ANNUAL REPORT 2019

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INTRODUCTION

The Faculty of Chemistry of the Brno University of Technology continues with its activities in the long tradition of chemical university education in Brno, started by the establishment of the Chemical Department of the Czech Technical University in November 1911 and interrupted in 1951 by the conversion of Brno technology into the military Technical Academy. The renewal of the Faculty of Chemistry in 1992 was a necessity both in terms of supplementing the Brno University of Technology with the field necessary for its integrated educational effect and complex scientific and research activities, and above all in terms of the industrial development needs of the region, where the interruption in the education of chemists with engineering education, lasting several decades, was clearly felt. The concept of fields of study constituted since the renewal of the Faculty's activities and from the next perspective is based on the needs of BUT development and reflects the needs and requirements of the society and the labour market in the near and far future. At present, the Faculty of Chemistry is an established and respected educational institution with strong research activities and strong links to the industrial and other application spheres.

MISSION

The mission of the Faculty of Chemistry is to provide quality education in chemical disciplines and related fields. Within the framework of educational activities, the faculty emphasizes the connection of educational and creative activities with the needs of the labour market, application sphere, region and other relevant partners. To this end, it uses the excellent research infrastructure, the high potential of its staff and students, and a harmonized environment that creates individualized and optimized conditions for the study of students and the work of employees.

VISION

Research-oriented faculty competitive in an international context, with strong links to industry, providing teaching with an emphasis on a quality basis of chemical disciplines and linking teaching with excellent material research in the field of material sciences and related fields.

DEAN'S FOREWORD


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DEAN'S FOREWORD

Dear supporters, employees and students of the Faculty of Chemistry, the annual report you are browsing or reading now summarizes the most important results and events of last year, which we recorded at our Faculty. I am glad that when we look back at the last year we can say that we have done a lot of work at the Faculty and have moved a lot forward again.

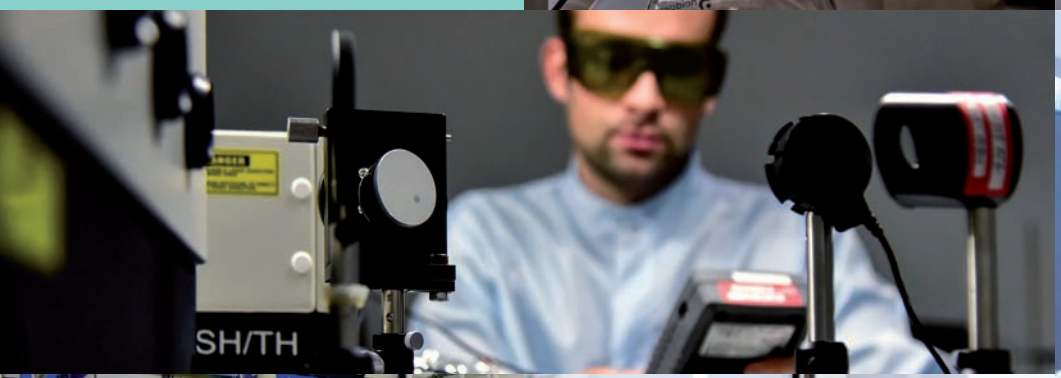
I am most pleased that even in a period of declining population curve, the interest of applicants for study at our Faculty has not decreased, and on the contrary the total number of students has slightly increased. I believe that this interest also entails our efforts to continually innovate our study programmes in such a way that they, as previously, prepare genuine professionals with competences that reflect the requirements of current professional practice.

In 2019, we managed to prepare and accredit several completely new study programmes. In the next academic year, we will therefore enrol the first students in the double-degree international doctoral study programme Biophysical Chemistry, on which we cooperate with the Spanish University of Huelva. On the other hand, all those who first enrol in the international double-degree follow-up study programme Environmental Sciences and Engineering will study at the German University of Koblenz-Landau. The new bachelor study programme Applied Analytical, Environmental and Forensic Chemistry was created at our Faculty as a reaction to today's pressing issues in the complex area of environmental protection and therefore combines the knowledges of processes in the environment and their analyses, chemical technologies, environmental legislation and law. The latest brand-new programme is the professionally oriented bachelor study programme Environmental Chemistry, Security and Management, which responds to the current demand for experts in this field.

