeared safety promotion units and residents of different ages took part in presentations and workshops. Visitors gained a solid portion of knowledge about safe behaviour on the road from their visit to the town, but also took part in first aid training.

These are not the only activities supporting the inhabitants of the regions that took place on that day at the Silesian University of Technology. In Mrowisko, activities intended for seniors were held and they encouraged to participate in screening tests. On this occasion, there was also a „Concert for a Senior,” during which Czesław Majewski & Janusz Tyłman, as well as the vocalist Karo Glazer performed.



photo Jan Szady

IV SCIENTIFIC CONFERENCE FOR CHILDREN AND YOUTH AT THE SILESIAN UNIVERSITY OF TECHNOLOGY

The fourth edition of the Scientific Conference for Children and Youth took place at the Silesian University of Technology. The event was organized

by the Faculty of Mining, Safety Engineering and Industrial Automation and the Faculty of Electrical Engineering of the Silesian University of Technology. As part of the event, the youth of secondary schools prepared projects related to safety in electrical engineering and power engineering. These included: An intelligent eco-house, a visualization and information system about privileged vehicles, an automated garage, or a world without electricity.

The fourth edition of the Scientific Conference for Children and Youth was attended by young people from Gliwice, Piekary Śląskie, Rybnik and Pyskowice. The students' work was evaluated by a scientific committee. ■

FACULTY OF ARCHITECTURE AT THE INTERNATIONAL CIVIL ENGINEERING FAIR

On 16th and 17th March 2024, the International Civil Engineering Fair took place in PreZero Arena Gliwice, where

the Faculty of Architecture of the Silesian University of Technology had an opportunity to present its achievements. This time, the Faculty had four exhibition stands, including workshops (ceramics and stained glass). The guiding motto was: "The Faculty of Architecture promotes its students." ■

THE WOMEN'S BASKETBALL TEAM OF THE SILESIA UNIVERSITY OF TECHNOLOGY HAS FINISHED ITS DEBUT SEASON.

The basketball team of AZS Politechnika Śląska in its premiere season placed seventh in the second league of women. The team of our University in its debut gathered extremely valuable experience. In sixteen meetings it scored four victories, including three on their own floor. The team is looking for new players for the next season, so coach Patryk Niczke invites all interested girls to contact. Details on the fan page of the team on Facebook:

Women's Basketball Section AZS Silesian University of Technology Gliwice.



photo Martin Huć

KATOWICE RUNNING FESTIVAL 2024

On May 18, 2024, the XV Katowice Running Festival named after Jerzy Kukuczka will take place in the Katowice Forest Park in Katowice Muchowiec. This year, the organizers have prepared several competitions. Run for 5km, run for 10km, half marathon, Nordic Walking rally for a distance of about 8km, run for children "In search of future Olympians", "Relay of generations". Registration is open until April 30th. Details on webpage: www.biegkukuczki.pl ■

SUCCESSSES

PROF. JANUSZ KOTOWICZ, VICE-PRESIDENT OF THE MANAGEMENT BOARD OF THE SILESIA-LESSER POLAND HYDROGEN VALLEY ASSOCIATION

Vice-Rector for Collaboration with Civic and Economic Environment, Prof. Janusz Kotowicz was again elected Vice-President of the Management Board of the Silesian-Lesser Poland Hydrogen Valley Association. The elections were held on March 20th in Katowice.

On March 20th, 2024, at the Institute of Innovative Technologies EMAG in Katowice, the

Annual General Meeting of the members of the Silesian-Lesser Poland Hydrogen Valley Association was held, during which the Association's strategy and the information exchange portal were presented.

In addition, due to the expiry of the first term of office, elections to the Management Board and the Audit Committee were held. Professor Janusz Kotowicz, Vice-Rector for Collaboration with Civic and Economic Environment was elected for the second time as Vice-President of the Management Board of

the Silesian-Lesser Poland Hydrogen Valley Association.



photo: Silesian University of Technology archives

We would like to remind you that the Silesian-Lesser Poland Hydrogen Valley Association was established by natural persons associated with local government, universities, fuel, and energy companies. The economic mission of the WMDW (Silesian-Lesser Poland Hydrogen Valley) Association is to support the development of the hydrogen economy and to strive to build a branch of the Silesian-Lesser Poland hydrogen industry, including production of hydrogen in the process of electrolysis using energy produced from RES installations and its use in the energy sector, including heat– transport, infrastructure, and industry. ■

DISTINCTION FOR PROF SEBASTIAN STUDENT

Prof. Sebastian Student, director of the Biotechnology Centre of the Silesian University of Technology, received a distinction in the category of Innovation and implementation in the 3rd edition of the competition "Perspectives of Medicine" for the project „Application of 3D culture of eukaryotic cells in medical aspects”.

