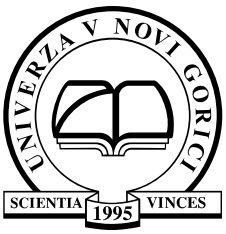
UNIVERSITY OF NOVA GORICA

Annual Report of the University of Nova Gorica 2021

UNIVERZA V NOVI GORICI



Annual Report of the University of Nova Gorica 2021

Fakulteta za znanosti o okolju v Novi Gorici

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Introduction

In 2021, the University of Nova Gorica activity covered undergraduate and postgraduate education, and research, artistic, and developmental work. The educational activity was implemented within six schools, and an academy of arts. By the end of 2021, 255 doctors of science, 509 masters, and 964 graduates had completed their studies. The research activity took place in six centres and four laboratories.

In 2021, we also had to deal with the COVID-19 epidemic. The inevitable changes in the field of education as a result of the global health challenge presented an opportunity for the University of Nova Gorica to build on its tradition of distance learning. To ensure an uninterrupted and high-quality study process, all lectures were immediately delivered remotely using previously introduced tools and platforms such as Zoom, Big Blue Button, Moodle and MiTeam. Videoconferencing systems can also be used to enable students to take certain examinations remotely.

The University of Nova Gorica is becoming an increasingly internationally oriented university institution. In 2021, foreign students from 40 different countries, both from Europe and other continents, represented 50,5% of the student population. Moreover, the University is becoming an attractive environment for foreign scientists and professors, and consequently, the number of experts from other countries is continuously increasing – at the end of 2021, they represented 29% of all employees.

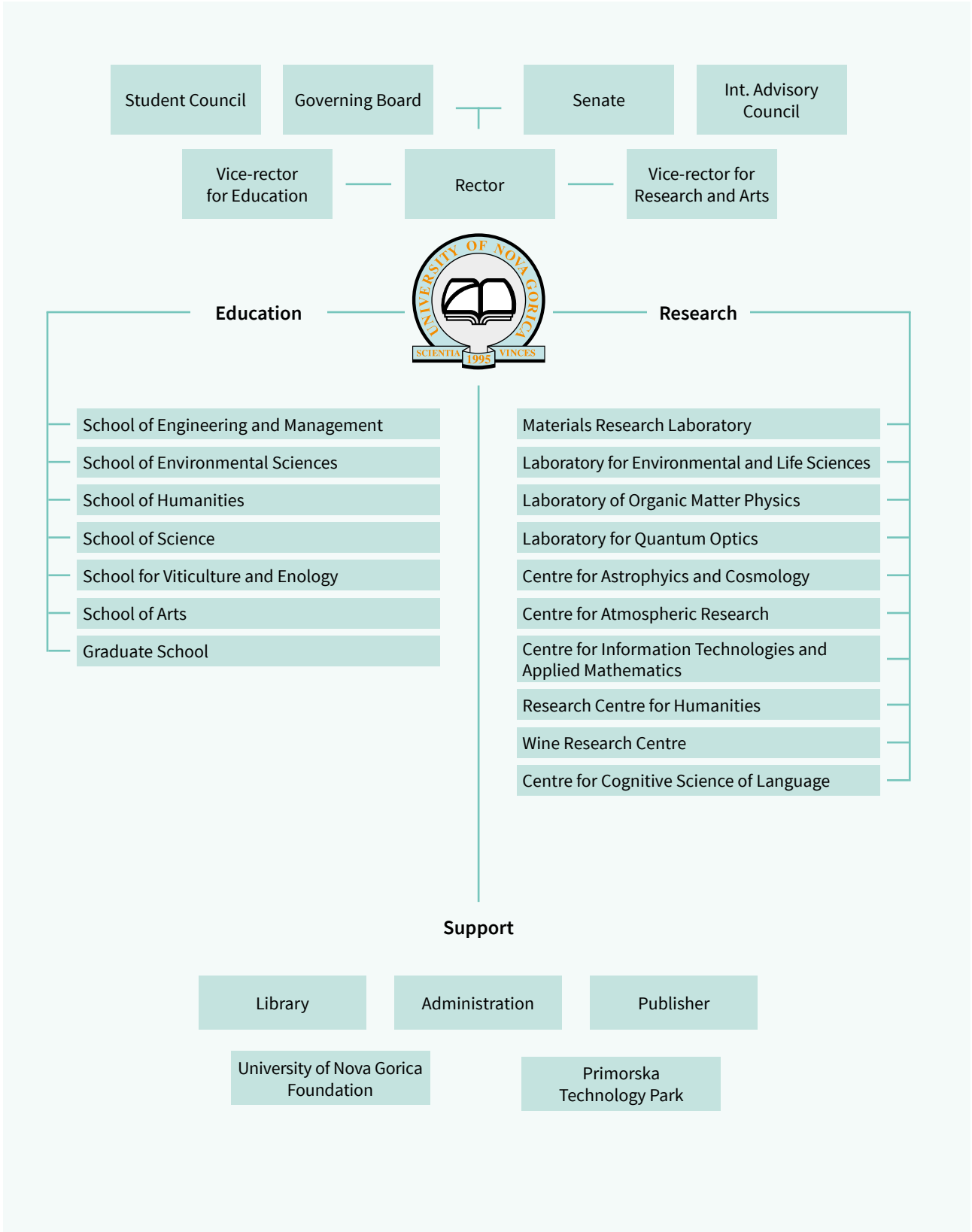
In 2021, the University of Nova Gorica again achieved a great success with the 169th place in the international Round University Ranking (RUR). The RUR ranking also shows that the University of Nova Gorica is by far the best-ranked Slovenian university in all quality elements. No other Slovenian university has ever ranked so highly in any of the internationally recognised rankings of world universities.

We would also like to make a special mention for two of our colleagues who received an award in 2021. Prof. Dr. Griša Močnik and Dr. Luka Drinovec, together with the development teams at Aerosol, d.o.o. and Robomed, d.o.o., have been awarded the Puh Award for outstanding achievements in the development of methods for measuring aerosol absorption. In addition, our students also achieve above-average results in the fields of science, arts, sport and culture.

In 2021, we gained a new Honorary Doctor of the University of Nova Gorica. Haruki Murakami, a world-renowned writer who has enthralled generations of readers with his stories that delicately intertwine love, mystery and fantasy, has been awarded an honorary doctorate from the University of Nova Gorica for his contribution to world literature.

The year 2021 will also be remembered for the discovery of NASA's Fermi LAT mission, in which our collaborator from the Centre for Astrophysics and Cosmology, Prof. Dr. Gabrijela Zaharijaš, participated. The results of the research confirm that magnetars form a new class of sources of short gamma-ray bursts, revealing astrophysical processes occurring in their vicinity.

Organisational Structure



Staff structure

As of December 2021, the University of Nova Gorica had a total of 169 regular staff members (of which 26 were shared employees with primary employment at another institution). This included 101 doctors of science, 16 research assistants, another 24 holders of bachelor's or master's degree, 22 administrative personnel, 3 librarians, 1 maintenance officer and 2 photocopy clerks; 41 staff members were foreign nationals.

	Regularly employed	Supplementary employed
2008	93	51
2009	113	57
2010	114	67
2011	124	49
2012	137	42
2013	130	42
2014	147	37
2015	121	33
2016	117	29
2017	115	31
2018	113	28
2019	118	29
2020	132	26
2021	169	26

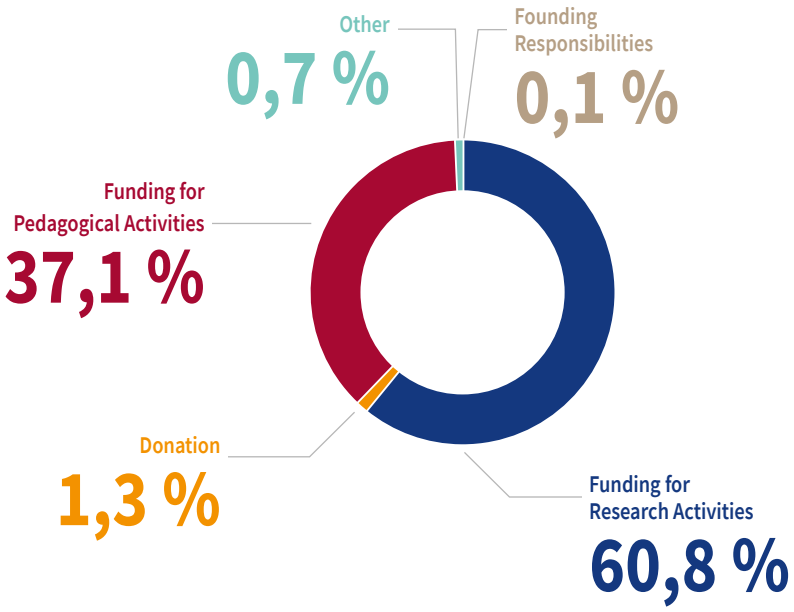
In addition, collaborating with the university were also over 200 adjunct faculty from other Slovenian universities and from universities outside of Slovenia.

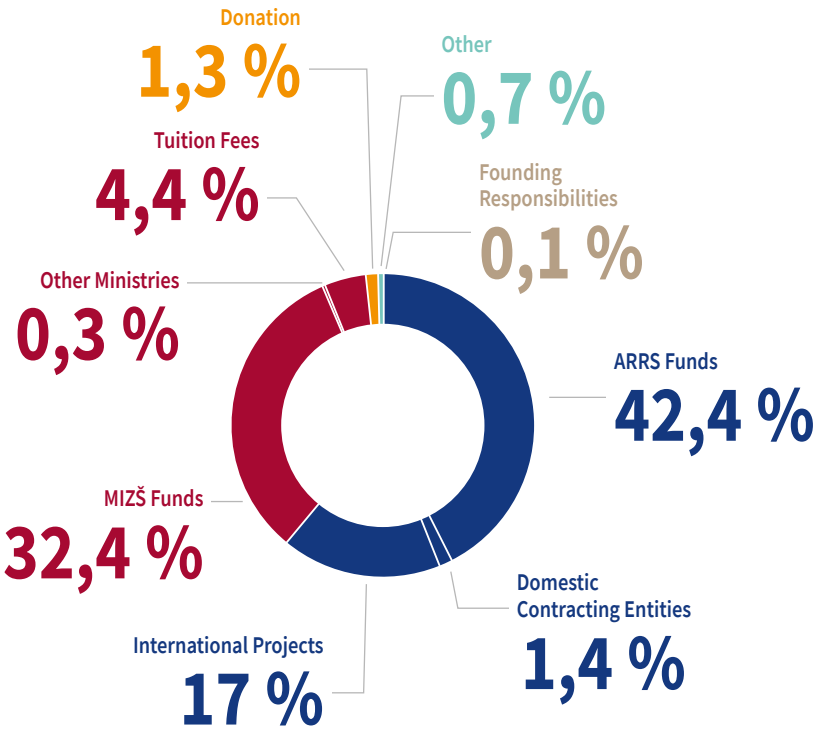
State	Nr. collaborators
Armenia	1
Bulgaria	2
France	1
Croatia	3
India	4
Iran	1
Italy	19
Kazakhstan	1
Hungary	1
Serbia	1
Poland	2
Russian Federation	1
Ukraine	2
Great Britain	1
United States of America	1
Total	41

Financial Report

The University of Nova Gorica receives its funding from tuition fees, educational and research projects that are financed by the Slovene Ministry of Education, Science and Sport (MIZŠ) and the ARRS (Slovenian Research Agency), the income of the founders, international and industrial projects, as well as from various donations. In 2021, the University of Nova Gorica obtained about EUR 9,983 million of assets (cash flow) from the below listed sources:

Founding Responsibilities 0,1 %
Funding for Research Activities 60,8 %
ARRS Funds 42,4 %
Domestic Contracting Entities 1,4 %
International Projects 17 %
Funding for Pedagogical Activities 37,1 %
MIZŠ Funds 32,4 %
Other Ministries 0,3 %
Tuition Fees 4,4 %
Donation 1,3 %
Other 0,7 %
TOTAL 100,0 %





Awards, Titles and Recognitions

Employee awards in 2021

Lapanje distinction of the Slovenian Biochemical Society
Dr. Fabio Lapenta

Puh Award for outstanding achievements
Prof. Dr. Griša Močnik and **Dr. Luka Drinovec**

Student awards in 2021

First Prize for Student Work, IFCA 2021 student award
Vasily Kuzmich

Rog's Golden Bike Award in the under-23 category, Rog Cycling Club awards
Kristjan Hočevar

Award for a completed student animation project, Award of the Slovenian Animated Film Association
Amadeja Kirbiš

Honourable mention (Young Talent Section), Animateka International Animated Film Festival
Miha Reja

Honorary Titles, Recognitions and Awards of the University of Nova Gorica in 2021

Doctor Honoris Causa
Haruki Murakami

Alumnus Primus Student Award
Nejra Ajanović
Urban Makorič
Matevž Rupnik
Pietro Cromaz
Parisa Zaeri

Alumnus Optimus Student Award
Vid Metljak
Marko Peric
Urban Makorič
Matevž Rupnik
Pietro Cromaz

Important Events

From left to right: Dragan Barbutovski, Director of the British Council in Slovenia, Prof. Dr. Gvido Bratina, Vice-rector for Research and Arts and Her Excellency Ms Tiffany Sadler, Ambassador of the United Kingdom of Great Britain and Northern Ireland.

MAY

Visit by the Ambassador of the United Kingdom of Great Britain and Northern Ireland

On 17 May, at the University of Nova Gorica, in the Lanthieri Mansion, the Vice-rector for Research and Arts, Prof. Dr. Gvido Bratina, received the visit of the Ambassador of the United Kingdom of Great Britain and Northern Ireland, Her Excellency Ms Tiffany Sadler.

After an introductory presentation of teaching and research activities, the talk turned to the University's collaborations with UK institutions in the fields of astronomy, solid-state physics, materials, linguistics and biomedicine.
The meeting, intended to explore new opportunities for mutual cooperation, was also attended by Dragan Barbutovski, Director of the British Council in Slovenia.

Visit by the Ambassador of the United Kingdom of Great Britain and Northern Ireland.

From left to right: Prof. Dr. Danilo Zavrtanik, Rector of the University of Nova Gorica, His Excellency Mr Juan Aristegui Laborde, Ambassador of the Kingdom of Spain in the Republic of Slovenia and Prof. Dr. Samo Stanič, Head of the Centre for Astrophysics and Cosmology.

Ambassador of the Kingdom of Spain visits the University of Nova Gorica.

MAY

Ambassador of the Kingdom of Spain visits the University of Nova Gorica

On 19 May, we hosted the Ambassador of the Kingdom of Spain in the Republic of Slovenia, His Excellency Mr Juan Aristegui Laborde, on a courtesy visit to the University of Nova Gorica.

The guest was welcomed at the Lanthieri Mansion by the Rector of the University of Nova Gorica, Prof. Dr. Danilo Zavrtanik, who introduced the teaching and research activities of the University.

The introduction was followed by a presentation by Prof. Dr. Samo Stanič, Head of the Centre for Astrophysics and Cosmology, on the construction of the Cherenkov Telescope Array (CTA), the largest observatory for high-energy gamma-ray astronomy, which started last year in Chile and La Palma. The researchers of the University of Nova Gorica are among more than 1,420 researchers from 31 countries involved in the design and planning

At the end of his visit, Ambassador Juan Aristegui Laborde expressed his satisfaction at the successful cooperation between the University and Spanish institutions and his interest in further strengthening the cooperation.

JUNE

15 June 2021.

16 June 2021.

Rector, Vice-rector and Deans of the University of Nova Gorica.

Ceremonies for the awarding of diplomas, master's diplomas, and conferment of PhDs

On Tuesday, 15 June and Wednesday, 16 June 2021, the ceremonies for the awarding of diplomas, master's diplomas, and the conferment of PhDs of the University of Nova Gorica, took place in the atrium of the Lanthieri Mansion in Vipava.

The graduates from the School of Science and the School for Viticulture and Enology, as well as six masters graduates from the School of Engineering and Management, received their graduation certificates.

At the ceremony, the Rector of the University of Nova Gorica, Prof. Dr. Danilo Zavrtanik, conferred a Doctorate of Science to five new PhDs from the Graduate School in *Physics*, *Cognitive Science of Language*, and *Humanities*.

As we had to cancel last year's ceremony due to the coronavirus epidemic, originally scheduled for December, we also took the opportunity to announce all the graduates, master's graduates, and PhDs who completed their studies between 1 June 2020 and 31 December 2020.

JULY

From left to right: Prof. Dr. Boštjan Golob, Prof. Dr. Matjaž Valant, Prof. Dr. Boštjan Zalar (Director of the »Jožef Stefan« Institute), Prof. Dr. Danilo Zavrtanik (Rector of the University of Nova Gorica), Prof. Dr. Mladen Franko and Prof. Dr. Gvido Bratina.

Director of the »Jožef Stefan« Institute visits the University of Nova Gorica.

Visit by the Director of the "Jožef Stefan" Institute

On 8 July, we hosted Prof. Dr. Boštjan Zalar, Director of the »Jožef Stefan« Institute, on a visit to the University of Nova Gorica.

The guest was welcomed by the Rector of the University of Nova Gorica, Prof. Dr. Danilo Zavrtanik, and the Vice-Rectors, Prof. Dr. Gvido Bratina and Prof. Dr. Mladen Franko, who presented the pedagogical and research work of the University of Nova Gorica to our guest.

During the meeting, Prof. Dr. Zalar also visited the Laboratory for Environmental and Life Sciences in Rožna Dolina, the laboratories and centres at the University Centre in Ajdovščina, and the Wine Research Centre at the Lanthieri Mansion in Vipava.

At the end of the visit, both the Rector and the Director praised the long-standing good cooperation between the institutions, which started in 1995 when the »Jožef Stefan« Institute, together with the Municipality of Nova Gorica, established the School of Environmental Sciences (the predecessor of the Polytechnic or the University of Nova Gorica). During the meeting, both sides identified a number of new opportunities to deepen cooperation on joint projects in the future.

JULY

University of Nova Gorica and Chemnitz University of Technology are Universities of the Capitals of Culture 2025 and want to cooperate closely in the future.

Capital of Culture Universities Conclude Cooperation Agreement

University of Nova Gorica and Chemnitz University of Technology (Germany) - Universities of the Capitals of Culture 2025 - want to cooperate closely in the future.

University of Nova Gorica and Chemnitz University of Technology want to jointly create momentum for the design of the Capital of Culture Year 2025. Nova Gorica and Chemnitz are both cities by their national borders, and will be the European Capital of Culture in 2025. The cooperation agreement between the universities now creates another bridge between the two Capitals of Culture.

»We were contacted by our colleagues from Chemnitz University of Technology, to our surprise, very soon after the announcement of Nova Gorica being the Capital of Culture 2025, alongside neighbouring Gorizia. We are thankful to our new partner University for this initiative, which also confirms the visibility and reputation of our young institution in the international academic arena. The European Capital of Culture 2025 is a great opportunity for the University of Nova Gorica to further promote its study programmes and activities, which are closely related to culture, and to contribute to the activities of the European Capital of Culture 2025. Through a new cooperation agreement with Chemnitz University of Technology, we hope to contribute jointly to these activities, and to strengthen the collaboration in the future in the areas beyond culture itself. Such academic collaborations are of key importance for the future development of the University of Nova Gorica, which declares itself as a research university with a strong international orientation«, stated prof. Danilo Zavrtanik, Rector of the University of Nova Gorica.

Prof. Dr. Danilo Zavrtanik (left) and Mag. Matej Tonin (right).

"We initiated contact with the University of Nova Gorica primarily in order to develop transnational European Capital of Culture activities between the two Capital of Culture universities, in keeping with the European idea. This idea was warmly received by at our new partner university, for which I would like to express my sincere thanks to my Slovenian counterpart and his team. Within a very short time, it led to the conclusion of a cooperation agreement, which also forms the basis for further cooperation, including the areas of research and teaching," says Prof. Dr. Gerd Strohmeier, President of Chemnitz University of Technology. "The Capital of Culture is already bearing its first fruits—we are pleased to have found a new partner that offers many points of contact and also fits very well with our efforts to become a European university within the UNIVERS consortium," adds Prof. Dr. Maximilian Eibl, Vice President for Academic and International Affairs at Chemnitz University of Technology. With the cooperation agreement, Chemnitz University of Technology once again underlines the importance of the successful Capital of Culture application for the university location of Chemnitz and emphatically underlines its support since the beginning of the application process.

Finally, the new university partnership is also intended to promote international academic exchange between the two locations. Thus, students, researchers, and employees in both locations will have the opportunity to visit the respective partner institution. With a view to concrete research cooperation, corresponding talks are currently underway.

Background: University of Nova Gorica

The University of Nova Gorica aims to be an internationally established research university, recognised as a driving force of social development in the Goriška region, and in a broader context. It offers courses in Slovenian and English, and attracts over 50% of the enrolled students from abroad. With innovative approaches to higher education teaching, the University of Nova Gorica promotes academic excellence in attractive and unique study fields, which ensures a high employability rate for its graduates. The city of Nova Gorica is closely linked to its Italian neighbour, Gorizia, and both have successfully bid as a duo to become the European Capital of Culture 2025. The University of Nora Gorica provides students with various forms of cooperation in the field of youth, cultural, and entertainment activities, and is actively engaged in collaboration with Italian universities across the border in Trieste, Udine and Venice.

Background: "UNIVERS – European Cross-Border University"

Chemnitz University of Technology is part of a consortium of eight European universities, which is supported by the German Academic Exchange Service (DAAD) with funds from the Federal Ministry of Education and Research in the program "European University Networks – National Initiative" as "UNIVERS – European Cross-Border University". All universities involved in UNIVERS have in common their location in border areas with the resulting requirements and challenges for higher education. Under the motto "building collaborative leadership for cross-border territories," the aim of UNIVERS is to overcome these borders and form a common European educational area with almost 85,000 students and 6,700 employees. In doing so, UNIVERS will serve as a role model for other cross-border regions in Europe and beyond, which can benefit from the solution strategies developed.

Minister of Defence visits the University of Nova Gorica.

SEPTEMBER

Visit of the Minister of Defence, Mag. Tonin, to the University of Nova Gorica

On 8 September, during visit of the Government of the Republic of Slovenia to the Gorizia region, the Minister of Defence, Mag. Tonin, and his colleagues visited the University of Nova Gorica.

University rector, Prof. Dr. Danilo Zavrtanik, as well as vice-rectors Prof. Dr. Mladen Franko and Prof. Dr. Gvido Bratina, received the delegation at the seat of the University of Nova Gorica in Rožna Dolina. The discussions concerned the possibilities of future cooperation.

As well as speaking to the Minister of Defence, rector Prof. Dr. Zavratnik also met with the Minister of Education, Science and Sport, Dr. Simona Kustec, and took part in a panel discussions on the development and future of the Gorizia region, which was held at the Slovenian National Theatre in Nova Gorica.

Ceremony for the Award of the Title of Professor Emeritus and the Golden Plate of the University of Nova Gorica.

SEPTEMBER

Ceremony for the Award of the Title of Professor Emeritus and the Golden Plate of the University of Nova Gorica

On September 28, on the cusp of the new academic year, we awarded the title of Professor Emeritus and the Golden Plate of the University of Nova Gorica at the award ceremony held at the Lanthieri Mansion in Vipava.

