

Description of the study programme – outline

Name of the higher education institution: Alexander Dubček University of Trenčín
Address of the higher education institution: Študentská 2, 911 50 Trenčín
Identification number of the higher education institution: 719 000 000
Name of the workplace: Centre for Functional and Surface Functionalized Glass
Address of the workplace: Študentská 2, 911 50 Trenčín

Institution body for approving the study programme: **Committee for the internal evaluation TnUAD**

Date of the study programme approval or the study programme modification: **8.7.2022**

[Zapisnica c. 5 2022 zo dna 08.07.2022.pdf](#)

Date of the latest change in the study programme description: **27.5.2026**

[Zápisnica č.2/2026 zo dňa 27. 5. 2026](#)

Reference to the results of the latest periodic review of the study programme by the institution:

<https://tnuni.sk/univerzita/organy-univerzity/rada-pre-vnutorne-hodnotenie-tnuad/>

Reference to the assessment report of the application for accreditation of the study programme under § 30 of Act no. 269/2018 Coll.:

[Internal Assessment Report of the Study Programme](#)

1. Basic information about the study programme

- a) Name of the study program and its number according to the register of study programmes.
[Inorganic technologies and non-metallic materials, 4613](#)
- b) Degree of higher education and ISCED-F education degree code.
[III. degree- doctoral study, code 6 864](#)
- c) Place(s) of delivery of the study programme.
[Alexander Dubček University of Trenčín, Študentská 2, 911 50 Trenčín](#)
- d) Name and number of the field of study in which higher education is obtained by completing the study programme, or a combination of two fields of study in which higher education is obtained by completing the study programme, ISCED-F codes of the field/fields.
[16. Chemical Engineering and Technologies](#)
- e) Type of the study programme: academically oriented, professionally oriented; translation, translation combination study programme (listing the specializations); teaching, teaching combination study programme (listing the specializations); artistic, engineering, doctoral, preparation for regulated profession, joint study programme, interdisciplinary studies.
[Academically oriented](#)
- f) Awarded academic degree.
[PhD.](#)
- g) Form of study.
[External, Part-time](#)
- h) In the case of joint study programmes, cooperating institutions and the range of study obligations the student fulfils at each of the given institutions (§ 54a of the Act on Higher Education Institutions).
[Not relevant](#)
- i) Language or languages in which the study programme is delivered.
[Slovak/English](#)
- j) Standard length of the study expressed in academic years.
[5 years](#)
- k) Capacity of the study programme (planned number of students), the actual number of applicants and students.

Capacity of the study program = planned number of students in all 4 years of study:	5
Actual number of students in all 5 years of study:	2
Planned number of students in the first year of study in AR 2025/2026:	1
Actual number of applicants:	0
Actual number of students in the first year of study:	0

2. Graduate profile and learning objectives

- a) The institution defines the learning objectives of the study programme such as student's abilities at the time of completion of the programme and the main learning outcomes.

The graduate masters scientific methods of research in the preparation of new non-metallic inorganic materials. He is able to independently solve the problems of the development of inorganic technologies, including the reduction of waste generation and solutions for their recovery. He has special knowledge in

the field of glass. He has deep theoretical knowledge in the field of thermodynamics and kinetics and is able to solve challenging engineering problems in technical practice. He actively masters computer technology and informatics. He is able to actively work in a team, forecast developments in his field and perform project management. His theoretical knowledge is a prerequisite for application in research and development workplaces in the academic sector, industry and interdisciplinary disciplines.

Learning outcomes and outputs	
1. Systematic understanding and acquisition of skills and methods	Graduate: - has deep theoretical knowledge in the field of thermodynamics and kinetics and is able to solve challenging engineering problems in technical practice, - masters the methods of studying the structure and properties of materials, - has special and in-depth knowledge in the field of research and development of glass, progressive ceramic materials with specific functional properties and functional coatings, with a comprehensive understanding of the broader context in the field, - has a practical experience in research in the field of high temperature processes, - masters scientific research methods in the field of preparation of new non-metallic inorganic materials, - demonstrates a systematic understanding of the field of study of non-metallic inorganic materials and masters relevant research methodologies, - is able to work effectively with professional literature and to extract from it targeted information relevant to its scientific-research activity, - masters the ethical principles of scientific work and actively uses them in its research and publishing activities.
2. Application of knowledge and understanding	Graduate: - independently designs and implements research activities while maintaining the integrity of the research plan, - critically evaluates and proposes new research concepts and procedures, - independently solves the problems of the development of inorganic technologies, including the reduction of waste production and the solution of their recovery, such as the reduction of the environmental impacts of these technologies, - supports technical and societal progress in the concept of the knowledge society, - his/her theoretical and practical knowledge enables his/her application in research and development workplaces in academic workplaces, in industrial development and in interdisciplinary fields.
3. Creation of opinion	Graduate: - independently plans research activities, performs the necessary practical experiments using modern experimental and analytical techniques, analyses and statistically evaluates the obtained results, according to which is able to draw substantiated conclusions, - predicts the choice of a suitable material in view of its complex production and utility properties for the selected application, or applications, while assessing its impact on the environment in terms of the requirements of the circular economy, - solves research problems by integrating comprehensive knowledge and synthesizing valid conclusions and recommendations.
4. Communication	Graduate: - has the ability to communicate constructively with its colleagues and the wider scientific community, - is able to present the basic ideas of research activities to the professional and lay public, - actively masters a foreign (especially English) language and can actively use it in communication within an international team, as well as in disseminating the results of their research in oral (presentation) and written (in the form of scientific or professional publication),