Education at our Faculty is widely supported by quality research activities. Therefore, I am pleased that this year we have also seen an increase in the quality of professional activity, which can be expressed, for example, by the increase in the number of publications in high quality impacted journals and by the increasing impact factor of these publications. In terms of its publishing performance, the Faculty belongs to the top of BUT and is fully comparable with other high-quality faculties of chemistry and technology. I am also pleased with maintaining the economic growth of the Faculty, which was also supported by the successful transformation and stabilization of the Materials Research Centre in the period after the end of the implementation of the sustainability project. Also in 2019, the Centre proved to be the key infrastructure of the Faculty, which we must further develop.

Finally, I would like to thank all students, employees and colleagues of the Faculty for their efforts, work and study commitment, which contributed to the successful development of the Faculty in the past year. With optimism, therefore, we can expect further development of the Faculty in 2020, but we also need to be prepared to successfully meet all the challenges it will prepare for us this year.

prof. Ing. Martin Weiter, Ph.D.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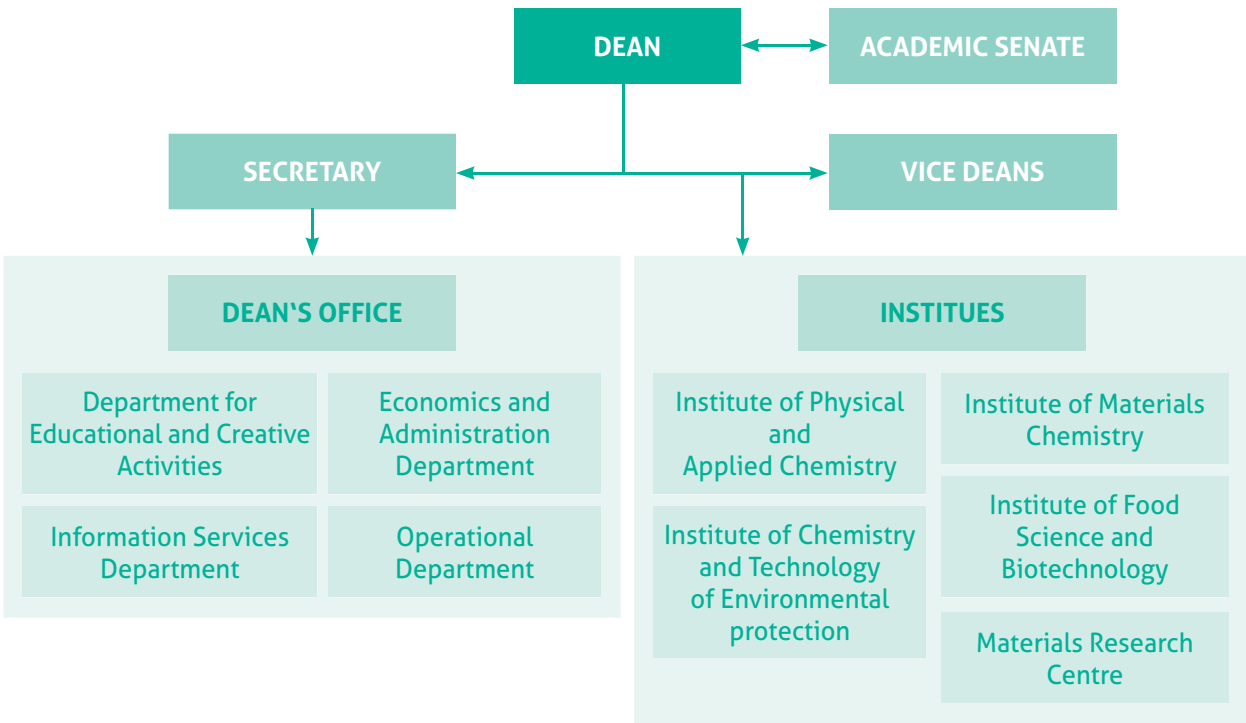