Both the audience and the TV viewers were initially addressed by the keynote speaker, elementary particle physicist Prof. Dr. Boštjan Golob: "After 26 years of operation, the University of Nova Gorica dominates as the only university in the Goriška region and as one of the most successful institutions in Slovenia in the field of research. Over the course of its short institutional history, it has weathered many Bora winds and taken root as a native tree in the local environment. The institution itself could not have achieved this; this was made possible by the people who are its organic tissue. Bringing to bear their scientific and pedagogical excellence, the colleagues of the University have created an internationally recognized institution that offers a top-level education to domestic and foreign students that will help them on their professional path and in building a successful career."

Prof. Dr. Golob pointed out in his address that he is standing before us today and for two more days as a professor of physics at the university somewhere behind Mount Nanos, but promised that he will do everything in his power in the future for UNG to continue its planned development and to become even more strongly rooted in this soil. "I am certain that the right path of development is to overcome the short-sightedness or narrow-mindedness of some actors in the Slovenian research and higher education space, which will require the commitment to excellent science, openness towards modern global scientific and technological space, international comparability and internationalization. We must overcome the well-known dilemma - the first in the village or the last in the city - and prove ourselves to be equal to the best in Europe," he emphasized.

"Today's guests of honour, Prof. Dr. Miran Veselič and Mr. Ivo Boscarol, each did an outstanding job in their part of our common ecosystem. I am happy and proud that they have joined forces with our university – a university that has demonstrated its success and bold ideas in the field of green technologies. In the hope of their joint realisation, I thank and congratulate both award winners from the bottom of my heart," said Prof. Dr. Golob at the end.

The title of Professor Emeritus of the University of Nova Gorica was awarded by the Rector of the University of Nova Gorica, Prof. Dr. Danilo Zavrtanik, to the distinguished Slovenian and internationally renowned expert in the field of hydrogeology, Prof. Dr. Miran Veselič, for *for his outstanding contribution to the international reputation and development of the University of Nova Gorica, and his exemplary pedagogical and mentoring work*.

Upon receiving the honorary title, Prof. Dr. Veselič expressed his gratitude for the award by saying: "This is my first academic title for which I neither applied nor ran, and the announcement of my election truly moved me and that feeling of gratitude remains with me to this day. From the very beginning, I believed in the exceptional importance and mission of the Polytechnic and the University of Nova Gorica. Anyone who knows and respects the history of this part of the Primorska region and the associated struggle of the people of Primorska for their ethnic essence, then the idea of the high school as an important place of education and culture must be a sacred one in this

Awardees and administration of the University of Nova Gorica.

land ravaged by history. That is why I have always gladly responded to invitations to participate and felt it was my duty; initially through pedagogical work and later through participation in the Governing Board. Over the course of more than 25 years of its existence, the University of Nova Gorica has achieved a worldwide reputation and secured its place in the academic world. Beyond a shadow of doubt, you – its management and every member of its staff – are responsible for this success."

The President of the Governing Board of the University of Nova Gorica, Borut Lavrič, presented the founder and director of the world-famous aircraft manufacturer Pipistrel, Ivo Boscarol, with the Golden Plate of the University of Nova Gorica for *constructive participation in the research and the promotion of the build-up of the University of Nova Gorica infrastructure*.

"I would like to thank you all very much for this extraordinary honour. I have been fighting my entire life to maintain values in entrepreneurship so that our employees, our customers and our suppliers can have a long-term relationship that is based on values. I am pleased that the University of Nova Gorica is also building its own story on these same values. You know, the best thing to forget is when something good has been achieved. That is to remember after twenty years how we transformed the Polytechnic into the University, how I motivated the politicians of that time, how I tried to convince the members of municipal councils that the University is necessary and that we needed the University. Building such values over an extended period means creating stories that we can all be proud of," said Mr. Boscarol upon receiving the award.

"If you look at our Earth from space, you'll see a thin blue band around it. That is our atmosphere. People can live a month without food, we can live weeks without water, but only a few minutes without air. And the University of Nova Gorica invests a lot of its energy in preserving the environment and is aware that – just like all of us together and each individual separately – we must do everything we can to preserve our environment as it is for future generations. Thank you for building your story on values," concluded the recipient of the Golden Plate.

Professor Emeritus of the University of Nova Gorica, Prof. Dr. Miran Veselič.

Golden Plate of the University of Nova Gorica, Ivo Boscarol.

Prof. dr. Boštjan Golob, keynote speaker.

OCTOBER

From left to right: Prof. Dr. Gvido Bratina (Vice-rector for research and arts, University of Nova Gorica), Prof. Dr. Boštjan Golob (University of Nova Gorica), Dr. Mitja Slavinec (State Secretary at the Ministry of Education, Science and Sport of the Republic of Slovenia), Prof. Dr. Danilo Zavrtanik (Rector, University of Nova Gorica) and Doc. dr. Melita Sternad Lemut (University of Nova Gorica).

Visiting the Wine Research Center.

University of Nova Gorica Hosted State Secretary Dr. Mitja Slavinec

On 25 October, Dr. Mitja Slavinec, State Secretary at the Ministry of Education, Science and Sport of the Republic of Slovenia, visited the University of Nova Gorica.

Following the introductory meeting with the management of the University, a presentation of the teaching and research activities of the University and a visit to the premises in Ajdovščina and Vipava took place.

The main purpose of the visit was to discuss topical issues in education and science and the plans for the future.

Ceremonies for the awarding of diplomas, student awards and conferment of PhDs, 1 December 2021.

Ceremonies for the awarding of diplomas, student awards and conferment of PhDs, 2 December 2021.

DECEMBER

Ceremonies for the awarding of diplomas, student awards and conferment of PhDs

On Wednesday, 1 December and Thursday, 2 December 2021, the University of Nova Gorica awarded diplomas and student awards, and conferred new PhDs.

Eight graduates from the School of Engineering and Management, six graduates from the School of Arts, three graduates from the School of Humanities and the School of Sciences, and one graduate each from the School of Environmental Sciences and the School of Viticulture and Enology received their diplomas. Six Master's graduates also received their graduation certificates.

The Rector of the University of Nova Gorica, Prof. Dr. Danilo Zavrtanik, conferred a Doctorate of Science to three new PhDs from the Graduate School in the study programmes *Physics* and *Karstology*.

Ten students were awarded the alumnus primus and alumnus optimus student awards.

Rector, Vice-rector and Deans of the University of Nova Gorica.

Organizing of Conferences and Schools

Škrabčevi dnevi 12

8 October 2021, Kostanjevica Nova Gorica Franciscan Monastery

On October 8, 2021, the University of Nova Gorica and the Research Center of the Slovenian Academy of Sciences and Arts co-hosted Škrabčevi dnevi 12. Škrabčevi dnevi is the only linguistic conference in Slovenia that imposes no restrictions with respect to the subdiscipline, topic, investigated language, framework or methodology of the reported research, with which the biannual event attempts to serve as an all-inclusive umbrella meeting for Slovenian linguists. Its 12th edition also marked the 10th anniversary of when the organization was taken over by UNG and RC SASA. The 15 talks covered topics in dialectology, etymology, normativity, terminology, syntax, morphology and phonology. The conference will be completed in 2022 with the publication of the conference proceedings published by the University of Nova Gorica Press.

International School: "Basic Photothermal and Photoacoustic Techniques: Theory, Instrumentation and Application"
16 October – 23 October 2021, Erice, Italy

The International School: "Basic Photothermal and Photoacoustic Techniques: Theory, Instrumentation and Application" was organized within the framework of the Fourth Mediterranean International Workshop in Photoacoustic & Photothermal Phenomena in Erice, Italy during the period from 16 October till 23 October 2021. The International School was organized as a series of intensive lectures and case study presentations with compulsory attendance to lectures of the Workshop given by top scientists and lecturers from universities all over the world, who presented lectures in the topics related to photoacoustic and photothermal techniques and instrumentation, such as: Thermal Lens Spectroscopy, Photothermal Beam Deflection Spectroscopy, Photoacoustic Phenomena, Infrared Radiometry, Non Destructive Evaluation & Testing, Biomedical and Biological PA & PT Application and Gas Sensing via QEPAS.

Important Achievements

JANUARY

Fermi LAT NASA mission discovers magnetar eruptions in a nearby galaxy, shining light on processes involving neutron stars

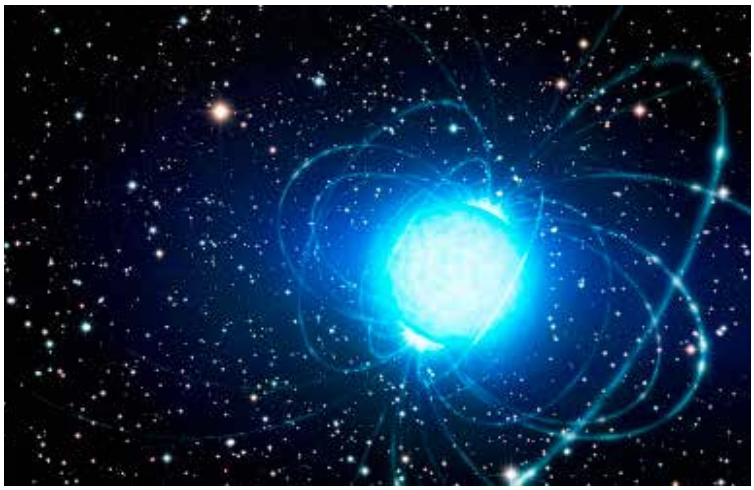
In a set of papers, published on January 13, 2021 in Nature and Nature Astronomy, multiple international science teams concluded that the blast came from a supermagnetized stellar remnant known as a magnetar located in a neighboring galaxy.

On April 15, 2020, a brief burst of high-energy light swept through the solar system, triggering instruments on several NASA and European spacecrafts. In a set of papers, published on January 13, 2021 in Nature and Nature Astronomy, multiple international science teams concluded that the blast came from a supermagnetized stellar remnant known as a magnetar located in a neighboring galaxy. In particular, the team of the Fermi LAT telescope, with the participation of Gabrijela Zaharijas, member of the Center for Astrophysics and Cosmology at the University of Nova Gorica, reported the discovery of a very energetic emission from magnetars, proving that they make up a new class of short gamma ray bursts, and shining light on astrophysical processes that take place in the vicinity of magnetars.

The brief burst of high-energy light, which lasted just 140 milliseconds – as fast as a finger snap – was discovered on April 15, 2020. It was detected by instruments aboard several spacecrafts in a tantalizing sequence of events: first, a brief, powerful burst of X-rays and gamma rays swept past Mars, triggering the Russian High Energy Neutron Detector aboard NASA's Mars Odyssey spacecraft. About 6.6 minutes later, the burst triggered the Russian Konus instrument aboard NASA's Wind satellite, which orbits a point between Earth and the Sun, about 1.5 million kilometers from Earth. After another 4.5 seconds, the radiation passed Earth, triggering instruments on NASA's Fermi Gamma-ray Space Telescope, as well as on the European Space Agency's INTEGRAL satellite and Atmosphere-Space Interactions Monitor aboard the International Space Station. Soon after, also the Burst Alert Telescope (BAT) on NASA's Neil Gehrels Swift Observatory provided valuable data.

Given the high number of experiments measuring the arrival of the signal at different positions and times, the scientists were then able to pinpoint the origin of the signal to a (relatively) nearby galaxy NGC253 in Sculptor constellation, 11 million light years away (for a comparison, the size of the disk of our own Galaxy is about hundred times smaller).

There are two prime suspect sources for such short duration events. One are the (short) Gamma-Ray bursts, that originate in collision of compact objects (e.g. two neutron stars) and another are processes related to a single neutron star, a magnetar. Magnetars are neutron stars with the strongest-known magnetic fields (with up to a thousand times the intensity of typical neutron



Artistic view of a magnetar neutron star.

Visualization of a model of magnetar mass ejection, proposed by Fermi LAT, which describes the observed delay in gamma-ray detection. The smaller pink cloud (right) represents the initial gamma rays that passed directly through the bow shock. The larger cloud (left) represents gamma rays created by the matter (which is slower) when passing through the bow shock.

stars). While gamma-ray bursts are much brighter and we discover almost one per day (since they come from all corners of the universe), detection of emission from fainter magnetars is much more rare.

Most of the 29 magnetars now cataloged in our Milky Way galaxy exhibit occasional high-energy activity, but only two have produced giant flares. In 1979 a giant flare was discovered from a magnetar located in the Large Magellanic Cloud, a satellite of our galaxy. Giant flares are poorly understood, but astronomers think they result from a sudden rearrangement of the magnetic field. One possibility is that the field high above the surface of the magnetar may become too twisted, suddenly releasing energy as it settles into a more stable configuration. Alternatively, a mechanical failure of the magnetar's crust – a starquake – may trigger the sudden reconfiguration.

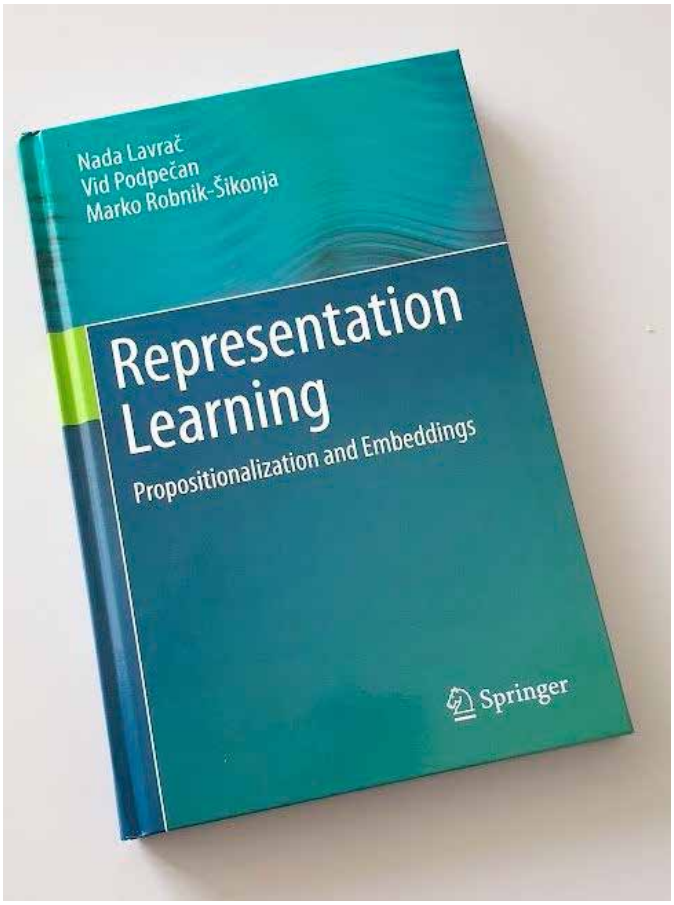
The story of the April 15, 2020 event become even stranger when Fermi's main instrument, the Large Area Telescope (LAT), also detected three gamma rays, with energies of 480 million electron volts (MeV), 1.3 billion electron volts (GeV), and 1.7 GeV – the highest-energy light ever detected from a magnetar giant flare. What's surprising is that all of these gamma rays arrived between 19 seconds and 4.7 minutes after the main event, long after the flare had diminished in other instruments.

This discovery, published in a work that received contribution from the University of Nova Gorica scientists, changed our views on magnetars and gamma ray transients in two ways. Firstly, it allowed scientists to understand better how the GeV emission could be generated in the vicinity of magnetars. A magnetar produces a steady outflow of fast-moving particles. As it moves through space, this outflow plows into, slows, and diverts interstellar gas. The gas piles up, becomes heated and compressed, and forms a type of shock wave called a bow shock. In the model proposed by the LAT team, the flare's initial pulse of gamma rays travels outward at the speed of light, followed by the cloud of ejected matter, which is moving nearly as fast. After several days, they both reach the bow shock. The gamma rays pass through. Seconds later, the cloud of particles – now expanded into a vast, thin shell – collides with accumulated gas at the bow shock. This interaction creates shock waves that accelerate particles, producing the highest-energy gamma rays after the main burst, explaining the delay measured by the Fermi LAT.

Secondly, it is now realized that a part of the known short gamma ray bursts could in fact actually be magnetars. Magnetars therefore appear to constitute their own new class of gamma-ray bursts, that will be explored in the years to come.

Papers analyzing different aspects of the event and its implications were published on Jan. 13, 2021 in the journals Nature and Nature Astronomy.

AUGUST



A monograph on representation learning was published by the Springer publishing house

The academic publishing house Springer has issued the monograph Representation Learning: Propositionalization and Embeddings, written by Prof. Dr. Nada Lavrač from the Jozef Stefan Institute and the University of Nova Gorica; Dr. Vid Podpečan from the Jozef Stefan Institute; and Prof. Dr. Marko Robnik-Šikonja, from the Faculty of Computer and Information Science, University of Ljubljana.

The monograph discusses advanced techniques of representation learning, which is one of the most active and relevant research areas of machine learning. Representation learning includes modern data processing techniques that transform data of various modalities and complexities into a tabulation presentation. For example, text, charts and relations are transformed to vectors by having the representation effectively include their semantic properties and mutual relations. The monograph focuses on the propositionalization approaches that have been established in relation learning and inductive logic programming and vector inputs that have become popular with the recent advancements in deep learning.

The book discusses the representation learning techniques that were developed in various areas of modern sciences. This allows the user to understand the common core principles while also offering an in-depth insight by using the chosen cases and sample codes in python books. The monograph is an interesting piece for a broader audience, from data scientists, researchers and students of machine learning, to developers, software engineers and researchers in the industry that are interested in the practical solutions of artificial intelligence.

AUGUST

The University of Nova Gorica again ranked high (169th spot) on the international Round University Ranking (RUR)

According to the results of the international Round University Ranking, which evaluates and ranks the best universities in the world, the University of Nova Gorica once again got placed very high (it took the 169th spot) in 2021.

Also in previous years, the university was successful, in 2019, it got the 140th spot. The first few places on this chart are normally taken by the best known American Universities (California Institute of Technology, Stanford, Harvard, …) and English Universities (University of Oxford, University of Cambridge, …).

The results of RUR show that in terms of all quality assurance indicators the University of Nova Gorica holds a remarkably strong lead over the rest of the universities in Slovenia. Up to date no other Slovenian university has been ranked so high on any of the internationaly recognised world universities rankings. Moreover, it performed better than older and larger universities in Slovenia's cross-border area (See "The world map of RUR Ranking").

RUR measures the performance of the leading world universities on an annual basis by universities' overall results achieved across four key missions: teaching, research, international diversity and financial sustainability.

Beside overall results RUR provides also subject rankings of the world universities. RUR subject rankings evaluate performance of 801+ world's leading higher education institutions by 6 broad subject areas: Humanities, Life Sciences, Medical Sciences, Natural Sciences, Technical Sciences, Social Sciences. All universities are assessed by the same 20 indicators and 4 key areas of university activities as in overall RUR World University Rankings.

RUR rankings are based on the data on world universities collected by Clarivate Analytics, as part of the "Global Institutional Profiles Project".

Clarivate Analytics' assessment of universities is based on data obtained from three main sources: data on the institution's publications and citations from Clarivate Analytics *Web of Science*; the results of the annual *Academic Reputation Survey* and the data provided by the institution directly to Clarivate Analytics. A database is thus formed on the institution's scientific and teaching performance, its sources of financing and the characteristics of its students and staff.

On the basis of the data obtained RUR's analysis is performed, considering 20 indicators of quality performance in the previously mentioned four key mission areas. The major part of the assessment is represented by the indicators in the area of research (40 %) and teaching (40 %). All indicators take into account the size of the institution. Consequently, small and large universities can equally be compared in terms of their performance.

Despite its short tradition and a relatively small size, the University of Nova Gorica excels on an international scale. Its excellence has also been recognised in the U-Multirank comparative world univeristy rankings and can by no means be considered as a coincidence but rather represents the results of hard work and the clearly defined mission of the development of the University of Nova Gorica. The University's scientific excdellence was also identified and emphazied in the European Commission's report on the Scientific Output and Collaboration of European Universities in the period from 2007 to 2011, stating that according to the criteria of scientific excellence and the scientific impact of its publications, The University of Nova Gorica is ranked among five best universities in Europe, including the University of Oxford, the University of Cambridge, the École Polytechnique Fédérale de Lausanne (EPFL) and the ETH Zürich.

Such university rankings represent a valuable source of information for prospective students deciding at which university to study, since the quality of studies and study programmes ensurung high employment prospects are of key importance. The rankings can also serve to employers, providing them with the information which universities provide the most highly qualified young professionals.

Global Top 25 badge for International joint publications.

Global Top 25 badge for collaboration index.

The graphic illustration of UNG's profile on the U-Multirank 2021 global ranking chart. The height of each column within a specific circular sector denotes a grade achieved for a specific criterion (the tallest column stands for 1 – exceptionally good, and the lowest column stands for 5 –weak).

SEPTEMBER

U-Multirank, the global university ranking

The University of Nova Gorica (UNG) has been a part of the global university ranking program called »U-Multirank« since the very beginning of this European project.

This year's results of the comparative rankings of different universities from all over the world (»U-Multirank 2021«), published on the website www.umultirank.org, that UNG's results are high above average, within the global university chart. (Same exceptional results were obtained by UNG also in the last years U-Multirank 2015, U-Multirank 2016, U-Multirank 2017, U-Multirank 2018, U-Multirank 2019, U-Multirank 2019 and U-Multirank 2020 comparisons of universities.)

In particular, the results show excellence of UNG performance in the field of research and international orientation. For U-Multirank's 2021 edition, UNG is among the Global Top 25 performers in the area of international joint publications, which reflects the degree to which a university's research is connected to international research networks.

Good results were also ascribed to UNG in the areas of teaching and learning, and regional engagement. If comparing U-Multirank results of UNG with the results of other universities in Slovenian and wider region outside Slovenian borders, it shows that the University of Nova Gorica is the best university according to a majority of ranking parameters. IIt not only ranks higher than other Slovenian universities, but also higher than bigger universities in our vicinity, such as the Graz University the University of Trieste, Padova University, and the University of Zagreb. According to these indicators UNG ranks among best European and world universities.

It is worth mentioning that scientific excellence of UNG was recognized and outlined also in the European Commission report on scientific performance of European universities »Scientific Output and Collaboration of European Universities«, in the period 2007 – 2011, which stated: *»Four institutions stand out for their strong performances in terms of scientific impact, as they are always among the top five according to the three citation-based impact measures: the University of Nova Gorica, the University of Oxford, École polytechnique fédérale de Lausanne (EPFL) and ETH Zurich.«*

In 2021 UNG has been ranked amongst the top performing universities around the globe! For U-Multirank's 2020 edition, UNG is among the Global Top 25 performers in the area of international joint publications and was awarded a Global Top 25 badge for International joint publications and Global Top 25 badge for collaboration index. The percentage of international joint publications reflects the degree to which a university's research is connected to international research networks. The list of the 25 top performers for International joint publications is characterised by a diversity of countries; higher education institutions from 19 different countries are represented. The list includes some higher education institutions from small countries (e.g., Liechtenstein, Luxemburg, Slovenia and Iceland) which emphasize the importance of international research collaborations in order to achieve research excellence and international competitiveness.

»U-Multirank« is a comparative university chart that was developed within the EU with the financial help that came from the European Commission. It is intended for comparative grading of universities from all over the world. This year 1,800 universities from 92 countries were included into the grading project.