	- contributes with its results to the expansion of the current state of knowledge: it documents this fact by publishing the results obtained at international conferences and in renowned scientific journals, - actively masters computer technology and is able to use it in an appropriate manner in communication within the international team, as well as in the analysis, evaluation and presentation of the results of his/her scientific research activities, - is able to actively work in a team, forecast developments in his/her field and manage a small research team.
5. Ability for further education	Graduate: - is prepared for the career of researcher and for further career and personal growth in the academic sphere, or in the field of industrial research and development, - while maintaining the ability to work in a team, demonstrates a high degree of independence, as well as the ability to quickly and effectively learn and master new issues using theoretical and practical experience and skills acquired during the study, - is prepared to make a significant contribution to technical development and social progress, whether in scientific research or in professional practice.

- b) The institution indicates the professions for which the graduate is prepared at the time of completion and the potential of the study programme from the point of view of graduate's employability.
Pursuant to the Annex to Decree No. 516/2011 Coll. Statistical classification of occupations SK ISCO-08 are graduates of the study program Inorganic Technologies and Non-Metallic Materials prepared for the performance of the professions listed in the table.

Code	Job title
1223001	Research institution manager
1223002	Research, development and technical development manager in production
1321008	Chemical production manager
1321009	Manager in glass production
2113999	Chemist not elsewhere classified (except chemical engineering)
2141029	Specialist in research and development in glass production
2141030	Glass production management specialist
2141032	Specialist technologist in glass production
2145001	Chemical specialist technologist
2145002	Chemical specialist in research and development
2310003	University teaching assistant
3116001	Application technician in chemical production
3116003	Process technician in chemical production
3122009	Master (supervisor) in glass production

From the graduate's point of view, the study program offers a wide range of applicability in:

- research and development in academic institutions in the Slovak Republic, in particular:
 - on universities providing education in materials and chemical technologies,
 - on SAS institutes dealing with research in the field of materials and chemical technologies,
- glass companies, but also in companies producing refractory materials and inorganic binders (cement plants) in various positions, from foremen, technologists and production managers to industrial development researchers in the field and application and operational laboratory staff. Potential employers in the Slovak Republic are RONA, a.s. Lednické Rovne; Vetropack Nemšová; Johns Manville Slovakia, Trnava; Knauff Insulation, Nová Baňa; Medical Glass, Bratislava; PPC Insulators, Čáb; Ladce Cement Plant; CEMMAC, Horne Srnie; etc.
- Due to the experience with working in the international environment at the training workplace, employment is not limited to employers in the Slovak Republic, but ensures the possibility of employment in the European labour market.

- c) Relevant external stakeholders who have provided the statement or a favorable opinion on the compliance of the acquired qualification with the sector-specific requirements for the profession.

Relevant involved groups were contacted in the form of questionnaires to comment on the compliance of the acquired qualification.

Opinion of the Relevant Involved Subjects

3. Employability

a) Evaluation of the study programme graduates employability.

KAP- has not been evaluated over the past five years.

b) If applicable, indicate the successful graduates of the study programme.

Name	Graduated	Employer	Job position
Vojtech Soltész	2013	VÚEZ, a.s. Levice	Project manager
Branislav Hruška	2013	TnUAD, FunGlass	Researcher
Petra Masaryk-Gaiová	2015	Yanfeng Slovakia	Test Technician
Lukáš Šimurka	2018	TNO Eindhoven, Holandsko	R&D scientist
Ivana Petriková	2018	TnUAD, FunGlass	Researcher
Marianna Čierniková	2018	RONA, a.s., Lednické Rovne	Specialist technician
Jaroslava Micháľková	2019	TnUAD, FunGlass	Qualified technician
Ewa Aleksandra Nowicka	2020	TnUAD, FunGlass	Researcher
Fatih Kurtuldu	2022	TnUAD, FunGlass	Researcher
Nurshen Mutlu	2023	Swiss Federal Laboratories for Materials Science and Technology	Postdoc. researcher
Mokhtar Mahmoud	2023	TnUAD, FunGlass	Researcher
Mai-Phuong Truong	2024	TnUAD, FunGlass	Researcher
Marzieh Ghadamyari	2024	TnUAD, FunGlass	Researcher
Martina Vitázková	2025	TnUAD, FunGlass	Researcher
Onat Basak	2025	TnUAD, FunGlass	Researcher
Abel Ourgessa	2025	TnUAD, FunGlass	Researcher
Ahmed Gamal	2025	TnUAD, FunGlass	Researcher

The complete list of graduates can be found on the FunGlass website: <https://www.funglass.eu/alumni/>

c) Evaluation of the study programme quality by employers (feedback).