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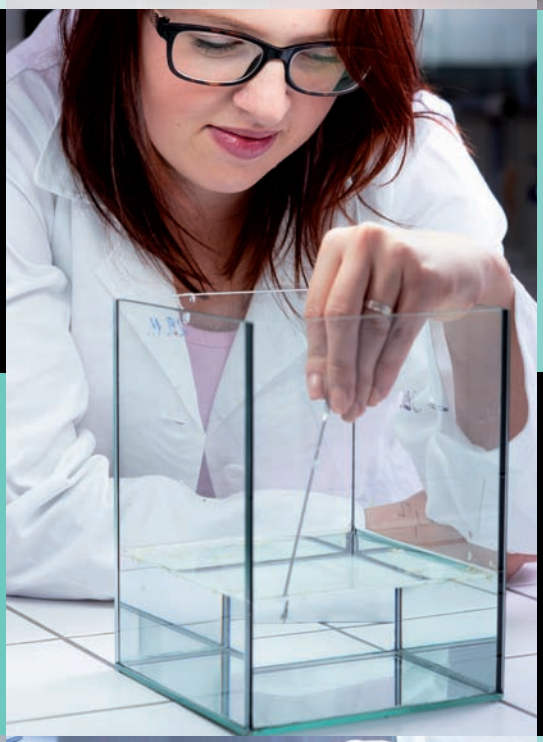