U-Multirank is the first global chart that gives a multidimensional picture of the way universities operate, as it compares universities in five different areas: teaching and learning, research, international orientation, regional engagement and knowledge transfer. If compared to other ranking charts that are geared towards classifying universities in charts like "best 100 universities" (based on a communal grade that is composed of parameters with different levels of importance), U-Multirank gives a complete picture of each university's virtues and disadvantages.

U-Multirank allows users to compare universities based on what matters to them. It reveals different strong performers in areas as diverse as research, teaching and learning, knowledge transfer, internationalisation and regional engagement. This approach and method give students the right sort and amount of information so they can pick the university that is appropriate for them more easily. This gives students an ability to make informed choices of the best universities for their interest. Students are also able to identify universities that do well in terms of international linkages and student mobility.

European Commissioner for Education, Culture, Youth and Sport, Tibor Navracsics, said: "U-Multirank gives students, parents and other stakeholders a valuable insight into the higher education institutions of their choice, across a range of parameters. This is vital to help drive informed decisions."

In order to create an efficient display that compares universities, the U-Multirank project offers to the students an online application that can be found on the following website https://www.umultirank.org/. By using this application, anyone can directly pick various universities in the select region or wider (on a global scale) and compare them in the areas of their interest.

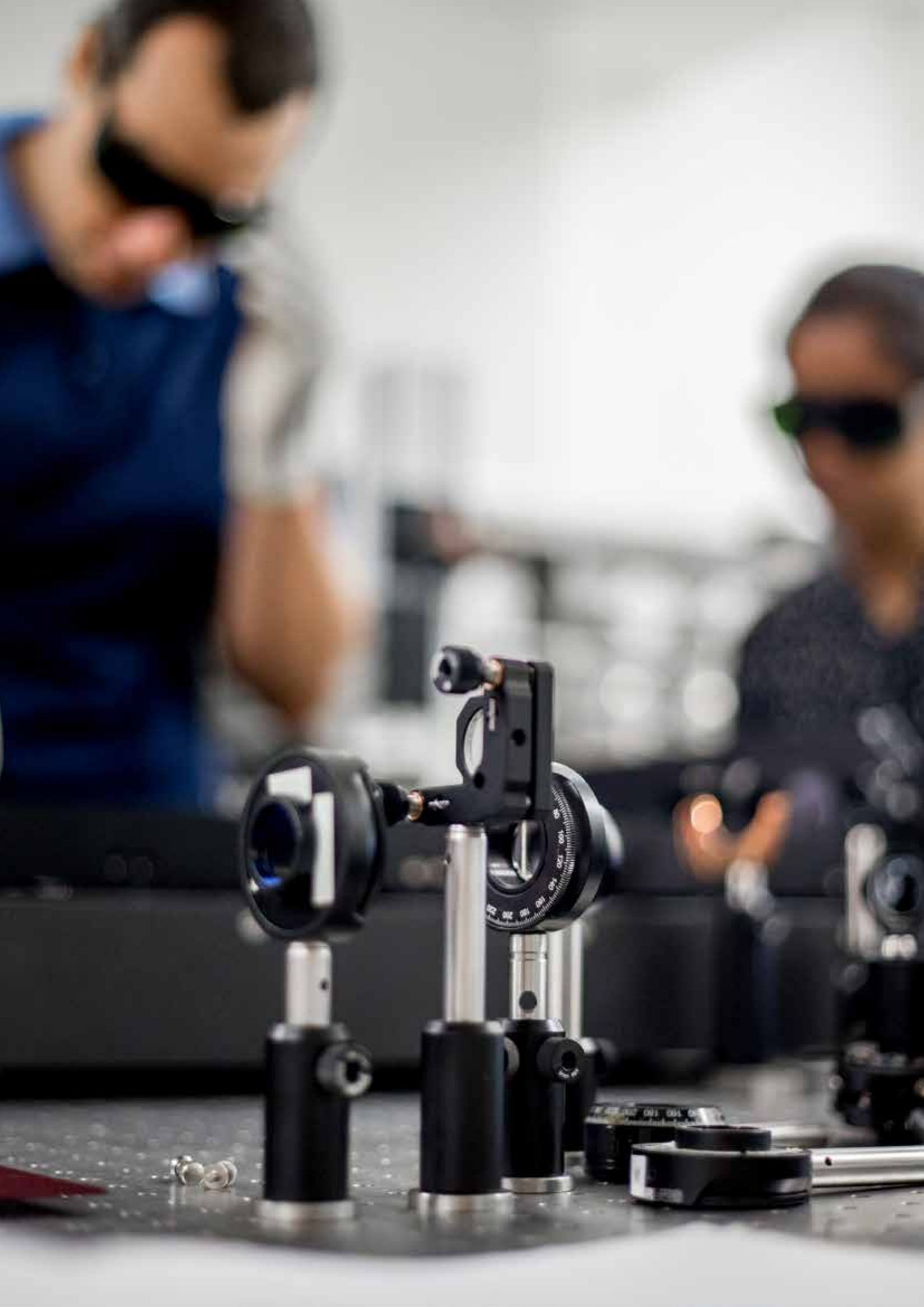
U-Multirank uses 39 different indicators by means of which universities are graded and compared in various areas and activity fields. U-Multirank uses a five-degree chart: 1 – exceptionally good; 2 – good; 3 – average; 4 – below average; 5 –weak. Detailed results that pertain to UNG (based on individual indicators) can be found on U-Multirank's website: https://www.umultirank.org/.

Despite its youth and relative smallness, the University of Nova Gorica displays a visible degree of excellence on the global scale. The top results that it has achieved are not coincidental, but a result of hard work and a clear vision the university has set for itself and was approved by the University's Senate.

DECEMBER

Pregled desetih najodmevnejših člankov v letu 2021

Number	Journal	Authors, University of Nova Gorica members	The Impact Factor
1	Nature nanotechnology	Ario De Marco	39.213
2	Nature photonics	Giovanni De Ninno	38.771
3	Advanced materials	Egon Pavlica, Gvido Bratina	30.849
4	Chem	Tina Škorjanc	22.804
5	Nature physics	Andrej Filipčič	20.034
6	Nature physics	Andrej Filipčič	20.043
7	Journal of the American Chemical Society: JACS	Tina Škorjanc	15.419
8	Journal of the American Chemical Society	Iztok Arčon	15.419
9	Nature communications	Ario De Marco	14.919
10	Nature communications	Fabio Lapenta	14.919



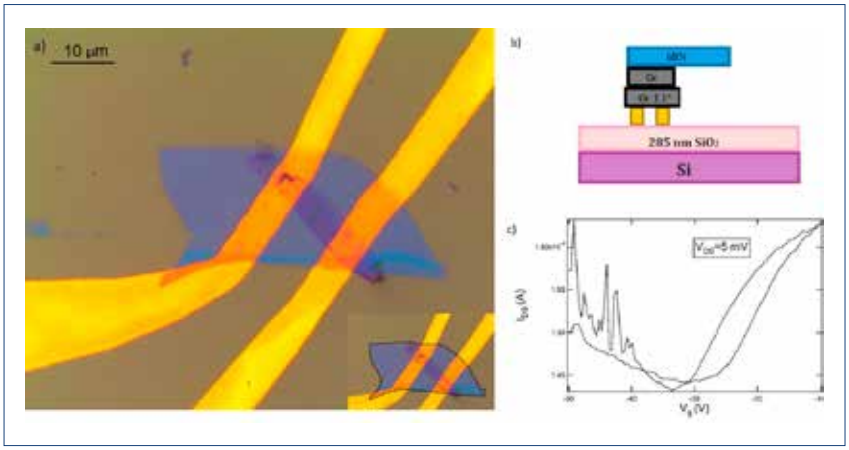
Research Activity

In 2021, the research work at the University of Nova Gorica was organized at four research laboratories and six research centers: Laboratory for Environmental and Life Sciences, Laboratory of Organic Matter Physics, Materials Research Laboratory, Laboratory of Quantum Optics, Center for Astrophysics and Cosmology, Center for Atmospheric Research, Center for Information Technologies and Applied Mathematics, Research Centre for Humanities, Wine Research Centre, Center for Cognitive Science of Language.

Laboratory of Organic Matter Physics

Head: Prof. Dr. Gvido Bratina

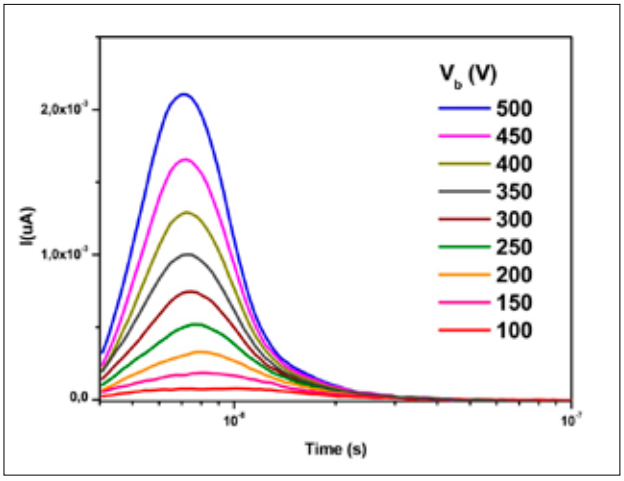
Despite the COVID-19 virus pandemic the activities in Laboratory of Organic Matter Physicsre-sulted in several important experiments, which yielded results in the area of as graphene and transition metal carbides (MXenes) and in the area of charge transport in modified graphene layers. Due to the pandemic the FLAG-ERA management committee extended the MX-OSMOPED project until the end of January 2022 and the project Prospect for six months. The SRA's program P1-005 Biophysics of polymers, membranes, gels, colloids and cells, received additional funding for COVID-related research.



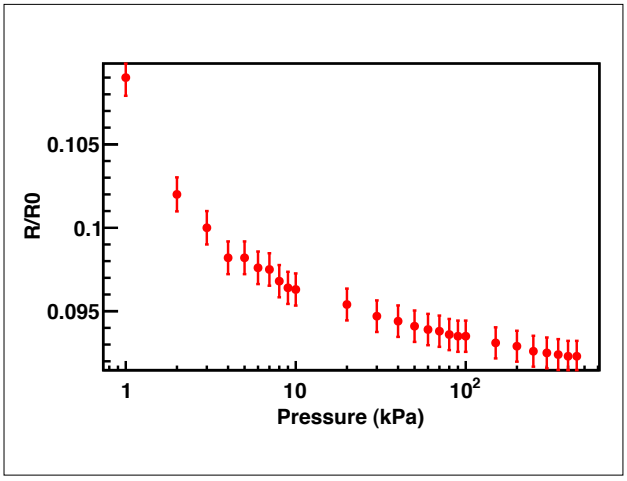
a) An optical microscope image of the heterostructure hBN/Gr/Gr over golden electrodes on SiO2/Si. The zoom-in image showing the two graphene layers with red and green contour lines, the hBN with black contour lines, the Au electrodes in yellow. b) Schematics of the cross-section. c) The current-voltage characteristic curve at drain-source voltage of V_{DS} = 5 mV.

Part of our research activity was dedicated to the preparation and study of two-dimensional heterostructures. These are two or more atomically-thin layered materials, such as graphene (Gr), hexagonal boron nitride (hBN), etc., which are placed on top of each other. The absence of an energy gap in stand-alone graphene is the biggest issue for its use in electronic nano-devices. Studies of the transport properties of graphene in heterostructure are important, as in such a configuration we can modulate the transport properties of graphene and pave the way for the design of materials with the desired properties. The charge transport was monitored in a heterostructure consisting of a graphene bilayer with a rotation-angle of 1.1° (i.e. the magic angle) encapsulated with hBN. The graphene bilayer transistor prepared in this way turns out to be very doped; the Dirac point is located at the negative gate voltage $V_G \approx$-30 V. The mobility of the charge carriers reaches a value of $30 \cdot 10^3$ cm^2/ Vs. The mobility is quite high, comparable to those reported in the literature.

MXenes are a novel family of 2D materials that exhibit exceptional conductive properties and promise great application potential in the field of electronics and energy storage. As part of our laboratory activities, we studied their transport properties of charge carriers using the time-of-flight photoconductivity (TOFP) method. In the production of MXene samples for the TOFP experiment, the surface of the glass substrate was first activated using Argon plasma. A thin layer of MXens was then applied to the activated surface and on top aluminium electrodes were evaporated. The samples were illuminated with short laser pulses of wavelength 270 nm. Different voltages V_b were applied between the



Measurement of the time-of-flight of photoexcited charge carriers in a thin layer of MXenes. The figure shows the measurement of time-dependent current (t) for different voltages V_b.



The responsivity of the piezoresistive pressure sensor based on a mille-feuille-like architecture of reduced graphene oxide (rGO) intercalated by covalently tethered molecular pillars in range of applied pressure from 1 to 450 kPa.

electrodes and the time-dependent current I(t) of the photoexcited charge carriers was measured. The mobility of charge carriers was calculated from these obtained I(t) curves. Such transport measurements showed exceptionally high electron mobility values in MXenes that exceed 200 cm^2/Vs.

We continued our work on the international FLAG-ERA project Prospect. The project focuses on multirange pressure sensors composed of layered polymers blended with graphene flakes. We characterize the electrical transport properties of nanocomposites under applied pressure by an in-house constructed pressure-varying device: current-voltage measurements, four-probe measurements, and time-of-flight photoconductivity measurements. Also, we received funding for the study of charge transport in 2D conjugated polymers. These are a new generation of organic semiconductors designed by employing conjugated linkages such as carbon-carbon bonds and pyrazine units. We are working on the characterization of charge transport in few-layer 2D polyimide and 2D polyamide crystals prepared at the air-water interface, through a reaction between amine and anhydride monomers, which was developed by our partners, the Center for Advancing Electronics Dresden at Technische Universität Dresden.

We have studied the morphology and transport measurements of Black Phosphorous(BP) thin films that were deposited on plasma cleaned 300nm thick SiO_2/Si by spin coating. Two kind of BP samples (0.05mg/ml) were prepared from solution where BP was dispersed in dimethylformamide (DMF) and isopropanol (IPA) respectively. An AFM image (Fig. a)) represents one such large BP flake from BP/DMF solution that also exhibited reasonable output characteristics. Majority of the flakes were upto 2-3 monolayers. We also noted that the density of flakes was higher on SiO_2 for BP dispersed in IPA. In addition, we also optimized the deposition of MXenes flakes on quartz substrates and investigated the morphology systematically under ambient conditions (Fig. b)). Firstly, we used different spin rate to prepare submonolayer coverage on plasma cleaned (either Ar or O_2) quartz. Secondly, flakes were deposited at same spin rate on the substrates that were cleaned in Ar and O_2 plasma respectively. We observed that Ar-plasma cleaned substrates were best suited for our work as it resulted in substrates with reduced surface defects due to plasma etching. Later, we proceed to fabricate large area 2-dimensional(2D) materials such as MoS_2 using gold tape (Au) exfoliation method as it can result in high quality of large area monolayers (~ 1cm) that can be integrated with other 2D layers (graphene, hBN, WS_2) to produce heterostructures and are best suited for electronic and optoelectronic applications [1]. Fig. c) represents an image depicting the Au tapes that was first used to exfoliate MoS_2 from bulk crystal and were transferred onto SiO_2 substrates. Au tape was prepared by depositing 170 nm thick Au on Si in high vacuum.

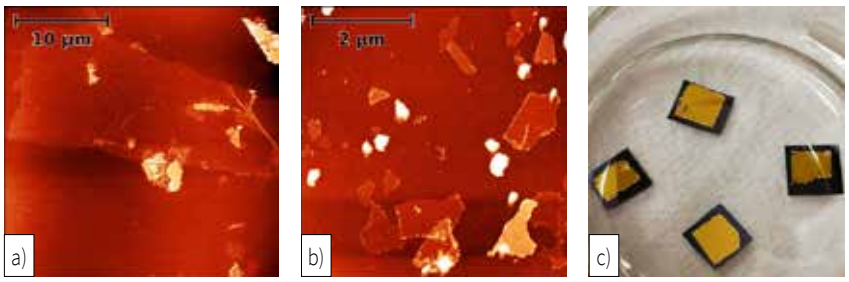
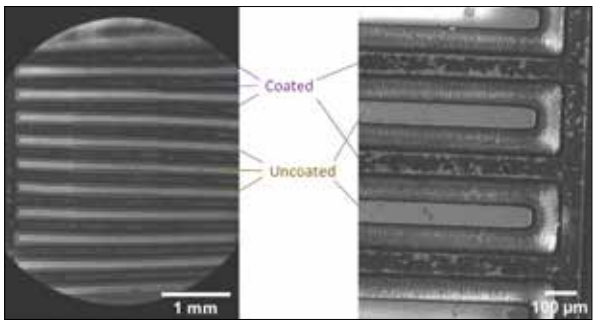


Fig. a) Large Black Phosphorous flake on O_2-plasma cleaned SiO_2 substrate, Fig. b) MXenes flakes on Ar-plasma cleaned quartz substrate, Fig. c) exfoliation of MoS_2 using gold tape method

Materials Research Laboratory

Head: Prof. Dr. Matjaž Valant

Material Research Laboratory was established in 2009 and has evolved into a sizeable research unit with state-of-the-art equipment and diverse expertise of the team members ranging from synthetic and crystal chemistry, functional materials, surface science, theoretical and computational chemistry, etc. We have not only maintained the initial research focus on environmental and electronic materials but also developed it towards new exciting and advanced material systems and processes that include topological insulators, energy conversion and storage, nanostructured photo-catalysts, materials for electrochemical devices, and materials in extreme environments. The joint efforts of the team members again resulted in some exciting discoveries and developments.



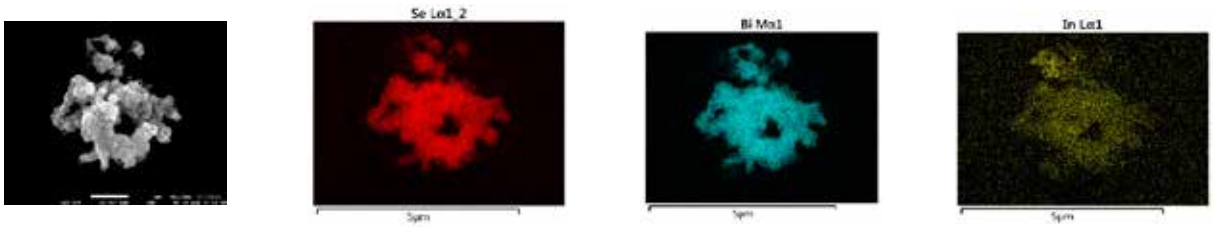
SEM images of a biosensor composed of polymeric materials deposited onto gold-coated interdigitated electrodes at different magnifications.

In the year 2021, we continued the research and development of sensors. Organic thin films are used to modify the metal electrode for biosensing and electrocatalysis applications. Several monomers, as well as covalent organic polymers and frameworks, were synthesized and characterized by electron microscopy, IR spectroscopy, thermal analysis, and powder X-ray diffraction. Electrophoresis was used to deposit thin layers of these materials onto Cu foil and Au-coated interdigitated electrode substrates. We successfully deposited covalent organic frameworks, porous polymers, and porphyrins with different molecular moieties on the metal electrodes via electrophoretic deposition from suspensions. In the field of CO_2 hydrogenation, we began to study the effect of crystallinity and grain boundaries in hydrotalcite-derived metal oxide nano-pallets on the catalyst selectivity and activity properties.

As part of the ARRS postdoctoral project, we are developing an innovative method for detecting the presence of topological states on nanoparticles of a topological insulator. The method is based on UV-VIS spectroscopy of adsorption peaks belonging to plasmon resonance. We developed a hydrothermal method and synthesized doped Bi_2Se_3 nanoparticles. By partially replacing Bi with another ion, we can change the position of the Fermi level and consequently control the properties of the material. We were the first to successfully synthesize nanoparticles doped with In (2-8 at.% In) and Cr (2-12 at.% Cr). In both cases, the results indicate still present topological states, which are observed as adsorption peaks due to localized plasmon resonance.

The 3D materials having topological electronic properties are insulating in their bulk, but conducting on their surface. This class of materials has been demonstrated to be promising for numerous potential applications, such as spin-transfer torque non-volatile memory and field-effect transistors, but also in the field of optoelectronics for helicity-dependent photocurrents and catalysis. Using spin- and angle-resolved spectroscopy, we demonstrated the topological electronic properties of the quasi binary Bi_2Se_3- Bi_2S_3 system. The measured band structures showed that within the solid solution interval 0-22 mol% Bi_2S_3 crystals, having a rhombohedral crystal structure, possess the spin-polarized topological surface states.

Under the scope of the bilateral project with the Vinča Institute from Belgrade, we are developing new catalytically active hybrid materials. These will combine topological insulators and dihalides with transition elements. We were hosting a doctoral student from Belgrade. Together, we synthesized new flat MoS_2 nanoparticles. From them, we prepared thin films, and with MoS_2 and Bi_2Se_3



EDX analysis of nanoparticles proving the content of Bi, Se, and In.

coupling also composite thin films. All materials were characterized by powder-XRD and SEM. Films electrochemical and catalytic properties are being analyzed in Belgrade.

In the field of materials for electrochemical devices is the development of low-cost and stable counter electrode material with excellent catalytic activity crucial for dye-sensitized solar cells (DSSCs) application. We used iron phosphide as counter electrodes (CE) in DSSCs with an I^-/I_3^--based electrolyte. With a simple and cost-effective solvothermal synthesis we generated Fe_2P phase at 300 °C and FeP phase at 350 °C. The obtained catalysts were deposited onto fluorine-doped SnO_2 substrates and heat-treated under argon. The overall solar-to-current conversion efficiency of the solar cells assembled with Fe_2P material reached ~89% of the costly Pt-CE device.

In the past year, we developed a simple chemical method for the production of reduced TiO_{2-x} nanotubes via a one-step anodization procedure by controlling the duration and post-annealing time in the air. The partially reduced surface exhibits enhanced visible light absorption. We found that the number of surface oxygen vacancies decreases the surface recombination centers, enhances the electrical conductivity, and improves the charge transportation. For the first time, reduced TiO_{2-x} photoanode was applied for photo-electrocatalytic degradation of textile dyes where the oxidative species include in situ generated reactive chlorine species.

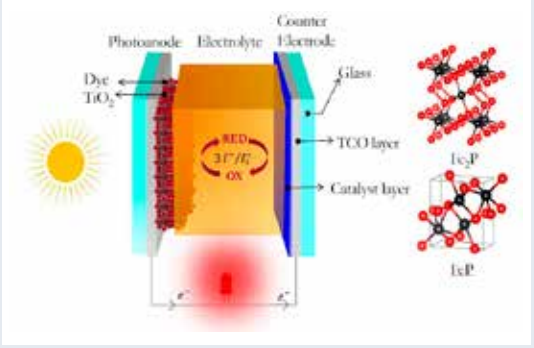
We continued the collaboration with prof. Gavioli's group (I-LAMP @ Catholic University, Brescia, Italy) on the topic of Ag/TiO_2 nanogranular thin films. The deposited films, by supersonic cluster beam sources on different substrates, were studied for their photochromic, optical, and antimicrobial properties. The studied evolution of the nanostructure upon heating resulted in an observation of a morphological transition above 600°C and a completely different behavior depending on the substrate (sapphire, fused silica).

In collaboration with CEA (France) and CNR-IOM (Italy) we studied by ab-initio calculations: i) the paramagnetic centers in alkali phosphate glasses as well as in silicon-based materials, ii) the point defects in silica, in the context of O_2-loading of optical fibers. In particular, we show that molecular oxygen can passivate a GLPC center by forming a dioxagermirane bulk defect.