Opinion of the relevant involved subjects-Employers

4. Structure and content of the study programme

a) *The institution describes the rules for the design of study plans within the study programme.*

The rules for the creation of study plans in the study program Inorganic Technologies and Non-Metallic Materials are regulated by the following internal regulations of TnUAD:

- 2-U-013 Rules for the internal system of quality assurance and evaluation of higher education, creative activities and other related activities at TnUAD in Trenčín,
<https://tnuni.sk/univerzita/organy-univerzity/rada-pre-vnutorne-hodnotenie-tnuad/>
- Guidelines for the design, modification and approval of TnUAD study programs - part 2-U-013 Rules for the internal system of quality assurance and evaluation of higher education, creative activities and other related activities at TnUAD in Trenčín
<https://tnuni.sk/univerzita/organy-univerzity/rada-pre-vnutorne-hodnotenie-tnuad/>

The conditions for completing the study in this study program, which are specified in the Study Plans, are defined in:

3-U-046 Directive- Organisation of Doctoral Studies at Alexander Dubček University in Trenčín- Directive

b) *The institution compiles the recommended study plans for individual study paths.*

The study program Inorganic Technologies and Non-Metallic Materials is a modern study program that reflects the individual nature of doctoral studies, but does not resign to the requirement of extensive, deep and comprehensive knowledge needed in scientific work, as well as in the later employment of graduates. It also includes practical training in selected experimental methodologies, as well as training in soft skills such as ethics of scientific work, project management and presentation skills.

In the study part of the study plan, it prescribes the completion of a two-semester English language course and two compulsory subjects, Inorganic Technologies and Materials I and Inorganic Technologies and Materials II,

which consist of 8 compulsory and 30 compulsory optional modules. Each module is compiled as an intensive course devoted to selected issues in the range of 10-30 teaching hours, and can be taught in the form of lectures, or in the form of a combination of lectures, exercises and laboratory exercises. Contact teaching is supplemented by individual consultations and self-study. The choice of compulsory optional modules will be made by the student in consultation with his / her supervisor. The selection reflects the individual needs of the student in relation to his / her previous education, as well as to the topic and goals of his/ her dissertation thesis. The student must pass a dissertation exam, the regular deadline of which is no later than half of the standard length of the study. At the end of the study, usually in the fifth year of study, the student must prepare a dissertation thesis and defend it before an established commission. The requirements for the composition of the commission are defined in the [Directive- Organisation of Doctoral Studies at Alexander Dubček University of Trenčín in Trenčín](#).

In the scientific part, the study program prescribes to the student experimental work aimed at obtaining scientific results related to the topic of his dissertation. Other subjects of the scientific part are focused on acquiring presentation and publishing skills. Their scope is defined in the [Directive- Organisation of Doctoral Studies at Alexander Dubček University in Trenčín](#).

The recommended study plan with the designation of compulsory and optional subjects and modules, profile subjects, prerequisites, student workload, obtained credits, persons providing individual subjects with contacts, and subject teachers, is given in

Study Plan

Learning outcomes and related criteria and rules of their evaluation, learning outcomes, conditions of completion of subjects and modules, prerequisites, used educational activities, methods by which educational activities are carried out, syllabi / syllabi of subjects / modules, teachers of subjects / modules, number of credits obtained per the subjects as well as the place of the course are listed in the **Information letters** [Study Plan](#)

- c) *The institution states the number of credits, the achievement of which is a condition for proper completion of studies and other requirements that the student must meet within the study programme and for its proper completion, including the requirements for state examinations, rules for re-study and rules for the extension, interruption of study.*

Number of credits required for proper completion of studies in the part- time form of the study program III. degree Inorganic technologies and non-metallic materials: **240**, where 1 ECTS credit corresponds to the requirements of 25 to 30 hours of study, depending on the complexity and requirements of the subject in accordance with Act no. 131/2002 Coll. on Higher Education Institutions and on Amendments to Certain Acts.

Further conditions for graduation are defined in the following internal regulations of TnUAD:

• [2-U-001 Study regulations](#)

- In Articles 6 to 16 of the [Directive- Organisation of Doctoral Studies at Alexander Dubček University in Trenčín](#).

- d) *For individual study plans, the institution states the requirements for completing the individual parts of the study programme and the student's progress within the study programme in the given structure:*

Condition/Number of credits for:	External study
Compulsory subjects	240
Compulsory elective subjects	0
Elective courses	0
Credits needed to graduate	240
Dissertation exam	20
Dissertation project	10
Defence of the dissertation	8
Professional practice	0

- e) *The institution describes the rules for verification of learning outcomes, students assessment and the possibilities of appealing against the assessment.*

Verification of learning outcomes and their evaluation is defined in Articles 24 to 29 of the Study Regulations in TnUAD <https://tnuni.sk/studenti/studijny-poriadok/>

As a part of the corrective procedures, the Study Regulations in TnUAD allow the student to use one regular and one corrective examination date.