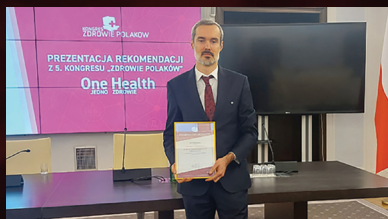


photo: private archives

The initiative aims to promote experts, leaders and teams that contribute to raising the level of Polish medicine, supporting positive changes in health care in Poland, improving the quality of medical care and popularizing pro-health attitudes. ■

AWARDED IN AN INTERNATIONAL COMPETITION

Dr Eng. Joanna Tobiasz from the Faculty of Automatic Control, Electronics and Computer Science and Dr Eng. Oktawian Białas from the Faculty of Mechanical Engineering took first place in the international competition of universities associated in the Progress 3 consortium for the best doctoral thesis defended in 2023.

In the same competition, among the awarded were also six representatives of the Silesian University of Technology. The second

place was taken by: Dr Eng. Maciej Klimas, - Faculty of Electrical Engineering), Dr Eng. Anna Skorupa (Faculty of Mechanical Engineering), Dr Eng. Adam Skowronek (Faculty of Mechanical Engineering) and Dr Eng. Bartłomiej Rutczyk. The third place was taken by Dr Eng. Justyna Mika from the Faculty of Automatic Control, Electronics and Computer Science) and Dr Eng. Katarzyna Młynarek-Żak (Faculty of Mechanical Engineering). ■

STUDENT OF THE SILESIAN UNIVERSITY OF TECHNOLOGY WINS THE MINING KNOWLEDGE TOURNAMENT

Mateusz Pawlik, a student of the Faculty of Mining, Safety Engineering, and Industrial Automation of the Silesian University of Technology, won the XVIII Mining Knowledge Tournament, as part of the School of Underground Mining Exploitation. In the competition, our University was represented by three students from the Department of Geoenvironment and Resource Exploitation, and at the same time members of the Student Scientific Club "SAFE WALL." ■

PROJECTS

ANNOUNCEMENT OF THE RESULTS OF THE THIRD EDITION OF THE COMPETITION FOR PROJECTS IMPLEMENTED WITH PUPILS OF SECONDARY SCHOOLS AS PART OF THE EXCELLENCE INITIATIVE – RESEARCH UNIVERSITY PROGRAM.

Eighty-six projects received funding as part of the third edition of the competition to finance projects with pupils

of secondary schools under the Excellence Initiative – Research University program. These projects received funding in the requested amount, not more than PLN 3,000.00 gross - in accordance with Regulation No. 20/2023 of the Rector of the Silesian University of Technology on the Regulations for financing projects implemented with secondary school

pupils, under the Excellence Initiative - Research University program. ■

GRANTS, FUNDING, AND SCHOLARSHIPS IN PRO-QUALITY PROGRAMS – SUMMARY OF 2023

In 2023, more than thirty pro-quality programs were implemented, aimed at employees, doctoral students, stu-

dents, and pupils of secondary schools. Pro-quality programs are the main instrument for implementing the development strategy of the Silesian University of Technology and the action plan under the Excellence Initiative – Research University program.

The Rector awarded a total of over 3300 pro-quality grants, grants, and scholarships to over 2500 employees, PhD students and students and decided to employ 22 people as part of the competition for outstanding young and distinguished experienced scientists under the IDUB program, to increase the subsidy for all basic units, as well as to grant funding to 335 PBL projects, in which more than 1400 students and 396 tutors declared participation and 139 projects of student research clubs, implemented by 354 students and 66 tutors. In addition, two editions of the project program with secondary school pupils were launched, under which 114 projects were implemented, in which 159 secondary school pupils declared their participation. ■

IDUB GRANT COMPETITION FOR INTERNSHIPS IN LEADING FOREIGN RESEARCH CENTRES.

We would like to inform you that the IDUB grant competition for at least 3-month internships in leading foreign research centres has been extended by the possibility of completing at least 6-week internships. The competition is addressed to employees and PhD students of the Silesian University of Technology. It occurs four times a year, based on applications submitted to the Research Office until March 31, May 31, August 31, and November 30.

Detailed information about the competition is provided in the Regulation No. 80/2023 of the Rector of the Silesian University of Technology of 24 April 2023 on the pro-quality competition for grants in order to complete at least 6-week or at least 3-month internships in leading foreign research centres, under the IDUB program – i.e., from 28.02.2024.