We have studied the finite-size effect of the biopolymer conformations using spin models of statistical mechanics and the reexamination of the protein folding depending on chain length and study of the sequence effects on the melting of DNAs of finite sizes. Altogether, the research is oriented towards the theoretical support for biotechnology, aiming to explain such phenomena as DNA - nanotube hybridization in biosensors and all the situations, when the limited size of a biopolymer plays an important role.

In the second part of 2021, we expanded our set of tools with the life cycle assessment software (LCA). It allows us to assess the environmental aspects of a product or process over its life cycle. The main objective is to compare and improve products or technological processes. The first ongoing application of this tool is the evaluation of new technologies developed in our laboratory.

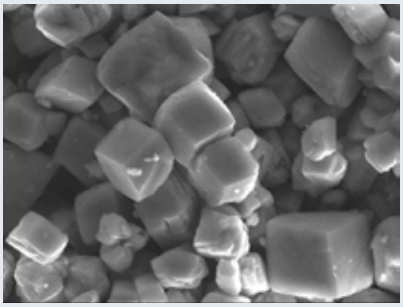
Within the framework of Nanoregion (Interreg ITA-SLO strategic project), our laboratory is the coordinator of Work Package 3.3



Scheme of a dye-sensitized solar cell (DSSC) device made of iron phosphide electrode.

"Proof-of-Concept". The main activity covers the demonstrative experiments proposed by the companies to verify whether the nanotechnology approach could solve their technological problems. The project consortium includes 5 high-ranked laboratories from Italy and Slovenia. We were actively involved in the experiments in collaboration with companies from Italy (e.g. NOXOR SOKEM group, Delka s.r.l.) and Slovenia (e.g. Polident d.o.o., Domel d.o.o.).

With the company ECUBES, we are continuing the applied project for the production of green hydrogen based on iron thermochemical cycles driven by excess industrial heat. The long-term cooperation with Seven refractories d.o.o. from Divača is going on. As part of the input quality control of bitumen, we have already performed for them more than 160 sample analyzes.



Scanning electron microscop image of cubic iron oxide synthesized by thermal decomposition of iron chloride in a laboratory reactor as part of industrial research projects on thermochemical cycles for hydrogen production.

Laboratory for Environmental and Life Sciences

Head: Doc. Dr. Iain Robert White

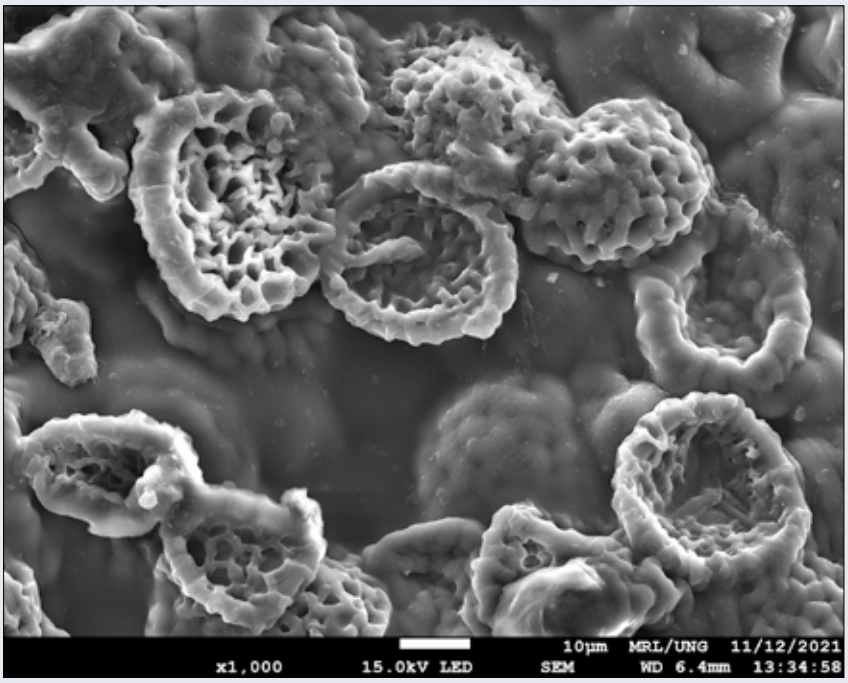
The Laboratory for Environmental and Life Sciences (LELS) provides the grounds for intensive research collaboration among analytical chemists, environmental chemists and technologists, biochemists, molecular biologists, toxicologists and material scientists. LELS focuses on developing of novel and unique ultrasensitive laser-based analytical techniques, study of the fate, transport and transformations of pollutants in atmosphere, terrestrial and aquatic environments, food quality and safety, characterization of novel materials, biomedical diagnostic tools, as well as identification of recombinant antibodies specific for tumour biomarkers. The laboratory has extensive collaboration with research groups from all over the world.

Experiments studying the effect of microplastics on plant growth.

Research activity

In the field of plant ecotoxicology, we have been studying how microplastics affect sewage sludge toxicity, following acute and chronic exposure. Acute exposure is assessed based on germinability, root length and biomass production; whilst chronic exposure is evaluated based on plant physiological responses that are activated to counteract toxins. We have extended this to study how effective microorganisms may act as detoxifying agents. To study the effects of pollution on human health, we have continued to develop new methods for the detection of biomarkers of exposure to air pollution. This includes the development and optimization of mass spectrometry-based methods for the analysis of pollution biomarkers alongside the chemical characterization of atmospheric pollution itself. Methods are being designed to explore the compounds in exhaled breath which can be applied to studies in environmental metabolomics as well as biomarker discovery for disease diagnosis.

For our work in ultrasensitive laser-based analytical techniques, we built an experimental setup for photothermal measurements that combines beam deflection spectrometry (BDS) with photothermal radiometry, enabling both measurements simultaneously. The BDS technique was applied to environmental research using samplers that operated on the basis of diffusion gradients in thin films to determine the distribution of iron species in arctic ice. This technique proved very sensitive and confirmed that iron in sea ice occurs mainly in the form of Fe^{2+}. BDS was also used for non-destructive and contactless determination of propertis in biocomposite materials that contain cellulose, chitosan and sporopollenin, for the treatment of wounds. We found that sporopollenin-free biocomposites have a flatter surface with roughness amplitude at the nm level and periodicity at the µm level. After deposition of sporopollenin, surface roughness significantly increased. We also found that biocomposite materials had low values of thermal properties, which were further reduced by the addition of sporopollenin. In other studies, we investigated the mechanism of the photocatalytic degradation of RB19 dye in the presence of TiO_2 or TiO_2 modified with Cu and/or Z. This can take place by photosensitization or direct photocatalysis, and by using thermal lens spectrometry (TLS), we were the first to distinguish between the two mechanisms. At the low RB19 concentrations used, measurements were only made possible with the TLS technique.



SEM image of biocomposite material with 75% cellulose and 25% chitosan, at 30 % sporopollenin.

In the field of nanobody research, work proceeded in three areas: i) development of reagents for SARS-CoV-2 detection (production of the antigen, selection of specific binders, their production and initial characterization); ii) optimization of rational design for improving nanobody characteristics (analysis of humanized mutations, modification of loop flexibility); iii) implementation of molecular biology tools for studying the physiology of forest plants (isolation of protoplasts from poplar leaves, direct panning on protoplasts, identification of potential biomarkers). Following the completion of several long-term studies, we demonstrated that it was possible to obtain a physiological effect by impairing the p53:Twist1 interaction with an intrabody, that yeast and phage display combined panning which resulted in convergent selection results, that controlled nanobody aggregates can be useful reagents and that protein quality control is crucial to achieve data reproducibility. Finally, we collected further promising data relative to a new library of binders based on the alternative scaffold of adhirons.

In virology, we continued to explore the role of APOBEC3 (A3) proteins in HPV oncogenesis. We analysed the expression profile of patients with head and neck cancer (HNSCC) from The Cancer Genome Atlas (TCGA). Preliminary results showed that genes whose expression correlated with A3A in HNSCC patients appeared to be generally down-regulated, while genes correlating with A3B were over-expressed. Gene ontology analysis revealed that A3A-correlated genes were associated with epidermal differentiation and innate immunity, whereas A3B-correlated genes were linked to cell cycle, chromosome organisation, DNA replication, and DNA repair. These results will be verified in a model system of A3A- and A3B-depleted HPV-positive keratinocytes.

Laboratory of Quantum Optics

Head: Prof. Dr. Giovanni De Ninno

The Laboratory of Quantum Optics (LKO) is focused on investigating ultrafast response of electrons in semiconductors, topological insulators, superconductors, and metal/organic interfaces for use in electronics, spintronics, and energy harvesting. Furthermore, LKO uses X-rays at synchrotron radiation facilities for characterization of atomic and molecular structure of new functional nano-materials, and biological and environmental samples. The lab members actively participate in the development of the FERMI free-electron laser, one of the most powerful laser sources worldwide, which is opening new opportunities for exploring the structure and non-equilibrium states of condensed, soft and low-density matter.

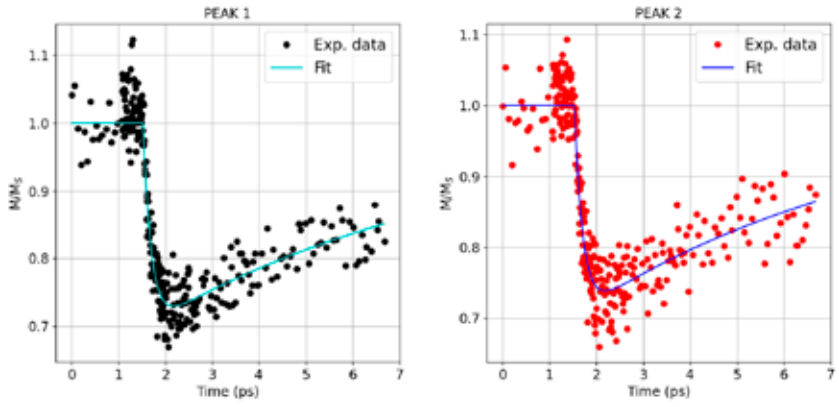


Figure 1- Normalized magnetic asymmetry signal recorded for Fe(left) and Ni(right) for Permalloy sample at 20mJ/cm2 pump fluence. The curves were fitted using a double exponential function to extract the time constants for the fast decay and the slow recovery of the magnetic signal.

In year 2021 the laboratory activities of LKO were mainly focused on the following topics of research:

Experiments on of the recently installed Magneto-optic Kerr effect (MOKE) setup, within the CITIUS light source. Since its installation in 2020, the set-up has opened new possibilities for experiments for internal as well as external users. After successfully measuring the Permalloy sample in the last year, we switched to a Fe coated by MnAs set of samples. This material is subjected to a ferromagnetic/paramagnetic transition in the range of 288-293 K (Figure 1), and the MOKE set-up can allow to examine this transition with great detail, together with the magnetization dynamics of both Mn and Fe. Due to high level of damage on the sample, pump-probe measurements were discarded in favour of a static approach. Hysteresis loops were therefore measured in static mode and clearly seen (Figure 2).

Angle- and time-resolved photoemission spectroscopy (tr-ARPES) were performed to study TaS_2, in its 1T (trigonal) – phase. This sample exhibits a commensurate charge density wave (C-CDW) phase and a Mott insulating state below 180K (Transition Temperature). Tr-ARPES was mandatory to study the metastable state in this material, which can be obtained applying on the sample an optical laser pulse. All the measurements were performed with the material in its insulating phase as the switching to a long-lived state is evident in the insulating state of the system. Pump-probe experiments were performed at 100K and for a fixed pump fluence along different high-symmetry directions of the hexagonal Brillouin zone (BZ) of TaS_2, with both low and high pump fluences. At a given sample temperature, the maximum T of the hot electron distribution could be controlled by varying the incident pump fluence on the sample and exiting from the crossover region. For two different sample temperatures, fluence dependent experiments were performed to confirm the observed dependence of time scales on fluence, both inside and outside the crossover region. Polarisation (horizontal) of the pump was fixed and probe beams was chosen such that we could probe the occupied electronic states at the BZ centre (gamma-point).

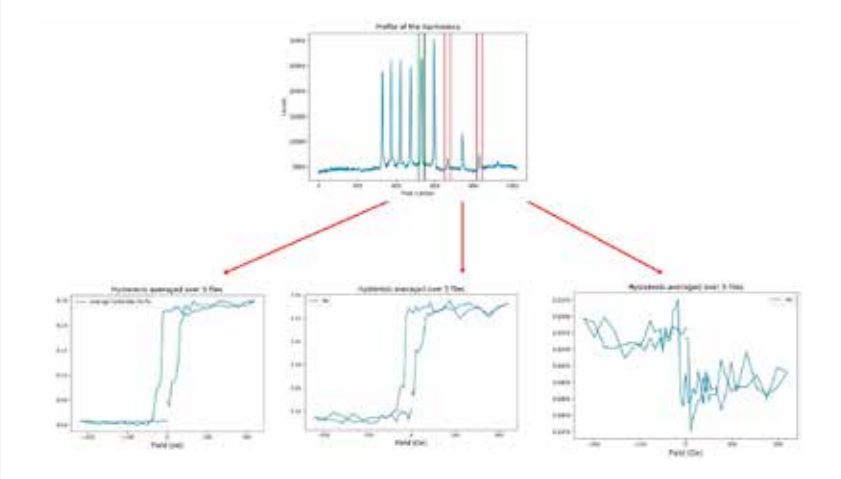


Figure 2 - The hysteresis measurements on Fe doped MnAs sample, with the harmonics recorded for the measurements. The peak selected on the left corresponds to Fe absorption edge and the peak on the right is for Mn. The middle peak is overlapped with both absorption edges of Fe and Mn.

For characterization of atomic structure of different new functional nano-materials and biological and environmental samples with X-ray absorption spectroscopy (XAS) methods micro-XANES and EXAFS we obtained and realized in 2021 two international research projects at two synchrotron radiation laboratories (Elettra, Trieste; PETRA III at DESY, Hamburg), in collaboration with research partners from Institute Jožef Stefan, National Institute of Chemistry, University of Ljubljana and University of Copenhagen. With a combination of X-ray spectroscopy and sub-micron X-ray microscopy we analysed and explained mechanisms of metal cations uptake, accumulation, and detoxification in different nutrition plants, that grow in in high salinity conditions. The results are important for optimisation of food production procedures in extreme environmental conditions. We performed operando RIXS and XAS analysis of different cathodes materials for metal-organic batteries with high energy density to elucidate the dynamics of electrochemical processes during battery operation. We used XANES and EXAFS analysis of different (photo)catalytic materials for water cleaning, and catalysts for different large-scale technological process to reveal the catalytic mechanisms in these materials. The results are crucial for optimization of catalyst performance. In 2021 we published research results in ten scientific articles in international journals with high impact factor.

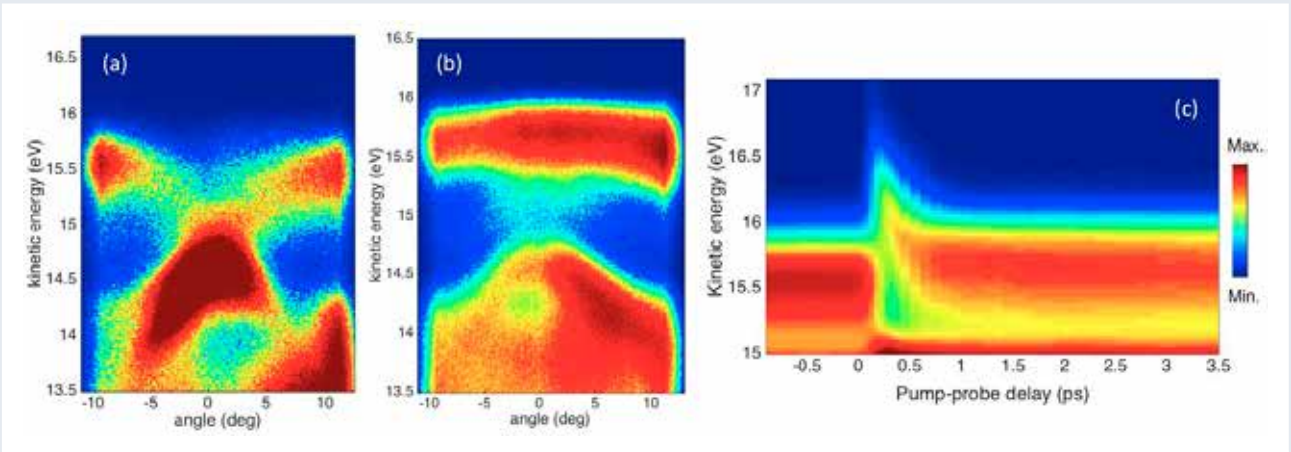


Figure 3 - ARPES spectrum along Γ- K direction using (a) vertical and (b) horizontal probe pulses at 100K; (c) angle-integrated trARPES spectrum along Γ- K at a high pump fluence

Center for Astrophysics and Cosmology

Head: Prof. Dr. Samo Stanič

Research activities of the center are oriented towards obtaining a more complete, unified picture of the Universe, its constituents, their interactions and high-energy processes. Combining the information carried by different cosmic messengers: photons, charged cosmic particles, neutrinos and gravitational waves, is the key for achieving this objective. Our primary goal is to investigate phenomena related to extreme energies in nature and push forward the knowledge frontier. With our active participation in leading international research collaborations in this field (observatories Pierre Auger, Cherenkov Telescope Array and Vera C. Rubin, Fermi-LAT, Gaia, Liverpool telescope and ENGRAVE collaborations) we contribute to cutting-edge science in searches for extremely energetic astrophysical sources, transient astrophysical phenomena, dark matter and possible mechanisms responsible for the matter – anti-matter asymmetry in the Universe. The research is supported by both national and international grants, most notably the Multi-messenger astrophysics research program, funded by the Slovenian research agency.

The upgraded surface detector stations of the Pierre Auger observatory with a plastic scintillator on top, providing composition sensitivity of primary particles. An additional antenna will enhance composition sensitivity at large zenith angles.

Pierre Auger Collaboration

The research related to ultra-high energy cosmic particles is conducted with the world's largest cosmic ray detector, the Pierre Auger Observatory in Argentina. Huge showers of secondary particles, created upon collisions with nuclei of gases in the Earth's atmosphere, are used to identify the properties of incident primary cosmic particles. The observatory combines data from a grid of 1660 surface water Cherenkov detectors with data from four fluorescence telescope sites, observing excited nitrogen molecules along the shower path. Auger results support the hypothesis that extremely energetic cosmic particles accelerate at extragalactic astrophysical sites and that their flux is suppressed due to interactions with cosmic microwave background. In 2021, our experimental focus was on the application of machine learning techniques for the classification of cosmic rays and the implementation of a real-time ultra-high energy photon search with the surface detector of the observatory. As shifters, we also contributed to successful operation of the observatory's fluorescent and surface detector.

Cherenkov Telescope Array Consortium

Studies of very high-energy cosmic gamma rays provide crucial information on non-thermal Universe. Contrary to charged cosmic particles, photons are not affected by magnetic fields, so they can point back to their production sites. Our research was coordinated within the Cherenkov Telescope Array (CTA) consortium, which prepares instrumentation, observation strategies and software for the construction of a new generation observatory for the detection of high energy photons with energies between 20 GeV and 100 TeV. In 2021, we participated in

development and extensive testing of the CTA Pathfinder Raman lidar system for atmospheric characterization at the northern CTA observatory site in La Palma, identification procedures for ultra-high energy cosmic ray sources amongst active galactic nuclei (U. of Innsbruck) and sensitivity studies for the search of dark matter in the Galactic center and for galactic and extra-galactic astrophysical sources.

Fermi Large Area Telescope Collaboration

Fermi Large Area Telescope (LAT) is the main detector onboard the Fermi Gamma ray Space Telescope, leading space laboratory for the high energy gamma ray research since 2008. In the energy range between 20 MeV and more than 300 GeV, Fermi LAT so far discovered more than 5000 gamma ray sources, which is more than an order of magnitude more than what was previously known. Unexpectedly, it also discovered a large bubble-like structure stemming from the center of the Milky Way above and below the Galactic plane, called the Fermi bubbles, that are almost as tall as half of the whole Galactic disk radius. It also provided strong constraints on the nature of dark matter particles by investigating their decay or annihilation signatures in astrophysical objects. Starting from 2019, the results of Fermi LAT experiments provided crucial information for a series of multi-messenger discoveries, in particular related to the origin of ultra-high energy neutrinos and high energy emissions from the gamma ray bursts.

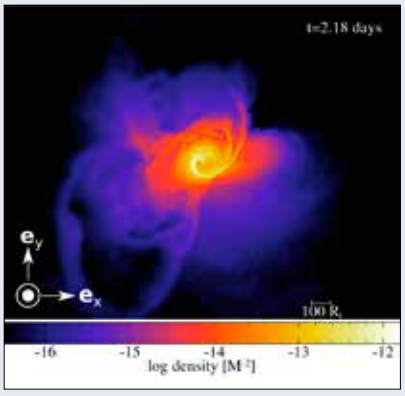
Astrophysical transients

Our team is active in international collaborations studying astrophysical transient sources, which include gamma ray bursts, gravitational wave events, tidal disruption events and supernovae. In 2021, most of our activities were related to the NSF Vera C. Rubin Observatory, which will provide the most extensive sky survey so far and is expected to detect numerous transient events. In particular, we estimated the expectations for Rubin Observatory of detecting tidal disruption events and strongly lensed supernovae. By using explosions of core-collapse supernovae, we posed limits on a dark mater candidate, the so-called axion-like particles. We also successfully concluded the Horizon 2020 project HERMES-SP aimed at developing a concept for probing X-ray temporal emission of bright high-energy transients such as Gamma-Ray Bursts using detectors on a constellation of nano-satellites in low Earth orbit.

Commissioning of the CTA-N Raman Lidar Pathfinder, a prototype device for atmospheric characterization above Cherenkov Telescope Array, at its northern site at the Observatorio del Roque de los Muchachos on the Canary island of La Palma.

Rubin Observatory summit in September 2021, Cerro Pachón, Chile.

Type Ia supernova SN 2021aefx in a nearby galaxy NGC 1566 discovered on Nov 11 2021 and observed with GoChile on Nov 23 2021.



Simulation of a tidal disruption event when a star approaches sufficiently close to a super -massive black hole and is pulled apart by the black hole's tidal force.

Galaxy cluster Abell 370 acting as a gravitational lens. The arcs and streaks in the picture are stretched images of background galaxies.

Center for atmospheric research

Head: Prof. Dr. Griša Močnik

Measurements of aerosols in a Saharan dust layer over Cape Verde.

The Center for Atmospheric Research (CAR) focuses on the study of physical processes in the atmosphere using remote sensing and in-situ measurements. Modeling of atmospheric phenomena adds to these efforts. Our research activities include the investigation of aerosol sources, their dispersion in the atmosphere and vertical profiles. We investigate atmospheric structures, how aerosols interact with the clouds, and use these data for validation of satellite measurements. The key question is how aerosols influence the atmospheric optical properties though scattering and absorption of solar radiation. Scattering cools the atmosphere, while absorption warms it – aerosol black carbon is the second most important climate forcer.

The Center is located at the University of Nova Gorica Ajdovščina site. It runs the atmospheric observatory at Otlica and is involved in the activities of the European Space Agency, the Pierre Auger Collaboration, the Cherenkov Telescope Array Observatory and field campaigns around the globe.