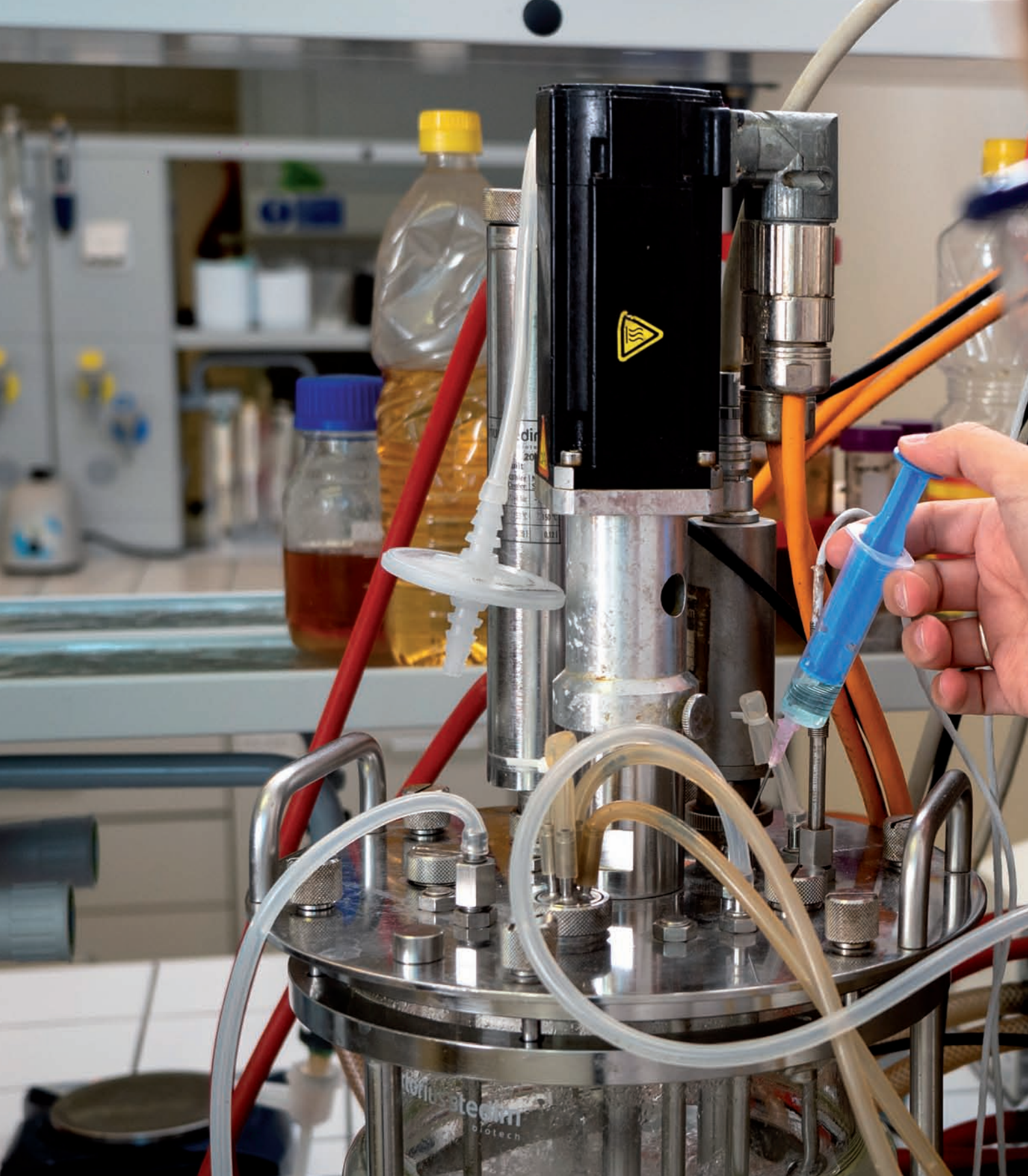

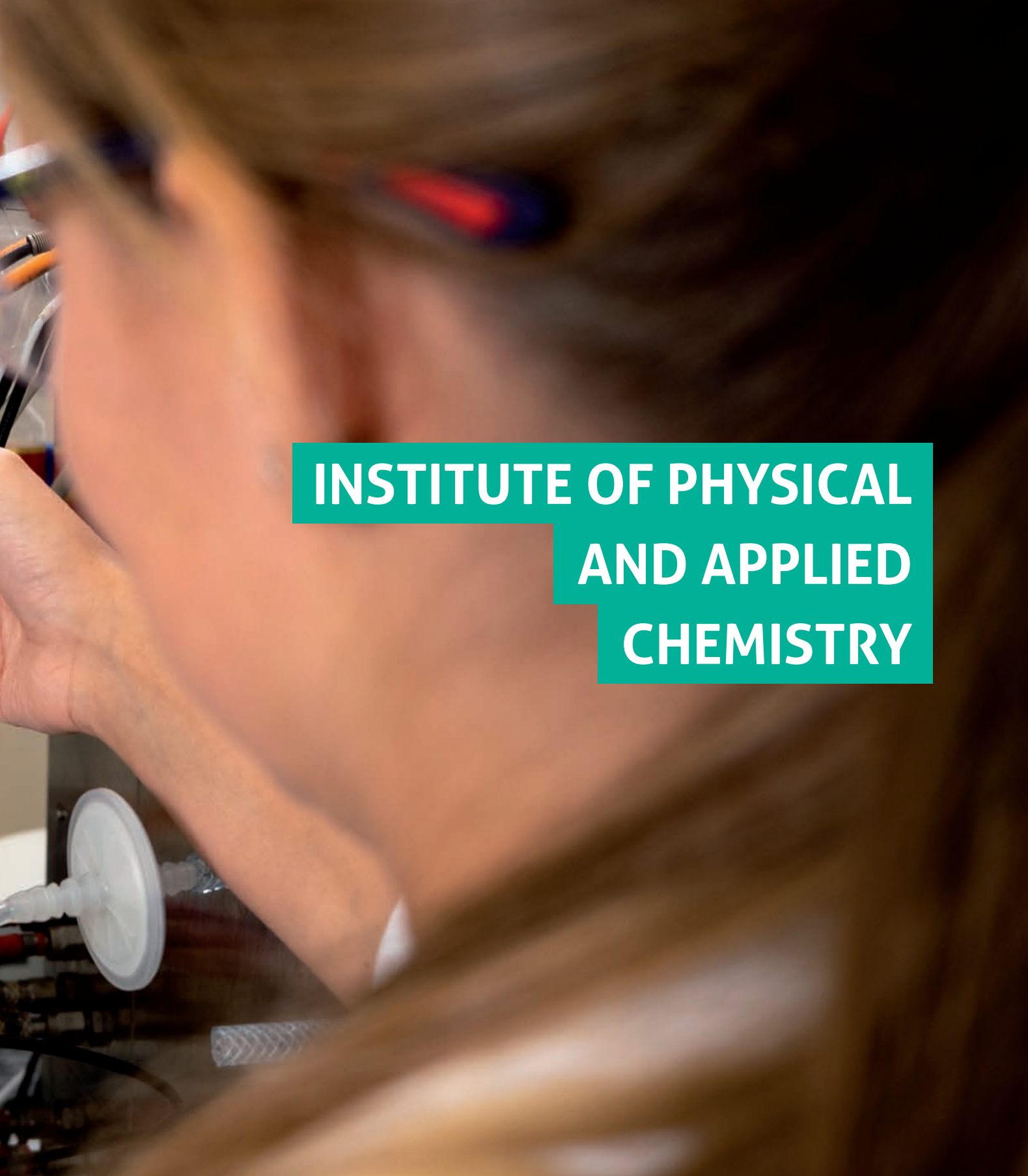

INSTITUTE OF PHYSICAL AND APPLIED CHEMISTRY

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In 2019, the first students joined the new bachelor study programme Chemistry and Chemical Technology, which the Institute provides. It builds on the previous field of study Consumer Chemistry and is intended for applicants with a deeper interest in chemistry as such and its use.. In addition, a new doctoral study programme Biophysical Chemistry has been accredited, also in the English version, with the possibility of obtaining a double doctorate in cooperation with the University of Huelva (Spain); the programme is provided by the Institute in cooperation with the Institute of Food Chemistry and Biotechnology. The arrival of the first students is expected in 2020. Traditionally, the Institute provides the bachelor study programme Chemistry for Medical Applications and the follow-up masters programmes Chemistry for Medical Applications and Consumer Chemistry. The study of Chemistry of Promedical Application is focused on general chemical and technical-chemical education, which is extended in field courses to the disciplines associated with the use of chemistry in various fields of medicine. The graduate is a chemist who is also educated in the basics of pharmacological, biochemical, medical-biological, biotechnological and bioengineering issues. His education also includes modern disciplines of nanotechnology, e.g. medical nanobiotechnologies. Graduates are applicable in chemical, but especially in pharmaceutical, biomedical and biotechnological practice. The aim of the study of Consumer Chemistry is to provide general education in the field of chemistry and technical chemistry, extended to the theory and practice of the consumer chemical industry. Students are offered education applicable especially in specialized small-scale productions. The graduate will acquire basic knowledges and skills (including laboratory) in the field of inorganic, organic, physical and analytical chemistry and chemical engineering. This basis is developed in the fields of applied physical chemistry and chemical