THE STEM IMPACT AWARD SCHOLARSHIP PROGRAM

The Polish American Fulbright Commission scholarship program for a trip to the USA – STEM Impact Award 2024-25. Fulbright STEM Impact Award 2024-25 is a program for people with Polish citizenship who direct STEM research projects and are employed in Polish academic and scientific institutions.

The scholarship allows for the implementation of a short-term (2-6 weeks) research, didactic or research-didactic project and to broaden knowledge in the field of commercialization of science or effective writing of grant applications in institutions in the USA.

Applications are open until May 20th, 2024. More information: www.fulbright.edu.pl/stem-impact. ■

COMPETITIONS FOR THE RESEARCHERS' NIGHT OF THE SILESIAN UNIVERSITY OF TECHNOLOGY 2024

Competitions for participation in the Researchers' Night of the Silesian University of Technology for children, youth and adults have started. In this edition, participants have a choice

of seven competitions – three individual and four team competitions. Participation proposals can be submitted until September 30th.

For more information, visit www.nocnaukowcow.com.pl/konkursy.

Applications should be made through the registration forms available on the website of each competition. The award will be decided by October 4th, and the award ceremony with the participation of the winners on October 12th during the inauguration of the event. ■

THE PM NIGHTS SCIENCE CONFERENCE

Solver Science Club, operating at the Faculty of Organization and Management of the Silesian University of Technology, organizes a PM Nights conference already for the 12th time. It is dedicated to the transfer of knowledge on topics related to project management.

This year's edition will take place on 13-14 May in Cechownia Gliwice under the slogan "Competences of the Future." It will be devoted to the competences that a project manager should have in a changing world and how to use them when working with projects. ■

APPLY TODAY TO L'ORÉAL-UNESCO FOR WOMEN AND SCIENCE.

The call for applications has started to participate in the 24th L'Oréal-UNESCO Scholarship Program for Women and Science. Its aim is to promote women in science and support their research. Applications can be submitted by May 5th.

You can apply for scholarships in one of three categories: Habilitation scholarship (in the amount of PLN 40 000),

doctoral scholarship (in the amount of PLN 35 000) and master's scholarship (in the amount of PLN 25 000). For more information about the program, as well as the application rules, visit <https://www.lorealdlakobietinauki.pl>. ■

INTERTECHDOC'24 CONFERENCE

We invite you to participate in the IX International InterTech-

DOC'24 Interdisciplinary Conference of Technical Universities. The conference consists of two days of lectures, trainings, and a joint debate on the current research. The event will take place on 20-21 May this year in Ustroń. The cost of participation is PLN 450, -. Registration is open until April 30th, 2024, via the application form at <https://forms.office.com/e/BD38swzsZG>.

Participants have the opportunity to publish an article in post-conference materials in the form of a chapter in the monograph. Full texts of the publication formatted according to the publishing guidelines and statements should be submitted by 30 April 2024. Details at www.doktoranci.polsl.pl. ■

THE MAY REPERTOIRE OF THE STUDENT CULTURE CENTER "MROWISKO"

6.05 17:00-19:00

Consultation meetings, office of the European Capital of Culture 2029, "Are we in Europe? Is the Silesian Metropolis in Europe?"

8.05 at 19:00

The performance "Prescription for slimming" - Tarnow Literary Cabaret "NaTenCzas"

9.05 at 19:00

4th Review of Student Bands

10.05 at 19:00

The show "the Little Prince" - Theatre of Sand

11.05 at 20:00

Party 2000 Vibe

16.05 at 20:00

Student Thursday

17.05 at 19:00

Stand Up by Daniel Midas: "Magic Show"

17.05 at 20:00

Good Evening with a Vinyl Record

19.05 9.00-13:00

Gliwice Record Exchange

19.05 at 15:00

"Elsa's Birthday Party or the princesses ball."

21.05 at 19:00

Board games in Spiral Club

23.05 at 18:00

Review of student bands - final

25.05 at 16:00

The 16th Watch Docs Film Festival

25.05 at 20:00

Rockoteka with the Hybrid Conspiracy

26.05

The performance "Konserwa" - "Waiting Room" theatre from Łódź

28.05 at 19:00

RPG with Student Self-Government

29.05 at 18:00

Drum Workshops

29.05 at 19:00

Stand-up by Tomasz Karolak "50 and what then"