The rules for partial and final evaluation of learning outcomes are defined for each subject in the Course Information Sheet. The rules are explained by each teacher to the students, usually in the first lesson. In justified cases (absence of a student due to health indications, serious family reasons, etc.), the corrective procedures of partial assessments allow the provision of additional time to complete the assigned tasks (e.g. semester work).

f) *Conditions for recognition of studies or a part of studies.*

The conditions for the recognition of studies are defined in Article 20 of the Study Regulations in TnUAD <https://tnuni.sk/studenti/studijny-poriadok/>

g) *The institution states the topics of final theses of the study programme (or a link to the list).*

Topics of final theses of the study program of students studying in the academic year 2025/2026

Topic	Student	Supervisor	Beginning of study
Mechanoluminescence and Persistent Luminescence of Bi-doped Germanates	Hossein Ebrahim Hosseini Tazeh Kandi	doc. Ing. Róbert Klement, PhD.	2020/21
Corrosion protection of aluminium using integrated self-healing systems	Udhaya Kumar Aruchamy	Prof. Ing. Dušan Galusek, DrSc.	2019/20

The list of all published final theses topics in the study program is published on the website of the FunGlass workplace in the section "**Dissertation theses topics of the study program**" <https://www.funglass.eu/study-programs/doctoral-study/>

h) *The institution describes or refers to:*

- *rules for the assignment, processing, opposition, defense and evaluation of final theses in the study programme,*

The rules for submitting, processing, opposing, defending and evaluating final theses are defined in the Internal Regulations in TnUAD:

- In Articles 8 to 13 of the [Directive- Organisation of doctoral studies at Alexander Dubček University in Trenčín](#)
- In Articles 27 to 29 of the [Study Regulations in TnUAD](#)

- *opportunities and procedures for participation in student mobility,*

Information on opportunities and procedures for participating in Erasmus + student mobility is published on the TnUAD website https://erasmus.tnuni.sk/index.php?id=185&no_cache=1 as well as on the FunGlass website in the part "Personnel of the study program" <https://www.funglass.eu/study-programs/doctoral-study/>. Other possibilities of mobility: BIP, virtual mobility, JECS Trust, DAAD, etc.

In addition, students of the study program "Inorganic Technologies and Non-Metallic Materials" have the opportunity to participate in mobilities and complete part of their studies at partner workplaces with which TnUAD has signed contracts and double diplomas:

- University of Padua, Italy
- Autonomous University of Madrid, Spain
- Friedrich Alexander University of Erlangen-Nuremberg, Germany
- Brno University of Technology, Czechia
- University of Limoges, France (in preparation)

To complete such a mobility, the student must meet the following conditions:

- Apply for a topic that is listed together with the partner workplace,
- Complete the study part of the studies at TnUAD, including passing the dissertation exam,
- Prepare a plan of activities carried out at the partner workplace, approved by the trainer, the director of the training workplace and the responsible staff of the partner workplace, [Training plan.pdf](#)
- Fulfil the conditions defined in the Double Diploma Agreement with the relevant partner office,
- After completing the internship, prepare a detailed report on the results of the mobility.

The maximum duration of the mobility is 12 months. During the mobility, the training institution can provide students with a contribution to cover the cost of living abroad, in an amount equal to the difference between the doctoral student's scholarship in the Slovak Republic and in the partner country. The institution will create conditions for students to obtain funding for research stays from external sources, such as the JECS Trust, SAIA, and others. The recommended semester(s) for international mobility is/are after the completion of the dissertation examination.

- *rules for adherence to academic ethics and rules for drawing consequences,*

The study program emphasizes the knowledge and practical application of the principles of academic ethics and scientific work of all students and graduates. Specific measures:

- All students in the course "Inorganic Technologies and Materials I" must complete a compulsory module, which content is a detailed acquaintance with the principles of research integrity and academic ethics, also presented in the form of case studies.

- all supervisors intensively work with students during their studies, especially in the preparation of publications and laboratory work, taking care to apply the principles of academic ethics described in the **Code of Ethics in TnUAD**

<https://tnuni.sk/univerzita/organy-univerzity/poradne-organy-rektora/eticka-komisia-tnuad/>,

- in **Statute of the Ethics Committee** <https://tnuni.sk/univerzita/organy-univerzity/poradne-organy-rektora/eticka-komisia-tnuad/>

- as well as in the **Declaration on strengthening the culture of scientific integrity in Slovakia**, to which TnUAD subscribes

<https://tnuni.sk/univerzita/organy-univerzity/poradne-organy-rektora/eticka-komisia-tnuad/>

- in the case of violation or gross violation of the rules of academic ethics, the **Ethics Committee** solves the complaints

<https://tnuni.sk/univerzita/organy-univerzity/poradne-organy-rektora/eticka-komisia-tnuad/>

- resp. **Disciplinary Board in TnUAD** <https://tnuni.sk/univerzita/organy-univerzity/disciplinarna-komisia/>

and draws consequences according to the seriousness of the offense.