Airborne measurements – inlets on the airplane fuselage (left) and instrumental payload (right).

Lidar research

Lidar measures the laser light backscattered on aerosols. With lidar measurements we monitor regional aerosol transport and local processes in the planetary boundary layer. The Center for Atmospheric Research currently uses two lidar systems: the mobile elastic lidar with the capability of three-dimensional scanning of the atmosphere, and the stationary polarization Raman lidar, in operation at the CRA laboratory in Ajdovščina enabling aerosol characterization in terms of size and morphology. We have been using concurrent lidar and *in-situ* measurements to investigate optical and physical aerosol properties and the dynamics of their spatial distribution, separating different sources of air pollution. We published the Doppler lidar measurement of Bora wind and model comparison (Bervida et al., 2021).

In-situ research

We have combined our lidar and in-situ measurements during the calibration and validation of the Aeolus satellite mission above Cape Verde islands. The Aeolus satellite of the European Space Agency is carrying a UV Doppler lidar ALADIN, which was validated with lidar measurements from the ground and in-situ aerosol measurements. We have developed a new inlet and the instrumentation payload for the light aircraft flown by Matevž Lenarčič in close cooperation with the industrial partners, for measurements of aerosol absorption and scattering, and size distributions. Aerosol absorption in different size fractions will be used to differentiate between fine and coarse aerosol absorption – soot and Saharan dust (an extension of Drinovec et al., 2020). These data are being analyzed to perform optical closure between remote and in-situ measurements of aerosol optical properties. Preliminary results were presented at international conferences and more in-depth analysis is ongoing.

We reported on airplane measurements in the Western Mediterranean (Yus et al., 2021a) and on further miniaturization of measurement platforms and have performed measurements with unmanned aerial vehicles (Kezoudi et al., 2021). The atmospheric heating rate measurements were analyzed with high time resolution using a novel approach examining the effect of clouds (Ferrero et al., 2021a), and taking into account the filter-photometer systematic biases (Ferrero et al., 2021b). We were involved in analysis of these systematic biases in remote measurement locations with long data series (Yus et al., 2021b), and quality control of aerosol measurements (Bernardoni et al., 2021; Cuesta et al., 2021). The source apportionment activities were conducted in Slovenia (Kanal ob Soči), Poland (Tobler et al., 2021), and New Delhi region, India (Lalchandani et al., 2021). We continued our work on new measurement techniques of aerosol light absorption (Drinovec et al., 2022).

Applied research

The observatory at Otlica above Ajdovščina (965 m above sea level) is a node in the national grid of meteorological and environmental stations, administered by the Slovenian Environment Agency, and a member of the European Virtual Alpine Observatory, with continuous monitoring of temperature, humidity, wind speed and direction, ozone concentration and solar irradiation, all available on line at the Agency's and Center's web portals. The observatory is involved in numerous dedicated international collaborations.

Wine Research Centre

Head: Doc. Dr. Melita Sternad Lemut

Wine Research Centre (CRV) is uniting the researchers and multidisciplinary research activities that are related to the fields of viticulture and enology (plant physiology, biochemistry and pathology; viticulture and winemaking technologies; sustainable agriculture; fruits, grape and wine analytics; microbiology and molecular biology of yeasts, grapes and wine and other fermented drinks; biotechnology). We operate in the modern equipped laboratories in Lanthieri Mansion, Vipava and in the experimental fields, including the University's own vineyard. Our primary studied plant is grapevine (with the processing from grapes to wine) but we also study some fruit plants, olives and apple wine (cider). We deal with both applicative research, addressing current problems in the field, as well as expert, more future-oriented research.

Pot experiment in the frame of Slovenia-Austria bilateral project »Exploring the grapevine metabolic plasticity under drought".

In the year 2021, Wine Research Centre (WRC) continued its work on ARRS applied research project entitled "The impact of heavy metals on the ageing of white wines." An extensive development of methods for wine analysis (volatiles and non-volatiles) was performed. Survey of 2-aminoacetophenone (2AAP) in commercial wines was done and the influence of different metal ions and antioxidant compounds on wine volatiles (2AAP, esters and terpenes) were investigated.

As part of another applied research project (ARRS) entitled "Improvement of Slovenian white wines through better expression of varietal aroma", several small-scale vinifications with 5 different native yeasts and 3 commercial yeasts were performed. Native yeasts were selected based on the previous results from chemical and sensory analyses of experimental wines. These wine samples were obtained by micro-fermentation experiment in which 40 different yeasts were tested.

For the Slovenian-Austrian bilateral project "Exploring the grapevine metabolic plasticity under drought", in 2021 an experimental vineyard with a modern equipment for studying different regimes of water constraint under different climate conditions was set up in Vipava valley. Throughout the whole growing season, the grapevine photosynthetic responses and the parameters of water status were monitored.

We continued the work on international project NFM "Uncorking rural heritage: indigenous production of fermented beverages for local cultural and environmental sustainability", which is coordinated by WRC/UNG and funded by Iceland, Liechtenstein and Norway through EEA and Norway Grants Fund for Regional Cooperation. A gas chromatograph (GCMS) in combination with various methods of sampling and sample preparation (SPME, direct incision, thermal desorption) was purchased with the help of 30% of co-financing from ARRS. We intensively started to develop methods on GCMS in order to determine the typical aromatic properties of wines and ciders. In 2021, we also launched the project's e-platform winecider.net , which is used for knowledge transfer on local wines, ciders and on sustainable and smart grape growing. Seminar "Cultural heritage sustains rural development" and webinar "Uncorking wine and cider typicality" with press conference and virtual stand during Regional Funds Week 2021 were also organised in the frame of this project.

Sampling of copper-contaminated vineyard soils after a 6-month simulation of climate change to determine chemical and microbiological changes in the soil.

Cider fermentation experiment with different nitrogen (YAN) concentrations.

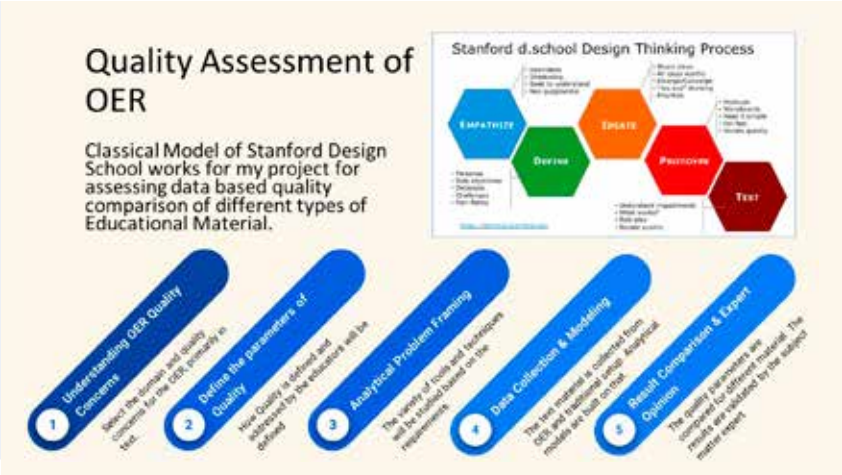
During mid 2021, one of our CRV members conducted a post-doc exchange in Udine (Italy), co-financed by the International Organisation of Vine and Wine (OIV). She studied the risk level related to the rising atmospheric temperatures in vineyard soils, contaminated with heavy metals. After microbiological analyses done in our laboratories, she performed a set of physical-chemical analyses of the soil in Udine. Work continues with the ARRS postdoctoral project "Does the presence of microplastic particles change the dynamics of copper in contaminated vineyard soils"? As part of this project, the microplastic particles from PVC and PP vineyard cords were prepared and the cords from vineyards after one or several years of usage were collected. Furthermore, pedologically different soils (neutral soils of the Vipava hills and acid soils from Styria) were sampled and microplastic particles were inculcated into the soil, to start a 6-month incubation.

In 2021, two research projects (EnViRoS project and the ARRS bilateral project Israel-Slovenia) were completed and their results were presented during workshop "A multidisciplinary approach to the treatment and application of waste water to agriculture", that was organised online on June 21st 2021 in the frame of the ARRS bilateral project Israel-Slovenia.

Center for Information Technologies and Applied Mathematics

Acting Head: Prof. Dr. Irina Elena Cristea

The Centre for Information Technologies and Applied Mathematics is an interdisciplinary dynamic research group, developing its activities at the intersection of computer science and informatics, mathematics, systems theory, and control systems technology. It focusses on novel approaches to model and solve a wide range of problems, from industrial engineering practice to education, biomedicine, theoretical and applied mathematics. Methods for intelligent data analysis are being developed and applied to the domains where IT support is required for knowledge discovery aiming at understanding complex diseases, phenomena in the environment, or problem solving in various complex domains, especially in engineering. In the mathematical area, we contribute with new studies in hypercompositional and ordered algebra, as well as in modelling.



Design approach for quality assessment of OER for Open Education.

In 2021 the Centre employed seven researchers, working on different topics in the framework of knowledge discovery, open education, discrete mathematics, modelling, Gaussian-process models, and renewable energy sources.

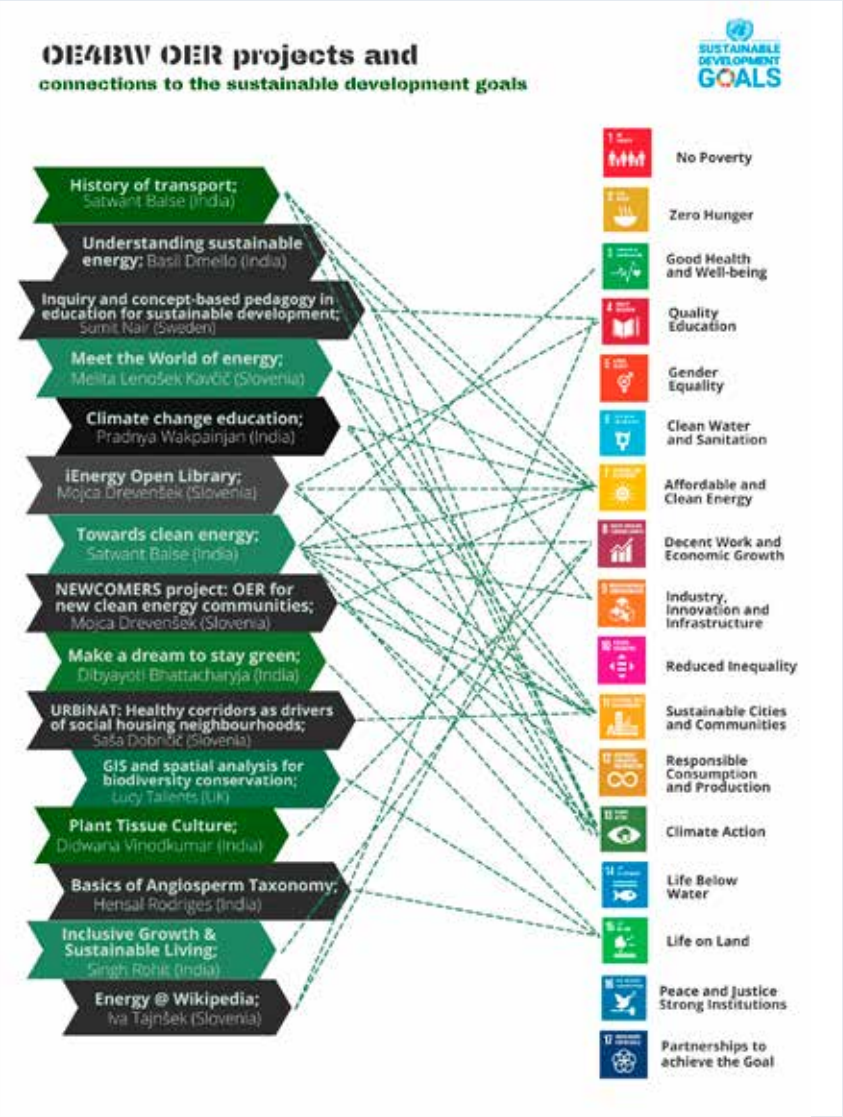
In the context of knowledge discovery, we continued with our activities supporting open education and healthcare research.

We broadened the scope of target open education applications to cover also management processes, such as identifying knowledge gaps, quality assessment and shaping strategic policies. We aimed at enhancing cooperative creation of Open Educational Resources (OER) for implementation of Sustainable Development Goals (SDGs). Projects developed in the SDG7 related hubs of the OE4BW program, devoted to energy, biodiversity and sustainable living were studied with a focus on interconnections with other SDGs and processes contributing to closing knowledge gaps (Figure 1). Resulting guidelines were generalized to provide further increase of OER's contribution to the achievement of SDGs, with a journal paper to be published. We identified open issues to be solved by applications of data mining. One of the lab members attended an international workshop where he presented a proposal for a new portal for the quality assessment of OER (Figure 2). With colleagues from Germany and Brazil we are preparing a publication on a novel approach to the development of supportive policies for OER that was tested

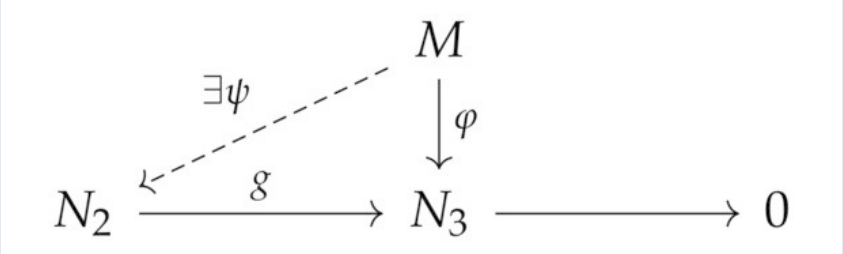
within the Leadership in Open Education Master's program and has proved to be a powerful mechanism to analyze and create a roadmap for OER for organizations and groups.

New results on the usage of analytics and technology in managing COVID-19, and a monograph about the usage of Artificial Intelligence for automated decision-making by the Government have been published.

In the framework of the theory of hypercompositional algebra, we extended several important results from classical algebra, by defining and studying links between HX-groups and hypergroups, regular parameter elements and regular local hyperrings, normal injectivity and projectivity of Krasner hypermodules (Figure 3), as well as composition vector spaces as a new type of tri-operational algebras. We continued also with the study of the reducibility property of hypercompositional structures, investigating it for several types of general hyperrings. New studies have been also conducted on ordered algebras, by generalizing the linear binary code generated by an ordered algebraic structure such as BL-algebra or BCK-algebra. We proved that the ordered algebra and its related generated code have the same structure. Moreover, we introduced the concept of interior in ordered algebras and studied the interior BCI/BCK-algebra and the doubly framed soft hyper BCK-algebra.



Projects on Energy, Biodiversity and Sustainable Living, and their connections to Sustainable Development Goals.



Composition structure of a diagram for a normal projective hypermodule M.

We have continued our studies on applied mathematics and modelling, by proposing a game theoretical model of the landscape theory, with new ideas related to the Nash and Pareto optimal landscape equilibrium. Another innovative model to explore the predictability of a BTW isotropic sandpile on a self-similar lattice was published, by introducing an algorithm which predicts the occurence of target events when the stress in the system crosses a critical level.

Research activities were pursued in the direction of the method for simulation of approximated autoregressive models, utilisation of graphic processing units for the computational acceleration of these models' simulation and on hybrid modelling composed of theoretical models and Gaussian-process models. The methods were utilised for the modelling of interdependent atmospheric variables and for the modelling of wastewater treatment plants.

In the area of circular economy and efficient use of energy and renewable energy resources, we continued the research and expert work in various projects: LIFE CARE4CLIMATE, »Analiza ukrepa iz Uredbe o upravljanju z energijo v javnem sektorju ter predlog za nadgradnjo in izboljšavo izvajanja ukrepa«, the CA EPBD initiative, as well as collaboration with the Slovenian ministries on the development/implementation of activities and applications. We participated in the implementation of expert consulting services in the field of energy performance certificates for buildings. We managed the content in the fields of experts training and the development and implementation of the ENERKNJIG web application for energy accounting of public sector buildings.

Research Centre for Humanities

Head: Prof. Dr. Katja Mihurko Poniž

The Research Center for Humanities works in the fields of literary sciences, cultural history, women studies, visual culture, intercultural studies and digital humanities. The common basis of research areas and their research methodologies is the focus on exploring forms of complex living conditions and human creativity through a historical perspective. The research projects explore past, modern and contemporary communication systems, forms of coexistence and displacement, human creativity and forms of solidarity. All these phenomena are measured, valued and interpreted trough the optic of current technological challenge and planetary ecological crisis. Research approaches complement each other - comparative research into literary media, for example, provides reflection on the complexity of interpersonal communication throughout history, while cultural history expands historical research into questions of modern and contemporary cultural practice.

In 2021, the Research Center for the Humanities acquired two new colleagues and two new colleagues working in the field of literary sciences (Dr. Ivana Zajc, Doc. Dr. Kristina Pranjić), Cultural Studies (Dr. Primož Mlačnik) and new media (Prof. Dr. Peter Purg). The Research Center for the Humanities has acquired three new projects funded by the Research Agency of the Republic of Slovenia: Transformations of Intimacy in the Literary Discourse of Slovene Modernism (project leader: Prof. Dr. Katja Mihurko Poniž), Digital Preservation of New Media Art (project leader: Prof. Dr. Aleš Vaupotič) Archeology of Identity Photography (project leader: Dr. Eszter Polonyi). We also continued our research in the research group Historical Interpretations of the 20th Century (head of the program group: Prof. Dr. Oto Luthar, ZRC SAZU).

Dr. Primož Mlačnik at the round table The phenomenon of Slovenian crime fiction.

In 2021, researchers from the Research Center for the Humanities attended numerous international conferences and published several scientific papers.

Prof. Dr. Katja Mihurko Poniž participated in the conference The Sun and Her Planets: George Sand's Reception in Central and Eastern Europe with a paper on the Slovenian reception of George Sand, published an original scientific article in the field of digital humanities and three scientific papers on Zofka Kveder. She has also published a scientific monograph From Her Own Voice to Her Own Room: Women Writers from Beginnings to Modernism.

Prof. Dr. Ana Toroš published three original scientific articles in the field of minority literature (Annales, Treatises and Documents) in 2021. She participated in two international scientific conferences (ICM, Gorizia and Challenges of Slavic Studies in the 21st Century, Maribor) and in the international symposium Obdobja. In April she gave an invited lecture at the University of Udine.

Prof. Dr. Peter Purg published an original scientific article »Establishing ecosystems for disruptive innovation by cross-fertilizing entrepreneurship and the arts« in the renowned Creative Industries Journal (Taylor and Francis), in 2021 he lead several round tables and presented Art-Science and investigative arts oriented performance lectures at international venues across Europe.

Doc. Dr. Kristina Pranjić presented her paper on the topic of the Yugoslav avant-garde at the EAM conference (European Network for Avant-Garde and Modernism Studies, University of Leuven). She has presented her scientific findings in several scientific articles and independent contributions in monographs, theoretical radio program at Radio Študent and invited lectures (University of Belgrade, Moscow State University). With Vadim Rudnev, a student of Yuri Lotman, she published two books in Russian in the field of semiotics and philosophy of language. She conceived and organized an international scientific conference with the artistic program *Cosmic Anarchism* with 21 panelists.

Dr. Eszter Polonyi at the Researchers' Night event.

Doc. Dr. Eszter M Polonyi gave several talks on the history of identity photography (at the annual FilmForum Conference on media and mobility, University of Udine, 2021, at RCH UNG, and at the ERC Mentorship Initiative for Humanities and Social Sciences at the Institut für die Wissenschaften vom Menschen in Vienna and the Polish Academy of Sciences).

Dr. Ivana Zajc participated in December 2021 at the 40. Simposium Obdobja - Slovenian poetry (The Faculty of Arts, University of Ljubljana, online) she presented the results of her research Poetry in the High School Exit Exam where she included her findings on poetry in secondary education and presented a comparative analysis of eleven different foreign essay models at the high school exit exam.

Nikita Meden was en editor of monograph *Nikita Meden, ed. Dolenčev zbornik 2021: On the 200th anniversary of the founding of the Adria brewery and the 60th anniversary of the birth of the historian Ervin Dolenc from Senožeče. Divača: 2021.* The release was followed by a public presentation (30.9.2021), in which she participated.

Dr. Primož Mlačnik presented a contribution *Cultural Studies and Contemporary Slovenian Detective Novels: Existing Research and Possible Research Approaches*. In September 2021, he collaborated at the roundtable *The Phenomenon of Slovenian Crime Novels*, organised by the publishing house Pivec.

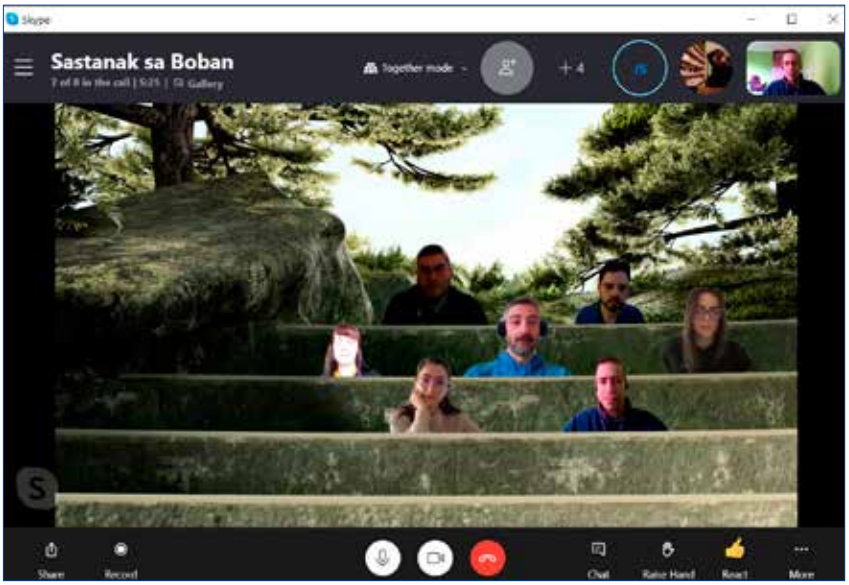
Prof. dr. Katja Mihurko Poniž at the Beletrina's debate Women Writers in past and today.

Center for Cognitive Science of Language

Head: Prof. Dr. Rok Žaucer

Center for Cognitive Science of Language is an interdisciplinary research center of the University of Nova Gorica. Our core expertise is in formal generative linguistics, which we use as a foundation for engaging in other domains of language-related cognitive science – especially language processing, language acquisition, bilingualism and the relation between language and other cognitive abilities.

At the focus of our research are investigations of theoretically relevant syntactic and semantic/pragmatic aspects of different languages. We strengthen the reliability of our data and analysis assessments with the use of corpora, large judgment samples, and various behavioral experimental methods (e.g., sentence completion, reaction times, developmental tasks, eye tracking, ERPs).