30.05 at 17:00

Stand-up duel Robert Korólczyk, Lukasz Kaczmarczyk, Marcin Zbigniew Wojciech

PUBLISHING NEWS

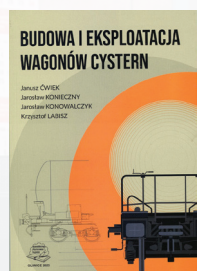


SUSTAINABLE FREIGHT FLOWS IN LOGISTICS NETWORKS. CONTEXT OF CONDITIONS FOR THE DEVELOPMENT OF INLAND WATERWAY TRANSPORT IN POLAND

MARZENA KRAMARZ, JAROSŁAW PIOTROWSKI

Ed. I, 2023, PLN 16.80, p. 116

The monograph analyses the factors hindering the development of inland waterway transport, including the issue of its development in balancing freight flows in logistics networks. It was indicated how different modes of transport fit into the implementation of freight flows in the logistics network, the determinants of the development of inland waterway transport were specified, identifying potential factors hindering its development. Surveys and expert studies were carried out. The results were taken into account in the analysis of the competitiveness of inland waterway transport compared to other modes of transport.



CONSTRUCTION AND OPERATION OF TANK WAGONS

JANUSZ ĆWIEK, JAROSŁAW KONIECZNY, JAROSŁAW KONOWALCZYK, KRZYSZTOF LABISZ

Ed. I, 2023, PLN 16.80, p. 116

Author of the textbook: Dr Hab. Eng. Janusz Ćwiek, University Professor, Dr Hab. Eng. Jarosław Konieczny, University Professor and Dr Hab. Eng. Krzysztof Labisz, University Professor are employees of the Department of Railway Transport, Faculty of Transport and Aviation Engineering, Silesian University of Technology. In turn, M.Sc. Jarosław Konowalczyk is an employee of the CHEMET S.A. factory in Tarnowskie Góry, which manufactures, among others, tank wagons, LPG tanks, autogas stations, road tankers, process equipment, and cryogenic tanks.

The textbook is the result of cooperation between the University and industry. Since one of the fields of engineering studies at the Silesian University of Technology is rail transport, the manual is dedicated primarily to students of this field.



HEALTH AND SAFETY RESEARCH METHODOLOGY. EXAMPLES OF QUANTITATIVE ACCIDENT FORECASTS

MARCIN KRAUSE, STANISŁAW GIL, GRZEGORZ PELON

Ed. I, 2023, PLN 13.65, p. 100

The publication is an original proposal of the basics of research methodology in the field of occupational safety and health on the example of predicting the number of accidents at work. Quantitative prognostic methods were analysed, special attention was paid to accident investigation, based on selected econometric methods. On the basis of the review of the literature of the subject and the results of own research, the analysis of the usefulness of the scoring method to estimate the level of acceptability of the adopted models of predicting the number of accidents at work was presented.



ANALYSIS OF REQUIREMENTS FOR THE ACTUATOR IN THE PROCESS OF SYNTHESIS OF THE REGULATION SYSTEM

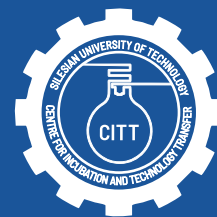
ZYGMUNT KUŚ

Ed. I, 2023, PLN 18.90, p. 117

The monograph discusses the economic method of selecting the actuator in the regulation system. This method shows the relationship between the quality of regulation and the costs of purchasing and operating the actuator. Parameterization of the control signal $u(t)$ by its maximum value and the maximum rise speed gives the possibility to define the requirements for the actuator. In this way, the quality of the regulation is presented as a function of the above parameters $u(t)$ and the relationship between the quality of the regulation and the costs associated with the actuator was obtained. It is a convenient tool to decide how much we are willing to pay for a particular quality of regulation. This allows to select an actuator that uses less energy for the desired adjustment quality. In addition to economic effects, the use of such an approach on a mass scale would be important for the environment.

Entrepreneur

Do you want to commission research work or a service?



BUSINESS PROCESSING OFFICE
guarantees efficient and effective
cooperation between science and business.

- send inquiry to biznes@polsl.pl
- we will find scientists
- we will prepare an offer
- we will realize the order

Check and contact us at the
Business Processing Office
biznes@polsl.pl



100
INNOVATIONS

Discover the best intellectual property
of the Silesian University of Technology



Do you need more information?

Contact the Centre for Incubation and Technology Transfer of the Silesian University of Technology at the Business Processing Office: biznes@polsl.pl



Centre for Incubation and Technology Transfer
Silesian University of Technology
7, Stefana Banacha Street
44-100 Gliwice
+48 32 400 34 00
biznes@polsl.pl
<https://www.polsl.pl/rjo4-citt/>



**Silesian University
of Technology**