- *procedures applicable to students with special needs,*

The procedures applicable to students with special needs are listed on the TnUAD Support Centre website <https://tnuni.sk/studenti/centrum-podpory-tnuad/centrum-podpory-tnuad/>

Due to the fact that the training workplace does not have its own Coordinator for students with special needs, students can turn to the university-wide coordinator if necessary. The contact is listed on the TnUAD Support Centre website TnUAD <http://cp.tnuni.sk/index.php/kontakt> as well as on the FunGlass website <https://www.funglass.eu/study-programs/doctoral-study/> in the part „Personnel of the study program“.

- *procedures for filing complaints and appeals by students.*

Student can submit his/her complaints and appeals to the Committee for the internal evaluation TnUAD, while the rules for submitting complaints are described in Rules for the internal system of quality assurance and evaluation of higher education, creative activities and other related activities at TnUAD in Trenčín <https://tnuni.sk/univerzita/organy-univerzity/rada-pre-vnutorne-hodnotenie-tnuad/>

The submission of complaints and appeals by the student is also regulated by the TnUAD Study Regulations. <https://tnuni.sk/studenti/studijny-poriadok/>

5. Course information sheets of the study programme

In the structure according to Decree no. 614/2002 Coll.

Information sheets of the subjects of the study program Inorganic Technologies and Non-Metallic Materials in the part-time study are listed on the FunGlass website in the part “Information letters” <https://www.funglass.eu/study-programs/doctoral-study/>, as well as in the information system AIS and Study Plan

6. **Current academic year plan and current schedule** (or hyperlink).

The schedule for the actual academic year for new and continuing students is given on the FunGlass website in section "Current schedule of the academic year"

<https://www.funglass.eu/study-programs/doctoral-study/>

The schedule for last year students is given at:

<https://www.funglass.eu/study-programs/doctoral-study/>

7. **Persons responsible for the study programme**

- a) A person responsible for the delivery, development, and quality of the study programme (indicating the position and contact details).

prof. Ing. Dušan Galusek, DrSc., director of FunGlass, dušan.galusek@tnuni.sk, phone 032-7400590

- b) List of persons responsible for the profile courses of the study programme with the assignment to the course and provided with a link to the central Register of university staff and with contact details (they may also be listed in the study plan).

The list of persons providing profile subjects of the study program with assignment to the subject with a link to the central Register of University Employees and with the relevant contacts is given in the **Study Plans** of the study program [Study Plan](#)

Persons providing profile subjects of the study program are marked with a **bold** in the Study Plan. The list is published also on the FunGlass website <https://www.funglass.eu/study-programs/doctoral-study/> in the part "Personnel of the study program – List of persons providing the profile subjects".

- c) Reference to the research/art/teacher profiles of persons responsible for the profile courses of the study programme.

References to the research/art/teacher profiles of persons responsible for the profile courses of the Study program are uploaded on: [VUPCH ucitelia zabezpečujúci profilové predmety](#)

- d) List of teachers of the study programme with the assignment to the course and provided with a link to the central Register of university staff and with contact details (may be a part of the study plan).

The list of teachers of the study program with assignment to the subject, indication of contacts and links to the central register of university employees is given in the **Study Plan** [Study Plan](#)

Names of teachers of the Study program are listed at the website of FunGlass <https://www.funglass.eu/study-programs/doctoral-study/> in "Personnel of the Study program"

- e) List of the supervisors of final theses with the assignment to topics (indicating the contact details).

The list of supervisors of final theses with assignment to topics and with contacts is available in the Academic Information System (AIS) TnUAD.

Supervisor	Contact	Topics of dissertation theses
prof. Ing. Dušan Galusek, DrSc.	dušan.galusek@tnuni.sk	Compositionally-Complex Ceramics (CCCs)
		Cold sintering of bioactive glasses
doc. Ing. Róbert Klement, PhD.	robert.klement@tnuni.sk	Novel efficient hybrid photocatalysts active in visible spectral range for elimination of water organic pollutants
		Near zero-thermal-quenching phosphors for NUV converted w-LEDs
		Advanced multifunctional ceramic materials
		Covalently functionalized nanoparticles with photosensitizers for photodynamic therapy application.
		Transparent ceramics with photoluminescent properties