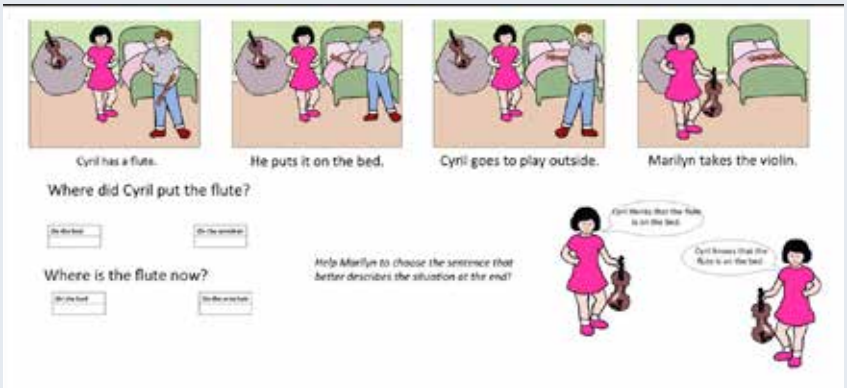


The Center for Cognitive Science of Language group specializes in formal generative linguistics, especially syntax and semantics/pragmatics, and uses this as a foundation for engaging in other domains of language-related cognitive science – especially language processing, language acquisition and bilingualism.

Basic research topics recently investigated in the Center include the following:

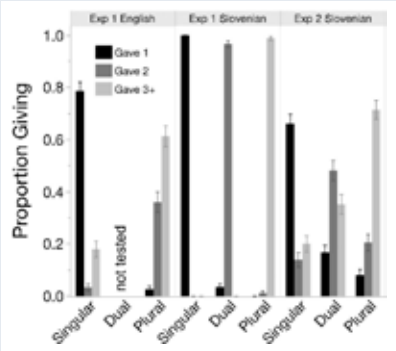
Our main focus in 2021 was on research within four projects financed by the Slovenian Research Agency. The first of these is 'Development of a standardized test of the sentence comprehension ability in Slovenian-speaking adults', in which we are measuring standard reactions in language comprehension under normal circumstances. This will give us a tool to compare and understand language use in special circumstances, specifically, in i) language acquisition in children, ii) multilingualism, iii) ageing, iv) language disorders.

In the project 'Hyperspacing the Verb: The interplay between prosody, morphology and semantics in the Western South Slavic verbal domain', which we are conducting together with the University of Graz, Austria, we are concluding the compilation of a database with a complete morphological landscape of verbs and verbal derivatives in western South-Slavic



languages, including any effects of interaction between verbal and deverbal morphology on the one hand and phonology, semantics, and syntax on the other hand.

In the project 'More than Agreement' we have been investigating the psycholinguistic aspects of the processes of syntactic feature assignment, whereas in 'Linguistic transfer in the pragmatic domain: Slovenian speakers in a multilingual environment' we have been studying negative transfer of pragmatic features in language acquisition in multilinguals;



one of our approaches to this has gone through an contrastive investigation of the semantics/pragmatics of the plural number in languages with a singular-plural grammar and in languages with a singular-dual-plural grammar.

In 2021, we also started work on a new 3-year Slovenian Research Agency-funded project, 'Acquiring minority languages in a multilingual setting', in which we will be analyzing the nature of intergenerational transfer of Slovenian as a minority language in Italy and trying to develop a specialized tool for testing competence in Slovenian as a minority language. And in a newly established collaboration with the Technological university of Varna and the Varna Dolphinarium, we laid down the foundations for a joint investigation of aspects of dolphin communication.

Other work recently conducted in the Center includes the following:

Through our community platform *Večjezičnost velja* (http://vecjezicnost.ung.si/)—the Slovenian branch of *Bilingualism Matters*—we reach out to families, teachers and anyone else who might have questions about raising bilingual children or about an adult life with more than one language. In addition to individual counseling, we organize public events with which we disseminate information and new, science-based findings about multilingualism.

The Center collaborates in the multipartner project 'Development of Slovene in a Digital Environment', whose main goals include meeting the needs for products and services in the field of Slovenian language technologies, both for companies and the public at large. In addition to its basic-research goals, our SRA-funded project 'Development of a standardized test of the sentence comprehension ability in Slovenian-speaking adults' also has a distinctly applied dimension to it, since proper understanding of typical and impaired language use is itself a precondition for successful language intervention.

Two members of the Center served their third year as joint editors-in-chief of the Journal of Slavic Linguistics, which is published by the Slavic Linguistics Society and aims to be the primary outlet for reporting research findings in any subdiscipline of Slavic linguistics. As of 2021, the journal will also be publishing the proceedings from the prestigious conference *Formal Approaches to Slavic Linguistics*.

Pedagogical Work

In 2021, the pedagogical work at the University of Nova Gorica was done within seven schools: School of Environmental Sciences, School of Engineering and Management, School of Science, School of Humanities, School for Viticulture and Enology, School of Arts, and Graduate School.

School of Environmental Sciences

Dean: Prof. Dr. Matjaž Valant

River water sampling during the field work at Group project course on a clear winter morning.

Study Pogrammes:
Bachelor's Study Programme Environment (First Level)
Master's Study Programme Environment (Second Level)

School for Environmental Sciences educates in the field of research, preservation and management of environment. The university study program Environment was according to the Bologne Directives modernized in changes into study programs Environment, Level I and Environment, Level II. The I. and II. level programs received public accreditation with declaration of Directorate for Higher Education of Republic of Slovenia on date 12. 10. 2007 and 15. 2. 2008, respectively. Continuously, we are modernizing the contents of the both study programs. In 2017/18, we have introduced obligatory practical training for the I. level students and substitute a diploma thesis with a diploma seminar. In 2018/19 we introduced courses on climate issues. In addition, we have introduced up-to-date contents among mandatory courses on the II. Level.

The study program Environment, Level I is an undergraduate program to obtain a university degree. The program offers all important contents from natural sciences and technical and social subjects related to environmental issues such as pollution of water, air and soil, environmental monitoring, waste management and environmental protection, management and economics. The basic goal of the program is to educate experts that will be able to conduct work on research, technical and managerial fields related to environment. This goes for different industrial sectors, lawmaking and law executing area on national and local levels.

In 2021/2022 school year we enrolled fifteenth generation of students in the study program Environment, Level I. Beside mandatory and selective courses the students had an opportunity within their field trips, excursions and group projects to see waste landfills, experimental stations and institutes, industrial facilities, power plants and regional parks.

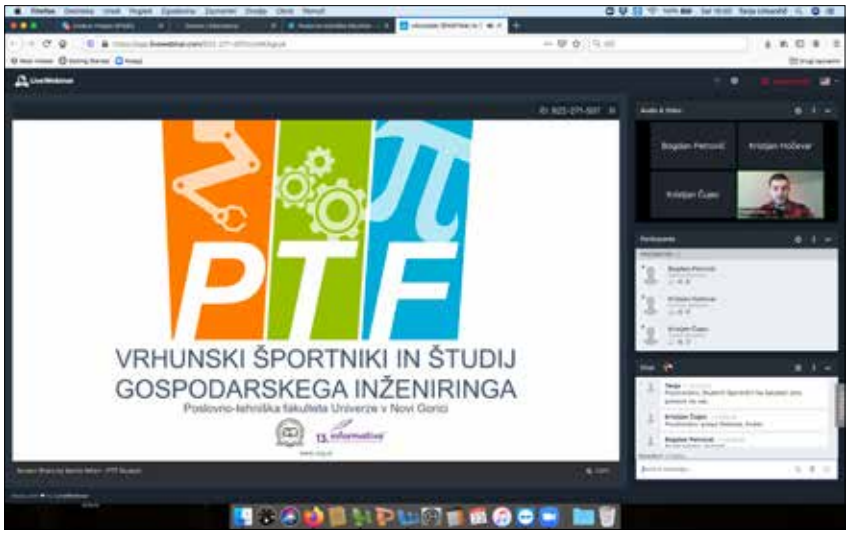
A uniqueness of our study program Environment Level I is a course called Group project, which introduces a modern approaches to education through project work. Emphasizes are on solving practical problems related to environment and working in a multidisciplinary group. During 2021, students took part in several projects, within which they investigated topics from environment remediation, pollution monitoring, waste management etc. They also studied influence of the biological waste in agriculture. Among others, the results suggest that by regulating easily-variable parameters such as e.g. extraction time, pH and temperature, the extraction of specific elements for use in fertilizers with a safe impurity content may be possible through alkaline leaching, the most economically efficient extraction method currently available. Reducing the amount of by-product that needs to be transported to landfills would have a significant societal benefit, both due to the favorable environmental impact of reducing the amount of landfilled waste and reducing the carbon footprint of waste transport.

Individual project work in the laboratories of the School for Environmental Science.

The study at the Environment, Level II takes four semesters to complete and is exceptionally interdisciplinary. It offers courses from all important fields of environmental sciences but also enables students to deepen their knowledge in their fields of interest by choosing from a large selection of the selective courses. On the Level II the project work is performed individually within a course Individual project. In 2021 four new students have enrolled in the master program.

School of Engineering and Management

Dean: Prof. Dr. Tanja Urbančič



Study Programmes:
Bachelor's Study Programme Engineering and Management (First Level)
Master's Study Programme Engineering and Management (Second Level)
Master's Study Programme Master in Leadership in Open Education (Second Level)

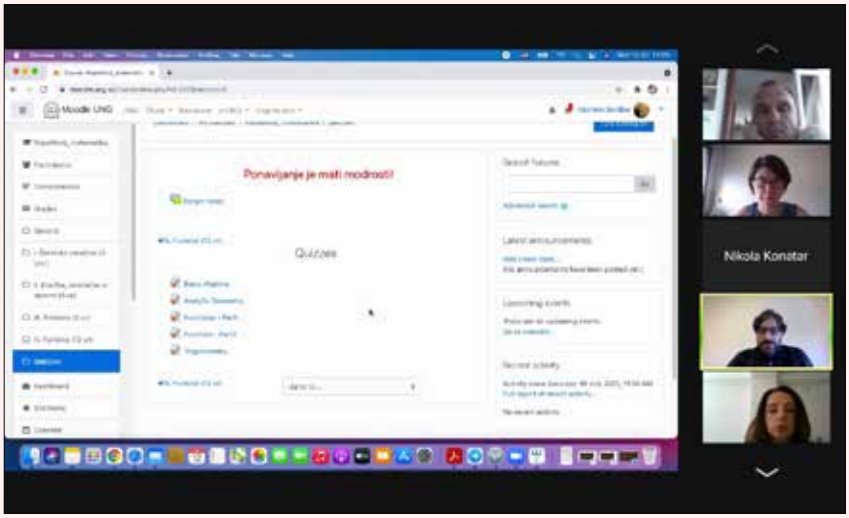
Bachelor's and Master's Programme of Engineering and Management are pursued at the School of Engineering and Management. Graduates have interdisciplinary knowledge of technology, economics and organisation. They are educated to identify and solve a broad spectrum of problems when supporting efficient and sustainable business and industry operation. Student projects and theses typically focus on concrete situations in companies, in various organisations or local communities. This is important to maintain good connections between the school and its environment, contributing to the very high employability rate of its graduates. From the year 2020, the school offers also an international Master's study program, entitled Leadership in Open Education.

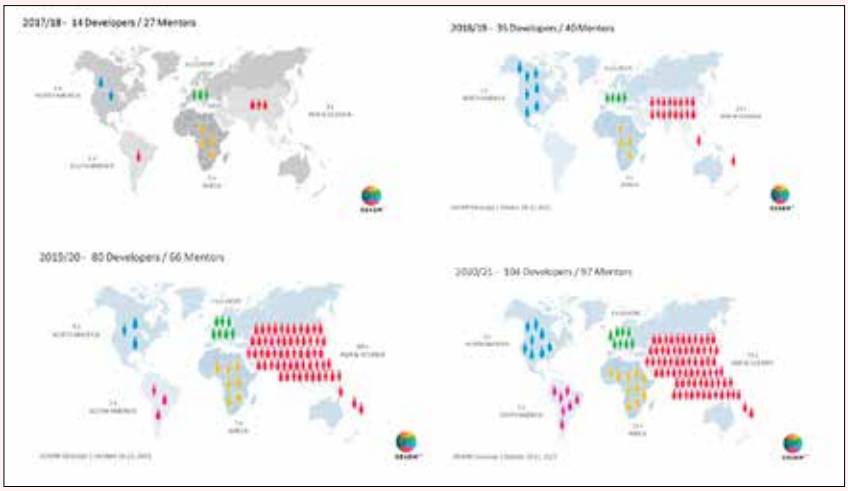
115 students were enrolled to the School of Engineering and Management in academic year 2020/2021, out of which 77 to the Bachelor's programme and 38 to the Master's programmes. Similarly to previous years, a high proportion of students came from abroad. The fifteenth generation was enrolled to the first level study programme Engeenering and Management, while the sixteenth generation came to the Master's programme Engineering and Management. Master's program Leadership in Open Education accepted the second generation of students in 2021.

Educational activities of the school were carried out in the Lanthieri Mansion in Vipava. When needed due to the COVID-19 related measures, we switched to online and hybrid way. The programe was implemented in accordance with the specifications. Elective courses are offered in two-year cycles for two generations at the same time. In 2021, the elective courses at the first level programme (first semester of the 2021/22 academic year) were the following: *Sociology of Organisation and Business Communication, Entrepreneurship Seminar* and *Logistics*. At the Master's level, elecitve courses in 2021 (second semester of the 2020/21 academic year) were *Decision Support Models and Systems, Contemporary Measurement Techniques, Automatic Contro Systems, Production Information Systems, Knowledge Management* and *Business Communication Workshop* at the Enginnering and Management programme, while at the Leadership in Open Education programme they included *Serious Games* and *Workshop for Open Education Pracitioners.*

The School of Engineering and Management is very active in the development and introduction of new methods and information technology support into the study process. This, together with the introduction of e-learning and open education elements contributes to a better accessibility of the courses. Consequently, the study activities are mitigated for those students that are active athleets or part-time employed, or need additional flexibility for other reasons.

20 students successfully finished their study at the School of Engineering and Management in year 2021. Out of them, 9 graduates come from the Bachelor's programme Engineering and Management, and 11 from the Master's programme Engineering and Management. Cummulative number of the graduates of this school increased to 605 at the end of the year 2021. Their broad profile ensures an excellent employability rate. Taking into account the last three generations of graduates, the employability in 6 months after graduation is 94,12 % while in one year after graduation it comes to 95,16 %. The employability of graduates is enhanced by the competences that students acquire through project work within or outside the study program. For spreading awareness among potential employers, also in the year 2021 the school organized and recorded a round table where successful graduates presented their professional profile and working experience. But most importantly, high employability is obtained by maintaining good cooperation between the school and companies, mainly through student internships. In the year 2021, internships were enabled by the companies Mahle Electric Drives Slovenija d.o.o., Primorski tehnološki park d.o.o., Računalničar d.o.o., LED Luks d.o.o., SAOP d.o.o., Advant d.o.o. GOAP d.o.o. in Arctur d.o.o.

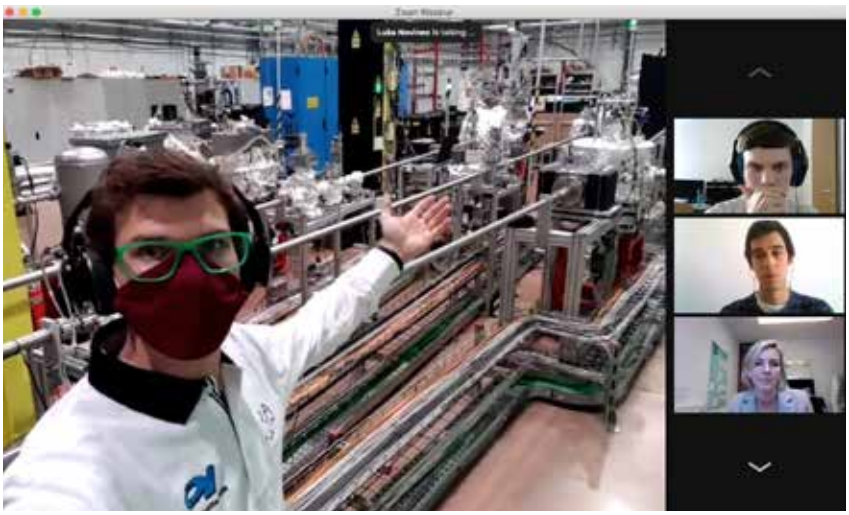




International cooperation has been almost entirely moved online due to the pandemics. We were active in the Ertasmus + programme, and in 2021, the international mentoring program Open Education for a Better World, developed and implemented together with the UNESCO Chair at the JSI, involved more than 100 developers of open education and 97 volunteers acting as mentors.

School of Science

Dean: Prof. Dr. Sandra Gardonio



At the School of Science, we have celebrated the International Day of Light 2021 by turning on the lights in different research laboratories we collaborate with showing the impact of their applications have in our lives.

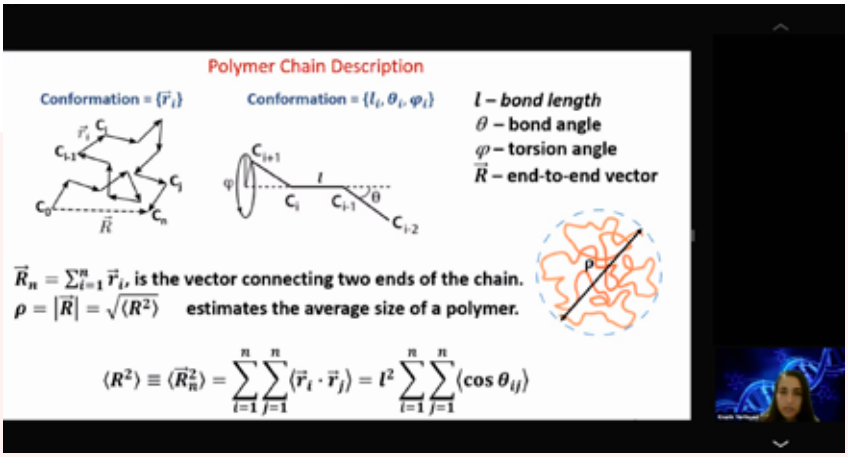
Study programmes:
Bachelor's Study Programme Physics and astrophysics (First Level)
Master's Study Programme Physics and astrophysics (Second Level)
Master's Study Programme Materials Science (Second Level)

Physics addresses the phenomena in nature at its most fundamental levels on a variety of dimensional and energy scales. The goals of physics are to build on the current understanding of nature, using both experimentation and theoretical analysis, and to extend our understanding to more complicated systems, such as molecules, fluids, solids and galaxies. School of Science, supported by five research laboratories and centers of the University of Nova Gorica, provides research oriented programs »Bachelor in Physics and Astrophysics«, »Master in Physics and Astrophysics« and »Master in Materials Science«. We actively promote student creativity, originality and versatility; we consider the studies to be the competitive edge that may help our graduates in their professional careers. Our advantages are individual approach to students, international research experience, and a young, dynamic academic team.

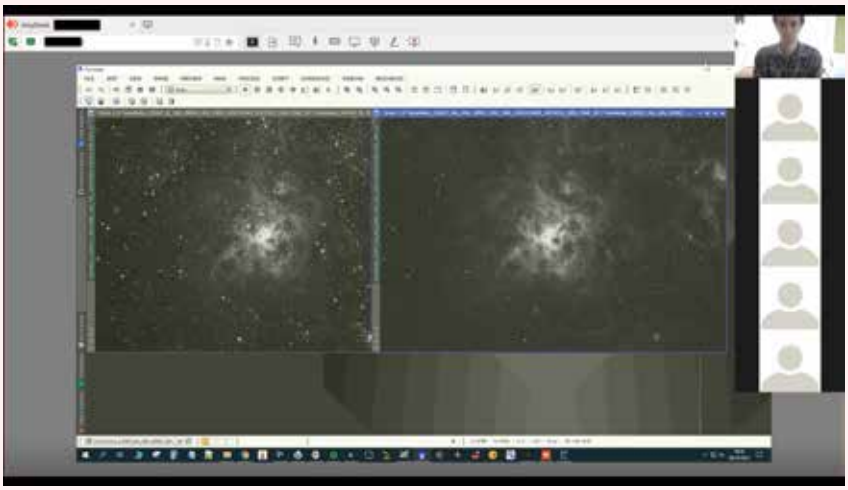
We welcome foreign students, as all our lectures and other teaching activities are available in English. Pursuing Bachelor studies in physics and astrophysics requires no tuition for students from Slovenia, other EU member states, and countries signatories of bilateral agreements that waive tuitions in higher education (Serbia, Montenegro, Macedonia, Bosnia and Herzegovina, Kosovo and others). The school's involvement in the ERASMUS+ program provides a convenient possibility for students from Armenia, Azerbaijan, Belarus, Georgia, Moldova and Ukraine to pursue physics studies at the University of Nova Gorica. Our study programs are accredited by the Slovenian Quality Assurance Agency for Higher Education and our graduates obtain officially recognized academic degrees and diplomas, including the diploma supplement, prepared according to standards agreed to by the European Commission, the Council of Europe and UNESCO.

To provide high quality education and optimal conditions for either further studies or employment in the field of physics and astrophysics, the bachelor level program introduces general theoretical and experimental topics in a broad spectrum of physics fields, and gradually involves the students in actual research. The master level program in physics and astrophysics aims at profiling the students into narrower research fields, such as astrophysics and physics of materials, providing additional in-depth knowledge each of the modules. The students are also encouraged to become involved in international research collaborations and student exchanges with other universities and institutions. From 2018, Master program »Materials Science«, an interdisciplinary and research-oriented 2-year study program was also offered. The common point of all programs is scientific excellence, direct individual approach in teaching and research and collegial relations between students.

School of Science is also active in dissemination activities promoting science among the youth. It co-organizes Slovenian high-school and elementary school level competitions in astronomy, provides support to the national team at international competitions, is involved in managing the Slovenian version of the popular science »Portal to the Universe« and organizes public lectures. Our students are welcome to participate. The service they give is very rewarding, as they obtain invaluable experience with giving lectures and presenting scientific ideas to general public.



During the academic year, young assistants presented to the School's undergraduates various topics in the fields of astrophysics, condensed matter and materials science.



A snapshot from the online workshop, where we demonstrate remote observing with GoChile to teachers and students. We are inspecting two images of the Tarantula nebula, which we have just observed.

Bachelor program »Physics and astrophysics«

The duration of the bachelor program »Physics and astrophysics« is three years, requiring a total of 180 ECTS points. The courses aim to provide general theoretical and experimental knowledge in a broad spectrum of physics fields, required for research work, and to gradually involve the students in actual research. Theoretical courses are complemented with research activities in laboratories and centers of the University of Nova Gorica. Although general orientation of the program is towards astrophysics and solid state physics, in nevertheless provides a broad enough knowledge base for the graduates to be able to pursue further studies or employment in any field of physics.

Master program »Physics and astrophysics«

Master studies of »Physics and astrophysics« provide specialist knowledge in the fields of astrophysics and solid state physics. The program's duration is two years and requires a total of 120 ECTS points. Student activities within research laboratories and centers of the University of Nova Gorica are the basis for their master theses, which are often published in international scientific journals. Hands-on experience in international environment and with state-of-the-art technologies is pursued to increase the competitiveness of our graduates in their further careers.

Master program »Materials Science«

Master program »Materials Science« is an interdisciplinary and research-oriented 2-year study program, requiring a total of 120 ECTS points, that is being offered from academic year 2018/2019. It is based on research excellence of the University of Nova Gorica and its partner, National Institute of Chemistry from Ljubljana, in the fields of physics and chemistry of materials, materials characterization, as well as materials technologies and development of innovative products and services, including the protection of intellectual property.

School of Humanities

Acting Dean: Prof. Dr. Peter Purg

School of Humanities community toward a new 2022.