doc. José Joaquín Velázquez García, PhD.	jose.velazquez@tnuni.sk	Novel binary semiconductor-based materials for Sustainable and clean energy: from synthesis to H2 generation
		Nano/micro structured fluoride based luminescent materials for non-contact optical thermometry application.
Ing. Jozef Kraxner, PhD.	jozef.kraxner@tnuni.sk	Development of novel glass melting technology using advanced laser technology.
		Corrosion of AZS refractory materials during production of Ba crystalline glass and design of methodology for their evaluation
		Upcycling of industrial waste glass into valuable components for water treatment applications.
		Additive manufacturing of advanced porous and photocatalytic glass ceramic wastewater purifying membranes.
		Additive Manufacturing of Optically Transparent Glass Structures for Next-Gen Sensing, Optical and Photonic Applications
		Innovative approaches to upcycling waste glass with binder jetting 3D printing for sustainable material solutions
Ing. Anna Prnová, PhD.	anna.prnova@tnuni.sk	Development of photoactive/conductive oxide electrodes by additive manufacturing techniques for photo/electrocatalytic reactions.
		Effects of mechanical milling and spray drying on flowability of rare earth oxide powders for thermal spray
		Preparation of high entropy materials with important magnetic properties
doc. Amirhossein Pakseresht, PhD.	amir.pakseresht@tnuni.sk	New glassceramic and ceramic materials in Al ₂ O ₃ -RE ₂ O ₃ - ZrO ₂ system with interesting mechanical properties.
		Synthesis and developing of high entropy oxide ceramic for thermal barrier application
		New and Modern Thermal barrier coatings based on high entropy ceramic oxides
Ing. Monika Micháľková, PhD	monika.michalkova@tnuni.sk	Surface modification of NiTi alloy by coating silicon-hydroxyapatite composite layers intended for biomedical applications
		Additive manufacturing of phosphor-in glass structures for enhanced light-emitting applications
Ing. Martin Michálek, PhD	martin.michalek@tnuni.sk	Preparation and characterization of luminescent glass-ceramic materials prepared by sintering in a viscous flow
		Development of multifunctional nanodevices based on silica and magnetic nanoparticles for theranostic applications.

		Development of novel bone fillers composites with enhanced bioactivity and biological response
		Bioactive oxynitride glasses for biomedical applications
Ing. Milan Parchovianský, PhD.	milan.parchoviansky@tnuni.sk	Development of corrosion resistant polymer derived ceramic coatings on stainless steel substrates
Dr. Kamalan Mosas	Kamalan.mosas@tnuni.sk	Enhancing optical properties through antireflective superhydrophobic coatings prepared by PVD and PECVD techniques
Dr. Si Chen	Si.chen@tnuni.sk	Therapeutic Ion-Doped Nanoparticle Infused Bioactive Glass Scaffolds with Tunable Textural Properties for Enhanced Bone Regeneration
Dr. Zulema Vargas Osorio	Zulema.vargas@tnuni.sk	Hybrid magnetic biopolymer beads for sustained drug delivery in theranostic applications
Dr. Omid Sharifahmadian	Omid.sharifahmadian@tnuni.sk	Enhancing mechanical and chemical durability of the Silicon Oxide (SiO ₂) Coatings using Hollow cathode plasma enhanced chemical vapor deposition (HC-PECVD)
Dr. Orhan Sisman	Orhan.sisman@tnunni.sk	Band-gap modulation of transparent conductive oxide (TCO) films by N ₂ incorporation
Mgr. Michal Žitňan, PhD.	Michal.zitnan@tnuni.sk	Photocatalytic water splitting using photocatalysts prepared by 3D printing
RNDr. Zuzana Neščáková, PhD.	Zuzana.nescakova@tnuni.sk	Antimicrobial effect of bioactive glass composites enriched with medicinal honey and propolis
		Metal-organic frameworks (MOFs) as carriers of drugs and other active agents for biomedical applications

- f) Reference to the research/art/teacher profiles of the supervisors of final theses.
Reference to the research/art/teacher profiles of the supervisors of final theses are on:
[2025_VUPCH](#)
- g) Student representatives representing the interests of students of the study programme (name and contact details).
Work group of the Committee for Quality Evaluation of TnUAD in study field 16. Chemical Engineering and Technologies:
- **Ing. Andrea Cibrínová**, andrea.cibrinova@tnuni.sk
Committee for study program „Inorganic Technologies and Non-metallic Materials“ in doctoral degree:
- **Ing. Terézia Sabadková**, terezia.sabadkova@tnuni.sk
- h) Study advisor of the study programme (indicating contact details and information on the access to counseling and on the schedule of consultations).
Mgr. Natália Kraxner, natalia.kraxner@tnuni.sk, <https://www.funglass.eu/study-programs/study-advisor/>
Information about the consultation schedule as well as other information is published on the FunGlass website <https://www.funglass.eu/study-programs/doctoral-study/> in the "Personnel of the study program" section.
- i) Other supporting staff of the study programme – assigned study officer, career counselor, administration, accommodation department, etc. (with contact details).
Study advisor Mgr. Natália Kraxner, natalia.kraxner@tnuni.sk,
Accommodation department <https://tnuni.sk/studenti/ubytovanie/>
Mobilities https://erasmus.tnuni.sk/index.php?id=185&no_cache=1
Social department <https://tnuni.sk/studenti/stipendia-a-pozicky/>
Specific needs of students <http://cp.tnuni.sk/>

Library<http://kniznica.tnuni.sk/>**Career counselling for students**

Ing. Andrea Chrastinová Kalinayová, PhD.,

andrea.chrastinova@tnuni.sk**Residence permits for foreign students**Marcela Brodová, marcela.brodova@tnuni.sk

All necessary contacts are also listed on the FunGlass website- "Personnel of the study program"
<https://www.funglass.eu/study-programs/doctoral-study/>

8. Spatial, material, and technical provision of the study programme and support

- a) List and characteristics of the study programme classrooms and their technical equipment with the assignment to learning outcomes and courses

The training workplace has laboratories that are equipped with state-of-the-art experimental technology, enabling research in the field of development, preparation and characterization of advanced glass and ceramic materials in a quality corresponding to European and world standards. All facilities are available after appropriate training to those doctoral students who use them in solving their dissertation project. Information regarding spatial, material and technical equipment of the study program is listed on the FunGlass website <https://www.funglass.eu/study-programs/doctoral-study/> as well as <https://www.funglass.eu/equipment/>

- b) Characteristics of the study programme information management (access to study literature according to Course information sheets, access to information databases and other information sources, information technologies, etc.).

- Information resources available at the TnUAD University Library (<https://katalog.kniznica.tnuni.sk/opac>)
- Electronic information sources and access to databases through the TnUAD University Library portal (<http://kniznica.tnuni.sk/index.php?id=371>)
- Book literature provided by tutors and teachers of individual subjects in individual agreement with the student.

The university and student laboratories are equipped with standard computer technology and the necessary software. Examples of specialized SW equipment include software for thermodynamic calculations containing an extensive database of thermodynamic quantities FACT, software for spectrum analysis Solo Mia, software for analysis of X-ray diffraction data HighScorePlus with PDF4 database, software for analysis of chemical analysis results ICP Experts and ICP MS MassHunter, SW for analysis of results of thermal analyzes NETZSCH Proteus 6 and TA Instruments Universal Analysis 2000, SW AZTEC for analysis of results of EBSD measurements, SW INCA for analysis of EDS and WDS spectra, SW Wire ver. 5.3 for evaluation of Raman spectra, SW SPECTRA Plus for evaluation of chemical analyzes on XRF, SW Cary Win for analysis and evaluation of UV-vis NIR spectra, SW FluorEssence for measurement of steady state spectra also with built-in module for calculation of color coordinates of emitted light as well as quantum yield, module for fitting curves measured by TCSPC excited state quenching technique SW DAS 6, etc.

- c) Characteristics and extent of distance education applied in the study programme with the assignment to courses. Access, manuals of e-learning portals. Procedures for the transition from contact teaching to distance learning.

The scope of distance learning for the combined education method is indicated in the Study Plan- [Study Plan](#)

The procedure for transitioning to distance learning is stated in Article 14 of the Organizational Directive for the Organization of Doctoral Studies at the Alexander Dubček University of Trenčín in Trenčín <https://tnuni.sk/studenti/doktorandske-studium/> and also in the article 16 of the Study regulations : <https://tnuni.sk/studenti/studijny-poriadok/>

- d) Institution partners in providing educational activities for the study programme and the characteristics of their participation

Partners	The nature of the cooperation
Institute of Inorganic Chemistry SAS	External educational institution: provides the scientific part of TnUAD doctoral students' studies on jointly announced topics.
Institute of Materials Research SAS	Cooperation in scientific research activities of doctoral students.

Università degli Studi di Padova, Italy	Joint education of doctoral students, visiting workplace for doctoral students' mobility, signed contract for the award of double degrees.
Universita Autonoma de Madrid, Spain	Joint education of doctoral students, visiting workplace for doctoral students' mobility, signed contract for the award of double degrees.
Friedrich Alexander Universität Erlangen-Nürnberg, Germany	Joint education of doctoral students, visiting workplace for doctoral students' mobility, signed contract for the award of double degrees.
Friedrich Schiller Universität Jena, Germany	Joint education of doctoral students, visiting workplace for doctoral students' mobility.
INSA Lyon, France	Visiting workplace for doctoral students' mobility.
CEITEC BUT Brno, Czech Republic	Cooperation in scientific research activities of doctoral students.
University of Pardubice, Czech Republic	Cooperation in scientific research activities of doctoral students.
VŠChT Praha, Czech Republic	Cooperation in scientific research activities of doctoral students.
RONA, a.s. Lednické Rovne	Cooperation in scientific research activities of doctoral students, arranging excursions, cooperation in defining dissertation theses topics.

e) Characteristics of the possibilities for social, sports, cultural, spiritual and social activities.

All students have the following opportunities for social, sports, cultural, spiritual and social activities:

- Gym,
- University Pastoral Centre, <https://tnuni.sk/univerzita/univerzitne-pracoviska/univerzitne-pastoracne-centrum-sv-andreja-svorada-a-benedikta-pri-trencianskej-univerzite-alexandra-dubceka-v-trencine/>,
- Student radio TrenchTown, <http://radio.tnuni.sk/>,
- Student centre, <https://www.facebook.com/%C5%A0tudentsk%C3%A9-centrum-Tren%C4%8Dianskej-univerzity-1722165551387862/>

f) Possibilities and conditions for participation of the study programme students in mobilities and internships (indicating contact details), application instructions, rules for recognition of this education.

The possibilities and conditions of participation of students in the study program in mobilities and internships are described in detail in the section "**Possibilities and procedures of participation in the student mobility**" of this Description of the study program.