Study programmes:
Bachelor's Study Programme Slovene Studies (First Level)
Bachelor's Study Programme Cultural history (First Level)

Master's Study Programme in Slovene Studies: Linguistics (Second Level)
Master's Study Programme in Slovene Studies: Literary Science (Second Level)
European Master in Migration and Intercultural Relations (Second Level)

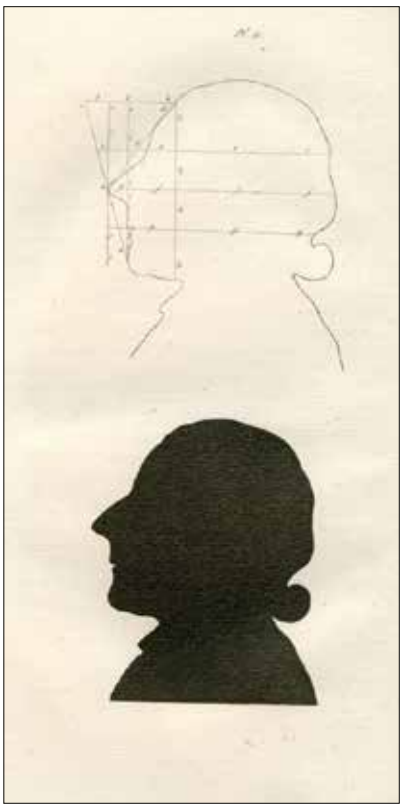
The School of Humanities abides by the following motto: "We bring together the humanist tradition and contemporary knowledge with the future in mind". In collaboration with the Research Centre for Humanities, the Centre for Cognitive Science of Language and multiple partners, we combine top scientific research with teaching to introduce students to research and professional practice.

The covid-19 pandemic, which swept through the world in 2020, also left its mark on studies and research activities at the Faculty of Humanities of the University of Nova Gorica. In the year 2021, similarly as in 2020, most activities at the School of Humanities were continuously revised to meet the most advanced technical and professional standards for the implementation of distance learning and research activities.

The School of Humanities offers study programmes at the Bachelor and Masters degree level. The two undergraduate study programs are Slovene Studies and Cultural History. By encompassing the fields of linguistics and literary theory and history, Slovene Studies graduates obtain the professional title of a graduate in Slovene (UN). At the University of Nova Gorica, Slovene Studies has updated the traditional focus of the Slovene Studies curriculum on linguistic and literary contents by introducing mandatory and elective courses in the field of general linguistics, literary theory, visual culture, film and the performing arts, and the new field of digital humanities.
The Cultural History program develops a broadly defined humanist knowledge in students. Additional attention is paid to the specifics of the cultural and political environment in which the program was created, that is, in the border area of the North Primorska region, as well as further focus on the region's role in the main historical developments of Central and South -Eastern Europe. The graduate of the Cultural History study program obtains the professional title of a graduate historian (UN).
In the 2019/2020 academic year, the School of Humanities offered three Master degree study programs: Slovene Studies with an optional

LnR Vladka, Hugo Tausk, Martha, Zofka Kveder, Zagreb, Frankoparska ul. 2A, ca 1906

»Martha Tausk and Zofka Kvedrova with children« (project, Katja Mihurko Poniž).



Eszter Polonyi: project »An Archaeology of Identity Photography«.

specialization in Linguistics/Literary Studies and the International Master's Program in Migration and Intercultural Relations (Erasmus Mundus). The two distinct masters degree study programs involving Slovene Studies (Linguistics and Literary Studies) develop knowledge of the Slovene language, of general linguistics and of Slovene literature, as well as securing a basic understanding of literary and linguistic theory and methodology. In 2020, the Linguistics study program was upgraded with an agreement between the University of Nova Gorica and Ca 'Foscari University in Venice, which enables students enrolled in this program to obtain a double degree. The acquired professional title in both study fields is master of Slovene Studies.

The Master's degree program in Migration and Intercultural Relations is an international program that focuses on human rights, democratic values, the welfare state and the labor market, and the challenges facing both Member States of the European Union and the globalizing world. The program is implemented with the support of an elite mechanism for international cooperation and exchange of students and professors in the field of higher education called Erasmus Mundus that at the end of 2021 obtained a further funding perspective for the next 5 years. The professional title of the graduate of this program is a master of Migration and Intercultural Relations. The course of study, which takes place at several European universities, is held in English.

After completing the MA study programs, candidates have the opportunity to continue their studies at the University in Nova Gorica in the study programs designed for obtaining a doctorate of science. Within the Faculty of Postgraduate Studies at the University in Nova Gorica, students can choose between two PhD study programs: Cognitive Science of Language, and Humanities, within which they can pursue either of the two modules of Literary Sciences or Migration.

The School of Humanities also conducts language courses in various foreign languages as well as the Slovene language for non-Slovene speaking students.

At the School of Humanities, we pay special attention to extracurricular projects in which students can acquire additional knowledge and practical skills.

In the 2020/2021 academic year the School of Humanities, under the leadership of prof. dr. Katja Mihurko Poniž, continued to coordinate the CEEPUS (Central European Exchange Program for University Studies) network Women Writers in History (https://ceepuswwih.ung.si) with the goal to study Central European women writers with digital materials and tools. The projects of the CEEPUS network also includes educational activities in regular university programs and summer schools.

As part of the "Slovene is Beautiful" project, we conducted a 40-hour Creative Writing Workshop for students with the Slovene Lyceum in Gorizia.

Within the project Open Education for a Better World, prof. dr. Katja Mihurko Poniž participated in a webinar at the end of the course Gender Equality and Education, which was prepared by Assoc. prof. dr. Madhuri Isave and Tilak Collage of Education.

In collaboration of FH UNG and the Fran Ramovš Institute for the Slovene Language, Research Station ZRC SAZU from Nova Gorica, on October 8, the Franciscan monastery Kostanjevica above Nova Gorica hosted the symposium Škrabec Days. The meeting took place on the tenth anniversary of the symposium Škrabec Days in a renewed form, although the symposium dates back to 1994, thus we are especially pleased that this year's symposium was accompanied by a ceremony at which the Stanislav Škrabec Foundation for six students of Slovene, classical philology, comparative and general linguistics awarded this year's Škrabec Scholarships.

Students of the Faculty of Humanities also participated in the symposium in honor of the 100th anniversary of the St. Jacob's Theater.

School for Viticulture and Enology

Dean: Prof. Dr. Branka Mozetič Vodopivec

Study programmes:
Bachelor's Study Programme Viticulture and Enology (First Level)
Master's Study Programme Viticulture and Enology (Second Level)

The School of Viticulture and Enology offers practically oriented study programs that combine the contents of viticulture, enology and wine marketing. We have been running the first level Viticulture and Oenology program (BSc) since 2005/2006 and the Master's program (MSc) from 2019/2020. The programs are modeled on similar programs in Italy, France and Australia and follow the OIV recommendations for the training of oenologists. Lecturers are top experts in the field with a wide range of practical and research experience. Students can enhance their theoretical knowledge with practical knowledge within the University Estate and by working with renowned winemakers in the local and wider area, and will also be involved in current research at the University Wine research centre.

Determination of grape maturity.

The Faculty of Viticulture and Enology (FVV) is implementing a 1st Cycle program Viticulture and Enology, and in 2020/21 we have enrolled students for the first time in our new Master's degree program in Viticulture and Enology.

Both study programs are conducted in Vipava, in modernly equipped lecture halls and laboratories of the Lanthierij Mansion, which were upgraded also by a new fermentation laboratory already back in the 2019/2020 academic year. In September 2021, we upgraded the lab also with a smaller grape press. Last year, we continued with the classrooms audio-video equipment upgrade, to support a hybrid way of teaching through the MiTeam platform, which allows students to monitor and actively participate in the study process both in the lecture halls and remotely. Despite the hybrid teaching plans, we unfortunately conducted most of our pedagogical process remotely during the past academic year 2020/21, which was very difficult at times for a practice-oriented study such as ours. However, we have greatly improved the skills of our staff in using the learning platform and conducting the pedagogical process remotely, and have prepared a lot of recorded learning material - both lectures and lab experiments - that will certainly be also used in the future.

The excellent research equipment of the Wine Research Centre, where our students also conduct real research through project and thesis work, and the strong commitment of the staff of the Wine Research Center, who are also our pedagogical staff, help us a lot in the implementation of our programs. in various national and international projects.

The capacities in the lecture halls and laboratories are of course complemented by a viticulture training site on a university estate in nearby Manče (1.2 ha of Zelen and Pinela vineyards) and more than 30 practical partners - various farms/ wineries, units, laboratories in Slovenia and Italy and also in Serbia. Last year, the staff of the Center for Wine Research established an important and modern pottery experiment in the collective plantation KGZ-Trsnica Vrhpolje na Slapu to study the behavior of the grape variety Pinot Noir in different climatic environments, where our students are writing their thesis.

We regularly invite many experts from the industry and other institutions involved in wine or viticulture. This year, for the first time, we have Mag. Tatjana Močan, the director of the Slovenian Wine Inspectorate. Many experts from abroad have also accepted the invitation - prof. dr. Antonio Tirelli (College of Milan), doc.dr. Davide Slagenaufi (College of Verona), doc. dr. Panagiotis Araptsisas from IASMA Institute (Italy) and prof. dr. Boscutti from the College of Udine.

Pot experiment in the vineyard.

This year's study year was even more affected by the Covid 19 epidemic than last year. We brought the study process and operation of all faculty committees online in November 2020 and stayed there until early May 2021, when we began field visits, laboratory and tasting exercises at the faculty site. We began hands-on training with our partners in early March 2021. Distance learning knowledge testing took place at the faculty throughout the academic year. Promotional activities were also carried out entirely online - both in Slovenia and abroad.

Since the situation did not allow us to hold the Student Wine Festival in the second year in the usual way, we decided to use the e-version, through which students could gain virtual experience in the promotion of wine cellars and wine. During the festival, our students created promotional videos about the selected winemaker and their wine, and at the end of September 2021, an expert committee of FVV staff announced the top three: Miha Sirk (2nd year), Ivana Milivojević (2nd year) and Liza Popova (3rd year). All students then presented their wines at regular tastings during the 2021/22 academic year.

Harvest in the University vineyard.

School of Arts

Dean: Prof. Boštjan Potokar

Setting Up of a Selection of Study Works
Exhibition in Xcenter in Nova Gorica.

Study programmes:
Bachelor's programme in Digital Arts and Practices
Master's programme in Media Arts and Practices
(Programme director: prof. Rene Rusjan)

University of Nova Gorica School of Arts has been educating in the field of arts since 2009. Within the University it started functioning as a BA school and in seven years developed into a fully accredited Academy. This is the first university level academy in Slovenia in 71 years. In English it retains the naming as the *School* of Arts. BA and MA programmes cover the following fields:

- Animation *(animated film, animation in creative industries)*
- Videofilm *(fiction, documentary, experimental film, art video)*
- Photography *(author, functional)*
- New Media *(creative use of new technologies)*
- Scenographic Spaces *(film, theatre scenography)*
- Contemporary Art Practices *(combining different media)*
- Art-Science-Technology *(connecting diverse fields)*

After 2008, when we prepared the first study programme in the field of arts, the school saw a gradual but firm development into an art academy:

The Programme structure at the UNG School of Arts enables combining media and fields thereby opening a range of professional pathways, from becoming an author to developing a distinct professional identity. In 2009 we opened the Bachelor's programme in Digital Arts and Practices. Our MA programme was developed within ADRIART, an EU supported project, together with partners from Croatia, Austria and Italy. As leading partner of the ADRIART project at the UNG School of Arts we were in 2012/13 able to offer our BA graduates a continuing of education - the MA programme - Media Arts and Practices, with a pilot run in that year and a full launch the following year. We are thus now able to conduct the whole vertical in the field of arts in the Republic of Slovenia.

In the 2021/22 study year 62 students are immatriculated at the UNG School of Arts. The student structure is international – already on BA level almost half of the students are foreign, while the MA level is distinctly international as the majority of the students are foreigners. Several are from EU countries while some come from more distant parts of the world. Within the study year 2019/2020 we moved from Palazzo Alvarez in the center of Gorizia, Italy, into existing spaces of University of Nova Gorica in Rožna Dolina, Nova Gorica. All educational activities are now run from these premises. Through various projects and co-production activities we have in recent years been able to acquire some of the much needed equipment

for film, animation and photography production and postproduction. Students thus now have a contemporary studio environment where they can work throughout the day.

In addition to individual careers of mentors and other UNG School of Arts collaborators, all of whom are nationally and internationally renowned artists, a lot of energy is invested in cooperations with various festivals and other ways of presenting student work.

Because of the pandemic almost all of the study year was conducted online. Similarly most of the festivals and exhibitions were held online. In May, June, July and September the missing practical parts of the study process was substituted. Similarly to previous years we took part with student works in diverse festivals and exhibitions, which happened, in contrast to the year before, mostly face to face.

- At the 23rd edition of the Festival of Slovenian Film we took part with three films in the student competition and five in the panorama programme.
- DSAF Slovene Animated Film Association awarded students for finished films and projects in development. This year our student received:
  Best Student Animated Film Award – Amadeja Kirbiš, *Dysmorphia*
- At the Isola Cinema Festival we presented an exhibition of students' works; several student films were also accepted into the Video on the Beach programme section.
- Tribute to a Vision Festival, Nova Gorica/Gorica – exhibiton, presentation of the school and screening of films within the selected programme First Crossings/Prvi poleti
- First Crossings/Prvi poleti:
  the children jury awarded Nika Karner, *Four of a Kind*
- At the Speculum Artium Festival in Trbovlje our films formed one slot within the Digital-BigScreen programme.
- International Festival of Computer Arts MFRU in Maribor:
  Our student Vasily Kuzmich was awarded with the 1st Prize for his new media work *Burja, Dih vetra/ Burja, a Breath of Wind*

Integrated Practices in Art and Electronics Workshop with our alumni Lavoslava Benčić.

Cave Photography Workshop with Arne Hodalič.

Antique Photography Workshop with Borut Peterlin.

- At the ANIMATEKA *2021* International Festival of Animated Film in Ljubljana University of Nova Gorica has, together with University of Ljubljana, sponsored the »Young Talent Award« for the best European student film. Two films of our students were selected for the Young Talent European Student Competition Programme and two were shown within the Panorama section.
  Our student Miha Reja was awarded with a Special Mention in this section for his film *Kurent*

We believe our most important showcase are our students and graduates – their products are valued high enough by professionals to represent Slovenia at diverse exhibitions, festivals and selections around the globe.

Graduate School

Dean: Prof. Dr. Iztok Arčon

Study programmes:
Doctoral Study Programmes (Third Level):
Environmental Sciences
(Programme director: Prof. Dr. Anton Brancelj)
Karstology
(Programme director: Prof. Dr. Martin Knez)
Physics
(Programme directress: Prof. Dr. Sandra Gardonio)
Materials
(Programme directress: Prof. Dr. Nataša Novak Tušar)
Humanities
(Programme directress: Prof. Dr. Ana Toroš)
Cultural Heritage Studies
(Programme directress: Prof. Dr. Saša Dobričič)
Molecular Genetics and Biotechnology
(Programme directress: Doc. Dr. Martina Bergant Marušič)
Cognitive Science of Language
(Programme director: Prof. Dr. Artur Stepanov)

Graduate School at the University of Nova Gorica (UNG) hosts and carries out all doctoral study programmes (third level), regardless of their scientific discipline. All study programmes are internationally orientated and closely linked to UNG's research laboratories and centres, and to other research institutions in Slovenia and abroad, which enables graduate students to conduct their research work required by their studies and to participate in international research activities and projects.

Graduate School at UNG hosts and carries out all doctoral study programmes, regardless of their scientific discipline. The range is very wide, covering fields from science and technology to the humanities and interdisciplinary sciences. Such a closely connected and homogeneous organization of graduate school proved to be very effective, enabling high electiveness and interdisciplinarity in designing individual doctoral study programmes.

Isolation of autochthonous yeasts for cider production (PhD research project).

In the academic year 2020/2021 there were a total of 60 student enrolled in eight doctoral programs. All study programmes are internationally oriented and closely linked to UNG's research units, and to other research institutions in Slovenia and abroad, where graduate students can conduct their research work and can participate in international research projects. Among many external partners we should point out those with which we have established long term collaborations. The programme *Karstology* is carried out in close association with the Karst Research Institute of the Centre of the Slovenian Academy of Sciences and Arts. The links between the two institutions were further strengthened in 2014 with the establishment of the UNESCO Chair on Karst Education at UNG. Doctoral programme *Cultural heritage Studies* is implemented in close cooperation with Università IUAV di Venezia, and offers a possibility of double doctoral diploma, and a one-year specialization (second-level Master). Doctoral

Exploring Karst Phenomena: scrapes on the Caussols plateau, Provance, France.

programme *Molecular Genetics and Biotechnology* is carried out in collaboration with the International Centre for Genetic Engineering and Biotechnology (ICGEB) from Trieste, Italy. The new doctoral program Materials was prepared and is carried out in close collaboration with National Institute of Chemistry.

An important strategic orientation of FPŠ is the internationalization of doctoral studies. This is reflected in the high share of enrolled foreign students (multi-year average is over 60%). Number of international student exchanges and number of visiting professors and mentors from foreign universities and research institutions is also very high. The language of dissertation is English, to ensure that all doctoral students gain necessary language competences, to be able to present sovereignly and independently their research results to international audience in English. The committee for the assessment of doctoral dissertation always includes at least two members from foreign universities to assure that the quality of doctoral degrees is comparable to international standards.

In 2020/2021, despite the limitations due to the Covid-19 pandemic, we managed to carry out and complete all pedagogical activities and ensure that doctoral students performed most of the planned research work. We enabled all students who could not attend the planned organized forms of study in the classrooms due to pandemic situation, to attend lectures and seminars remotely using the online UNG platform, designed for the support of remote e-learning. The platform also enabled defence of dissertations remotely via videoconferencing system.

We continuously improve and upgrade all our doctoral programs, to guarantee the quality and topicality of the contents and teaching methods, and to provide doctoral students necessary up-to-date knowledge and skills for solving new challenges in science. All programmes are conducted successfully, in a high-quality manner and effectively, which is visible in the success of students in their studies and individual research work. The quality of graduate studies is reflected in successful defences of high-quality doctoral theses, and in numerous publications of student research results in reputable international scientific journals. In the academic year of 2020/2021 students published 61 scientific and professional articles, 77 contributions at international scientific conferences, and 13 other scientific publications. In this year UNG promoted 9 new Doctors of Science.

Implementation of doctoral study programmes is financed through tuition fees. Premises and equipment for the implementation of graduate study programmes are adequate. Director with Scientific Board of the programme is the expert head of an individual programme.

Cultural Heritage Studies present Urbinat project at Venice Biennale of Architecture 2021.

Other Activities

For the researchers, students, and general public, all the professional (research) and study literature is available at the very modern *University Library*, while the *Publisher of UNG* is in charge of the publication of text books, lecture notes, collections of scientific papers and other works. The university also has a *Student Office* that helps both undergraduate and graduate students, as well as all those interested in obtaining information about the study at the UNG. The *International and Project Office* is there for coordinating international projects and gives administrative support for carrying out international projects. Apart from that, the University of Nova Gorica also has a *Career Center* that creates a link between the university, the students and potential employers. Lastly, there the *Alumni Club* that joins alumni from all generations of graduates, of both graduate and undergraduate programs. It basically connects all individuals who have contributed in any way to the development of the University of Nova Gorica.

University Library

Head: Vanesa Valentinčič Murovec

University library of University of Nova Gorica is open to all students and staff, as well as to all other visitors who are interested in the materials offered by the library. We collect material from all areas of science, mostly for educational and research activities of UNG.

Library collection includes about 22.900 book titles, 50 titles of periodicals, 680 items of non-book materials and e-edition of scientific journals, reachable over services like ScienceDirect, Springer-Nature, APS Journals, EIFL Direct-databases EBSCOhost, ACS Publications, JSTOR, CREDO online, ProQuest Dissertation & Theses Global, "Window of Shanghai" e-book service, IOPscience in Taylor & Francis – Science & Technology, Web of Science, MathSciNet, ORP-index.

Library collection is almost completely open access and organized by UDC classification. We offer on-line searches from databases and through interlibrary loan we provide material that is not in our collection. We provide bibliographic service for our researchers and other institutions. The library is full member of the Slovene library co-operative online bibliographic system & service, COBISS. Throug our website we offer e-learning of search skills. We also provide information literacy courses. The library is open 48 hours per week. Users can use a reading room with 50 reading places, 5 computers in the computer room and there is option to connect to Wi-Fi their own devices for easier access to electronic materials, archives and databases. Students from the dislocated faculties can use library loan by the courier service. Repository of the University of Nova Gorica (RUNG) is one of the Open Science Slovenia portal's "openaccess.si" partners.

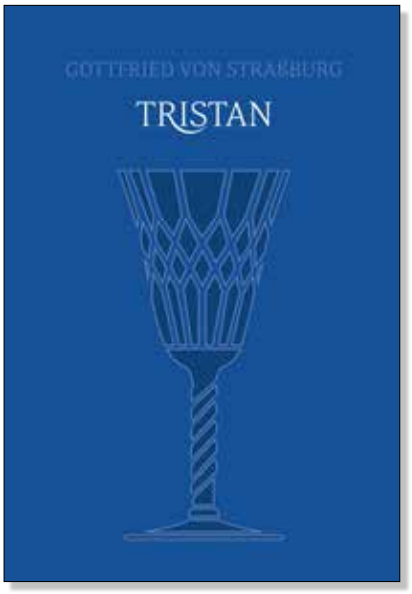
In 2021 the work at UNG has been adjusted to the conditions of the covid-19 epidemic, the library also operated to a limited extent. We ordered 6 new art magazines. The purchase of material in printed form was lower than in previous years. We prepared a detailed review of the material, which was followed by an extensive write-off of particularly older and less used material.

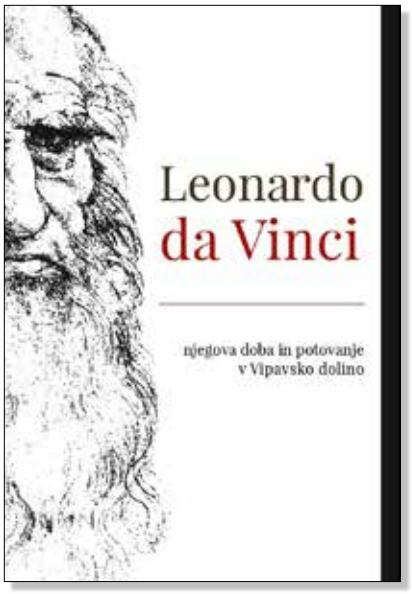
In 2021, we worked from home for half the year, so we focused on sending material in printed form to users by mail. For material in electronic form, we provided remote access. If remote access was not enabled we sent the material to users by e-mail.

Despite the situation, we successfully performed 12 hours of on-line training for users where we introduced students to the operation of the library and the basics of searching library catalogs, databases and other electronic sources.

Publisher of UNG

Head: Mirjana Frelih





University of Nova Gorica started its publishing activity in 2001. We publish textbooks and study materials for the academic courses available at our institution, as well as research and scientific works. Publishing is regulated by the Rules of publishing activities, for quality is responsible *Commission for publishing*.

So far, we have published 54 publications. Among them there are teaching materials with instructions for exercises for undergraduate students of the University of Nova Gorica, university textbooks for students and professors, conference proceedings, scientific and other monographs.