9. Required abilities and admission requirements for the study programme applicants

a) Required abilities and necessary admission requirements.

The basic prerequisite, the fulfilment of which is necessary for admission to the study, is the completion of the second degree of university study, namely in the field of study Chemical Engineering and Technology (Chemical Engineering, Chemical Technology, Inorganic Technology and Materials, Organic Technology and Fuel Technology, Macromolecular Substances Technology, Chemistry and environmental technology), or in the fields of study Chemistry (chemistry, inorganic chemistry, organic chemistry, analytical chemistry, physical chemistry, macromolecular chemistry, theoretical and computer chemistry, biochemistry), Physics (physics, chemical physics, condensed matter physics and acoustics, biophysics) or Engineering (materials). The applicant must demonstrate skills for independent scientific work and must have an active knowledge of English. As part of the admission procedure for doctoral studies, an entrance examination will take place. The content of the entrance exam for doctoral studies is to check the applicant's knowledge of the issue, which is the content of the dissertation selected by the applicant from the proposals published topics of doctoral dissertations. The required skills and prerequisites for admission to the study are updated on an ad hoc basis, and after the approval of the AS TnUAD, the current wording is published in <https://www.funlass.eu/study-programs/doctoral-study/> as well as on the Higher Education portal <https://www.portalvs.sk/en/studijny-program/tnuad-anorganicke-technologie-a-nekovove-materialy0>

b) Admission procedures.

The applicant is admitted to study on the basis of the results of the entrance examination, which is transparent and objective. The entrance exam takes place in the form of an oral interview, at which the

admissions committee examines the applicant's knowledge of the issue, which is the content of the dissertation topic selected by the applicant from the proposals published topics of doctoral dissertations. The admissions committee will evaluate the result of the entrance exam in a closed session. If several candidates apply for the entrance examination on one published topic, the admissions committee will determine the order of their success. For joint topics with partner institutions with which TnUAD has signed double degree agreements, an authorized representative of the partner institution will also take part in the entrance examination. The decision on admission / non-admission to the study is sent to the applicant in writing no later than 30 days after the entrance examination. Admission conditions for foreign applicants are the same as admission conditions for students from the Slovak Republic. In the case of applicants from abroad, it is possible to take the entrance exam online.

Current valid admission procedures are available on the University Portal

<https://www.portalvs.sk/en/studijny-program/tnuad-anorganicke-technologie-a-nekovove-materialy0>

<https://www.portalvs.sk/en/studijny-program/tnuad-anorganicke-technologie-a-nekovove-materialy0#details-matriculation>

as well as on the FunGlass website <https://www.funglass.eu/study-programs/doctoral-study/>. The detailed admission procedure is described in the Organizational Guidelines for the Organization of Doctoral Studies at the Alexander Dubček University of Trenčín in Trenčín <https://tnuni.sk/studenti/doktorandske-studium/>

c) Results of the admission process over the last period.

Results of the admission process over the last period.

The evaluation of the results of the admission procedure for the last period is given in the Regular Evaluation Report on the admission procedure at TnUAD / faculty / CUP published on [Regular Evaluation Report on the admission procedure](#)

10. Feedback on the quality of provided education

a) Procedures for monitoring and evaluating students' opinions on the study programme quality.

Procedures for monitoring and evaluating students' opinions on the quality of the study program are defined by 2-U-013 Rules for the internal system of quality assurance and evaluation of higher education, creative activity and other related activities at TnUAD in Trenčín <https://tnuni.sk/univerzita/organy-univerzity/rada-pre-vnutorne-hodnotenie-tnuad/>

b) Results of student feedback and related measures to improve the study programme quality.

The results of students feedback and related measures to improve the quality of the study program are published at [CUP FunGlass- Pravidelná hodnotiaca správa garanta](#) as well as on FunGlass website <https://www.funglass.eu/accreditation-documents/committee-for-study-program/> and [Opinion of the relevant involved subjects-Students](#)

c) Results of graduates feedback and related measures to improve the study programme quality.

The results of graduates feedback and related measures to improve the quality of the study program are published at:

<https://www.funglass.eu/accreditation-documents/committee-for-study-program/> a [Opinion of the relevant involved subjects-graduates](#)

11. References to other relevant internal regulations and information concerning the study or the study programme student (e.g. study guide, accommodation regulations, fee directive, guidelines for student loans, etc.).

Study guide	https://tnuni.sk/studenti/informacie-o-studiu/
Accommodation	https://tnuni.sk/studenti/ubytovanie/
Fees Directives	https://tnuni.sk/studenti/skolne-a-poplatky/
Student cards	https://tnuni.sk/studenti/studentske-preukazy/studentske-preukazy/oznamy/
Scholarships and loans	https://tnuni.sk/studenti/stipendia-a-pozicky/
Support Centre	https://tnuni.sk/studenti/centrum-podpory-tnuad/centrum-podpory-tnuad/
Student Organizations	https://tnuni.sk/studenti/studentske-organizacie/iaeste-slovakia/
Alumni Portal	https://www.funglass.eu/alumni/