In 2021 we published the scientific monograph »Leonardo da Vinci, njegova doba in potovanje v Vipavsko dolino« by Igor Grdina and Željko Oset (eds). The print edition of the book was published with the support of the Slovenian Research Agency.

In print edition it was also published medieval knight novel "Tristan / Gottfried von Straßburg" translated by Simon Širca and the first reprint of textbook "Osnove avtomatskega vodenja" by Juš Kocijan and Stanko Strmčnik that was first published in October 2016, as the book edition was almost sold out.

In electronic edition under a Creative Commons license it was published proceedings book of peer-reviewed scientific conference contributions on domestic conference »Škrabčevi dnevi 11. Zbornik prispevkov s simpozija 2019« by editors Franc Marušič, Petra Mišmaš and Rok Žaucer and the first online textbook »Literary Foremothers: Women Writers in Dialogue with Tradition of Their Own« by Katja Mihurko Poniž.

Student Office

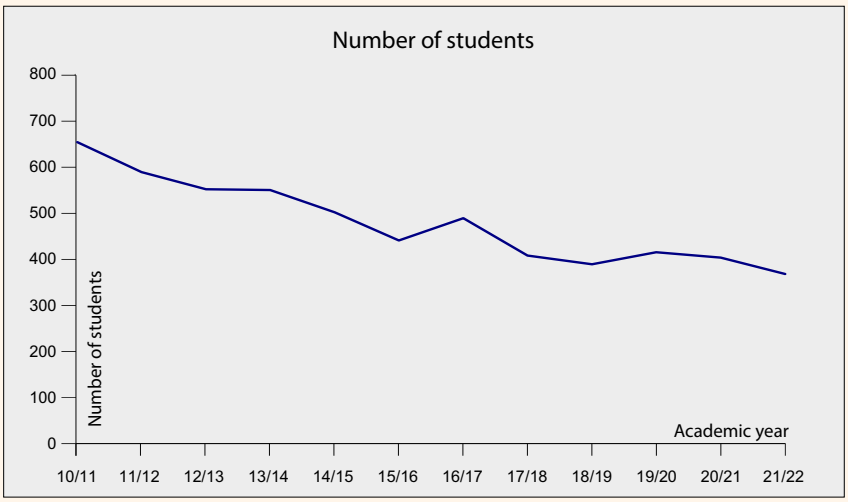
Head: Renata Kop

The Student Office of the University of Nova Gorica was founded in the year 2002 and serves both undergraduate and postgraduate students as well as those interested in information about the studies at our institution. The objective of the Student Office is to support the students and the candidates for study in academic and extracurricular activities. The Student Office has offices available in Nova Gorica and Vipava.

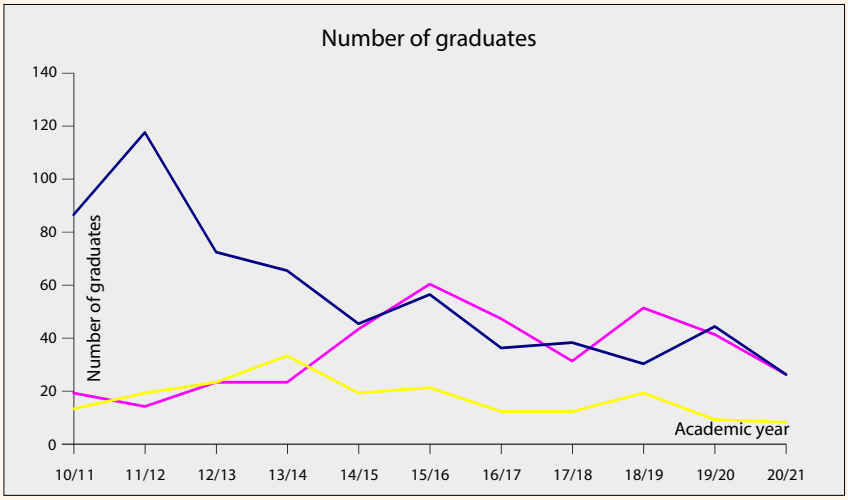
Part of the Student Office is also Higher Education Application-Information Service, which was founded in the year 2007.

The Student Office offers information about enrolment, conditions for enrolment, information about academic programmes, and other information concerning studies at the University of Nova Gorica; arranges application and selection procedures and organizes and implements call for enrolment, application and enrolment processes; issues certificates and prepares diploma documents; manages and regulates student databases; processes and analyzes students data; organizes medical examinations for students, assists in finding accommodation including organization of housing in Lanthieri Mansion Student Dorm; manages the processes and prepares decisions of recognition of education for the purpose of access to education.

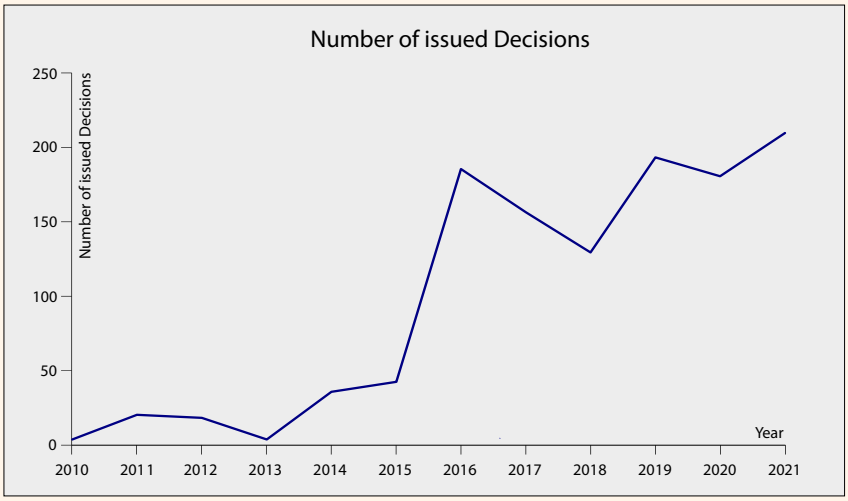
In the academic year 2021/2022 we have 370 students: 243 students of the bachelor`s degree study programmes, 72 students of the master`s degree study programmes and 52 students of the doctoral degree study programmes.



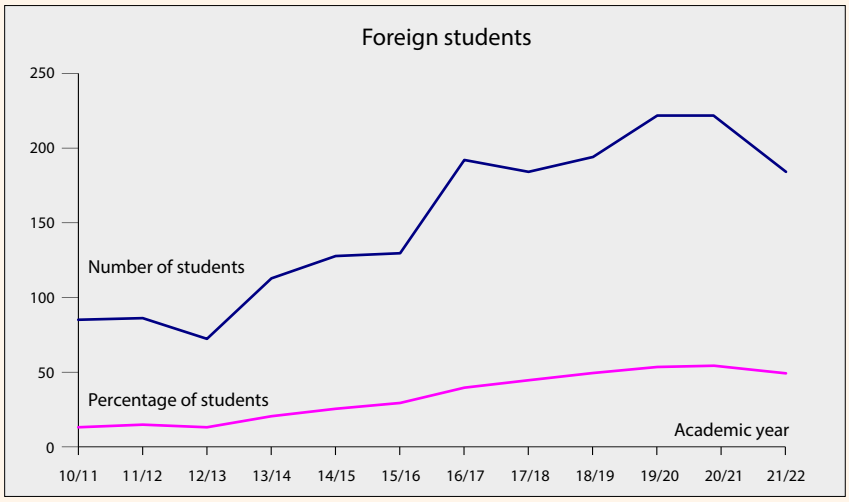
The number of graduates by the level of the programme in academic year 2020/2021:
- 27 on the bachelor's study programmes,
- 32 on the master's study programmes,
- 9 on the doctorate study programmes.



The Student Office completed 218 processes of the recognition of foreign education and issued 130 positive decisions in the year 2021.

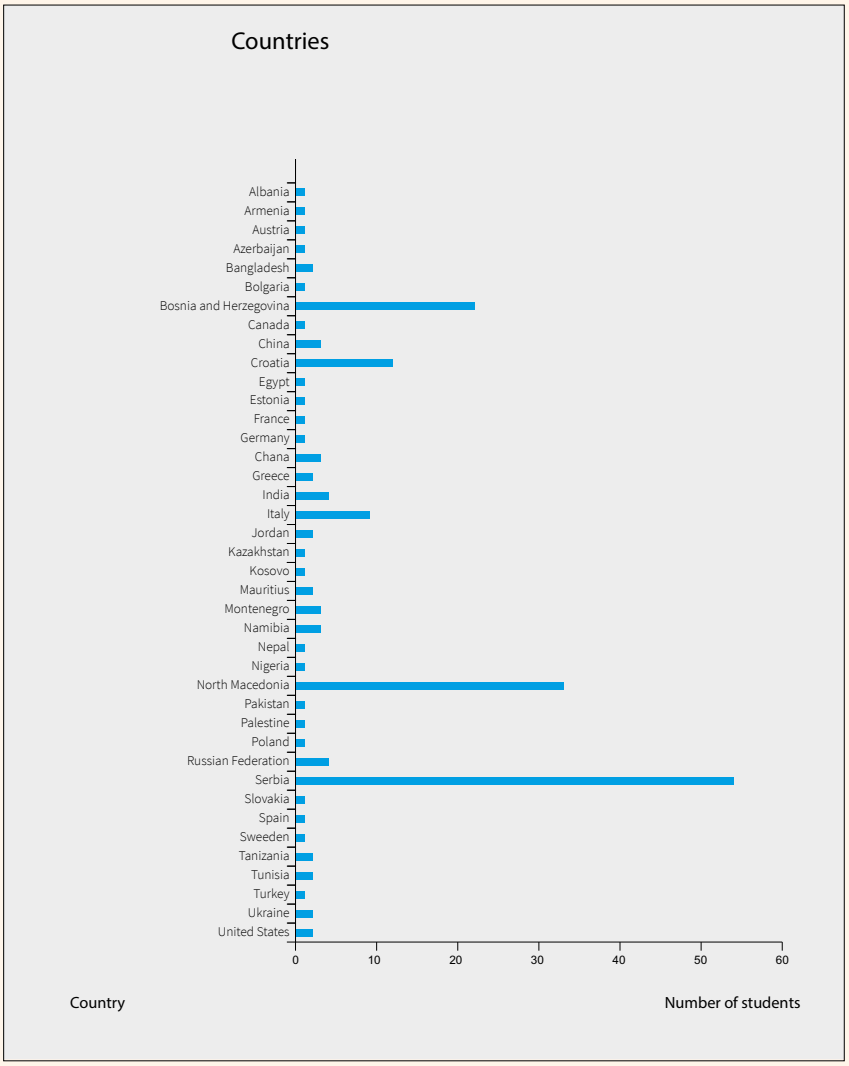


The number of the foreign students in academic year 2021/2022 is lower compared to academic year 2020/2021. Lower is also the percentage of the foreign students according to the total number of students, this is 50,5%.



The majority of the foreign students in academic year 2021/2022 study on the bachelor's study programmes, in particular on the bachelor's study programme Engineering and Management, School of Engineering and Management.

In the academic year 2021/2022 the foreign students come from 40 different countries:



International and Project Office

Head of Office: Aljaž Rener

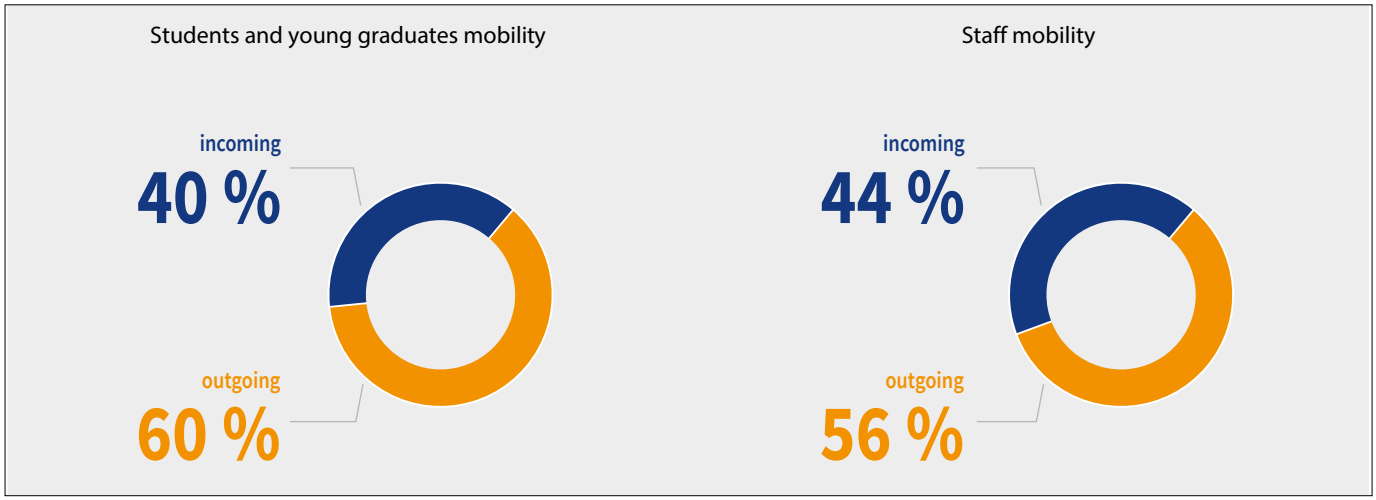
The activity of the International and Project Office is intended for the management and organization of international activities and the coordination of international (and domestic) UNG projects.
It is intended for students, professors, researchers and other employees who are active in the field of mobility. It takes care for incoming and outgoing mobility under the Erasmus + program, under Ceepus, Bilateral Scholarships and for mobility carried out under various interinstitutional agreements or arrangements. It also provides support in concluding interinstitutional agreements.

The office also provides administrative support for applications for tenders and the implementation of international projects. It is in charge of monitoring published tenders and informing persons within UNG about open tenders. The office provides support to researchers and other employees in preparing applications for tenders, primarily from a financial, administrative and legal-formal point of view. For ongoing projects, the office ensures the preparation of financial reports for international research projects and provides support and advice in the implementation of projects.

The office employs three people (Office Manager, Project Coordinator and Mobility Coordinator).

Mobility projects implemented during the academic year 2020/2021

- MIZŠ, Tuji strokovnjaki in prožne oblike učenja za boljše znanje, spretnosti in kompetence ter boljšo zaposljivost študentov Univerze v Novi Gorici (2019 - 2022),
- Erasmus+ 2020, Visokošolsko izobraževanje med državami programa (2020 – 2021)
- Erasmus+ 2019, Visokošolsko izobraževanje med državami programa (2019-2021)
- Erasmus+ 2019, Visokošolsko izobraževanje med programskimi in partnerskimi državami (2019-2021)
- Erasmus+ 2018, Visokošolsko izobraževanje med državami programa (2018-2021)
- Erasmus+ 2018, Visokošolsko izobraževanje med programskimi in partnerskimi državami (2018-2021)
- CEEPUS, Research and Education in the Field of Graphic Engineering and Design (2018 - 2019, 2019 – 2020),
- CEEPUS, Multidisciplinary Approach to Education and Research in the Field of Digital Media Production (2018 - 2019, 2019 – 2020),
- Erasmus+, KA2: Strategic Partnerships, EMINDS – Development of an Entrepreneurial MindSet in Higher Education (2017 – 2020),
- Erasmus+ 2017, Visokošolsko izobraževanje med programskimi in partnerskimi državami (2017 – 2019),
- Erasmus+, KA2: Strategic Partnerships, CDICAE – Collaboration to Design an Innovative Curriculum for Animation Education (2017 – 2019).



21 exchanges of students, young graduates and staff were realized. In the 2020/2021 academic year, virtual mobility was also carried out for the first time within the Erasmus+ program The Office provided all the necessary support to all participants before, during and after the mobility – providing information and with organization.

The Office also informed UNG staff about open calls within the programs for which it is responsible, provided support in concluding inter-institutional agreements and took care of the promotion of programs and projects and their results. Office organized several informative presentations of mobility project for both staff and students, which took place in virtual form due to pandemic. It also participated in virtual Info Days of the University, promotional campaigns organized by the University.

The Office regularly edited the internal database "Projects and Contracts", a list of agreements and international memberships on the UNG website, a blog "UNG Mobility Blog" and a website, where interested parties can get general information on international activities.

The work in the office in 2020 in the field of international research projects took place mainly to support the implementation of acquired projects.

In academic year 2020/2021, the International and Project Office provided administrative and financial support in the implementation of the following projects and in the preparation of financial reports:

- NFFA EUROPE - Integration and opening existing national and regional research infrastructures of european interest (Horizont 2020)
- EnViRoS - Opportunities for environmentally friendly viticulture: optimization of irrigation and introduction of new genotypes of wines (ERA-NET ARIMNET2)
- EcoLamb - Holistic Production to Reduce the Ecological Footprint of Meat (ERA-NET SUSAN)
- NanoElMem – Designing new renewable nano-structured electrode and membrane materials for direct alkaline (M.ERA-net)
- MX OSMOPED – MXene organic semiconductor blends for high-mobility printed organic electronic devices (FLAG ERA JTC)
- DIMAG - Electrically controlled ferromagnetism in 2-dimensional semiconductor (FLAG ERA JTC)
- PROSPECT PatteRned cOatings based on 2D materials benzoxazine reSin hybrids for broad range Pressure detection (FLAG ERA JTC)
- CLIC - Circular models Leveraging Investments in Cultural heritage adaptive reuse (Horizont 2020)
- URBINAT – Healthy corridors as drivers of social housing neighbourhoods for the co-creation of social, environmental and marketable NBS (Horizont 2020)
- RETINA - Opening research laboratories to innovative industrial applications (INTERREG V-A Slovenija – Avstrija)
- AGROTUR II - Sustainable development of agriculture and tourism on crossborder Kras (INTERREG V-A Slovenija – Italija)
- MAST – Master Module in Art, Science and Technology (EC DG Connect Pilot Call)
- HERMES-SP - High Energy Rapid Modular Ensemble of Satellites (Horizont 2020)
- KONS – Platform for contemporary research art (call of Ministry RS for Culture)
- Uncorking rural heritage: indigenous production of fermented beverages for local cultural and environmental sustainability (NFM Fund for regional cooperation)
- Biological remediation of water contaminated with heavy metals (Call of MIZŠ Researchers at the beginning of their careers 2.0)
- Metalization of polymer surfaces using algae (Call of MIZŠ Researchers at the beginning of their careers 2.0)

Career Center

(Head: Nives Štefančič)

Activities in 2021:

Activities in the context of practical training; coordination and assistance of students in finding companies for practical training and participation in online presentations of interim reports of the practical training of students of School of Engineering and Management in companies Led Luks, d. o. o., Primorski tehnološki park, d. o. o., Arctur, d. o. o., MAHLE Electric Drives Slovenija, d. o. o., SAOP, d. o. o., GOAP, d. o. o., Računalničar, d. o. o. and Advant, d. o. o.
Contacts with employers; online meetings with employers from companies Bia Separations, d. o. o., Eta, d. o. o., Lek, d. d., Luka Koper, d. d. and Advant, d. o. o. where we discussed the possibilities of cooperation with individual faculties in the framework of practical training, student work and other possibilities of cooperation. Publication of vacancies of companies Kolektor Etra, d.o.o., Incom, d.o.o., Led LUKS, d.o.o. and others.

Informing students and graduates of suitable job vacancies, internships, current events, tenders; published arround 170 job vacancies, which correspond to profiles of UNG graduates. We released 7 career news, sent to 650 e-mail addresses of students and graduates.

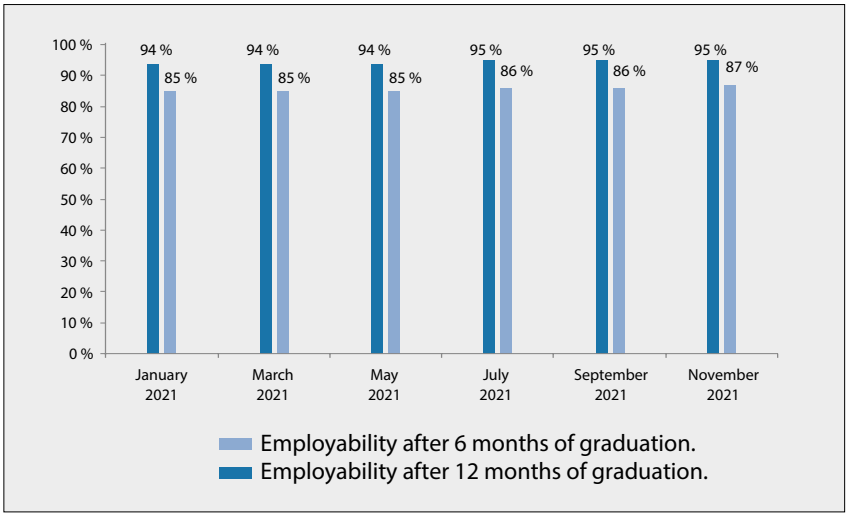
Periodically checking the employability of graduates six months and one year after graduation; in January 2021, March 2021, May 2021, July 2021, September 2021, November 2021 (graduates from 2017 to 2021).

Organization and/or participation at events with the aim of promoting the University and the Career Center:

- participation at Informativa 2021;
- participation at Info. Days 2021;
- conducting online chats with students or graduates on the topic of practical experience during their studies at the School of Humanities, School of Arts, School of Science and the School of Viticulture and Enology;
- obtaining written statements from graduates about study at the Schools of the University of Nova Gorica;
- obtaining written statements from employers on the course of practical training for the purposes of promotion;
- organization of an online webinar with graduates of the School of Engineering and Management "Economic Engineer - the profession of the future";
- organization of two online webinars and five online workshops for students of all Schools - EURES;
- organization of two workshop titled CV and motivation letter for students of all Schools;
- participation in the workshop regarding Cultural Management - provider of the cultural and educational association PiNA;
- participation in LUNG knowledge stands within the framework of Lifelong Learning Week 2021;
- member of the working group of the Rectors 'Conference of the Republic of Slovenia for monitoring employability (to support the activities of the EUROGRADUATE project of the Rectors' Conference of the Republic of Slovenia)
- pooperation/coordination of the STE(A)M project - within this project we held several meetings with representatives of secondary schools.
- coordination and co-management of the online round table at the School of Engineering and Management with title "Engineers through the eyes of Primorska Companies".

Participation of the Career Center in working meetings and trainings:

- participation at online working meetings with representatives of Career Centers of Higher Education Institutions;
- participation at the conference "20 years of operation of the National Center for Information and Vocational Counseling in the Euroguidance network";
- participation at several workshops related to the implementation of the European EGTI Alumni Monitoring Project.



Graphical presentation of the employability of graduates UNG 6 and 12 months after graduation (2021).

Alumni Club

Head: Nives Štefančič

Photo from the awarding of diplomas, master's degrees and the promotion of doctors of science at UNG.

Alumni Club of the University of Nova Gorica in 2020 continued with activities to increase connection between University and Alumni:

- we upgraded informations about Alumni and informed them about activities of Alumni Club;
- we invited them to become promotors within their schools, at variety promotional events;
- we informed Alumni about scholarships, competitions, opportunities for postgraduate studies at home and abroad;
- we informed them about job vacancies and other events suitable for individual profiles of graduates;
- we invited them to different events of the University of Nova Gorica (information days, semester and annual exhibitions, etc.);
- we conducted online chats with graduates on the topic of practical experience during their studies at the School of Humanities, School of Arts, School of Science and the School of Viticulture and Enology.

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