physics, colloid chemistry, photochemistry, modern electronics and material printing. Teaching at the Institute generally emphasizes independent activity, developing individual skills and their involvement in teamwork. For students with a deep interest in chemistry and creative activities, the Institute offers doctoral study in the programmes Physical Chemistry and Chemistry, Technology and Properties of Materials. The Institute became the target of longer internships of foreign students (Brazil, Croatia and Germany). In the area of modern teaching methods, the Institute prepared extensive hypertext materials to support the teaching of mathematics in chemistry.

For the professional public, the Institute offers all forms of cooperation in the field of its competences, both educational and scientific-research and development, e.g. specialized training courses, consultations, measurements and determinations on instruments of the Institute, custom or joint research and development and a strategic partnership in research, development and innovation. The Institute is specialized in applied physical chemistry including colloid chemistry, photochemistry, electronics and plasmochemistry. It can thus offer expertise e.g. in the field of development and testing of dispersion systems and gels, controlled release, classical and material printing, photochemical-

functional products, materials for organic electronics or photovoltaics, plasmachemical treatments and processes, etc. The creative activity of the Institute is closely linked with the Materials Research Center of the Faculty.

From the achievements of creative activity in 2019, it is possible to highlight the acquisition of new international projects: cooperation with Taiwan, a unique junior project of the International Society for Humic Substances or a project of the Interreg programme. A joint research and innovation project with Kores was launched and the Institute participated in the solution of the so-called innovation vouchers and the application research project for the Ministry of the Interior of the Czech Republic was successfully completed.

prof. Ing. Miloslav Pekař, CSc.

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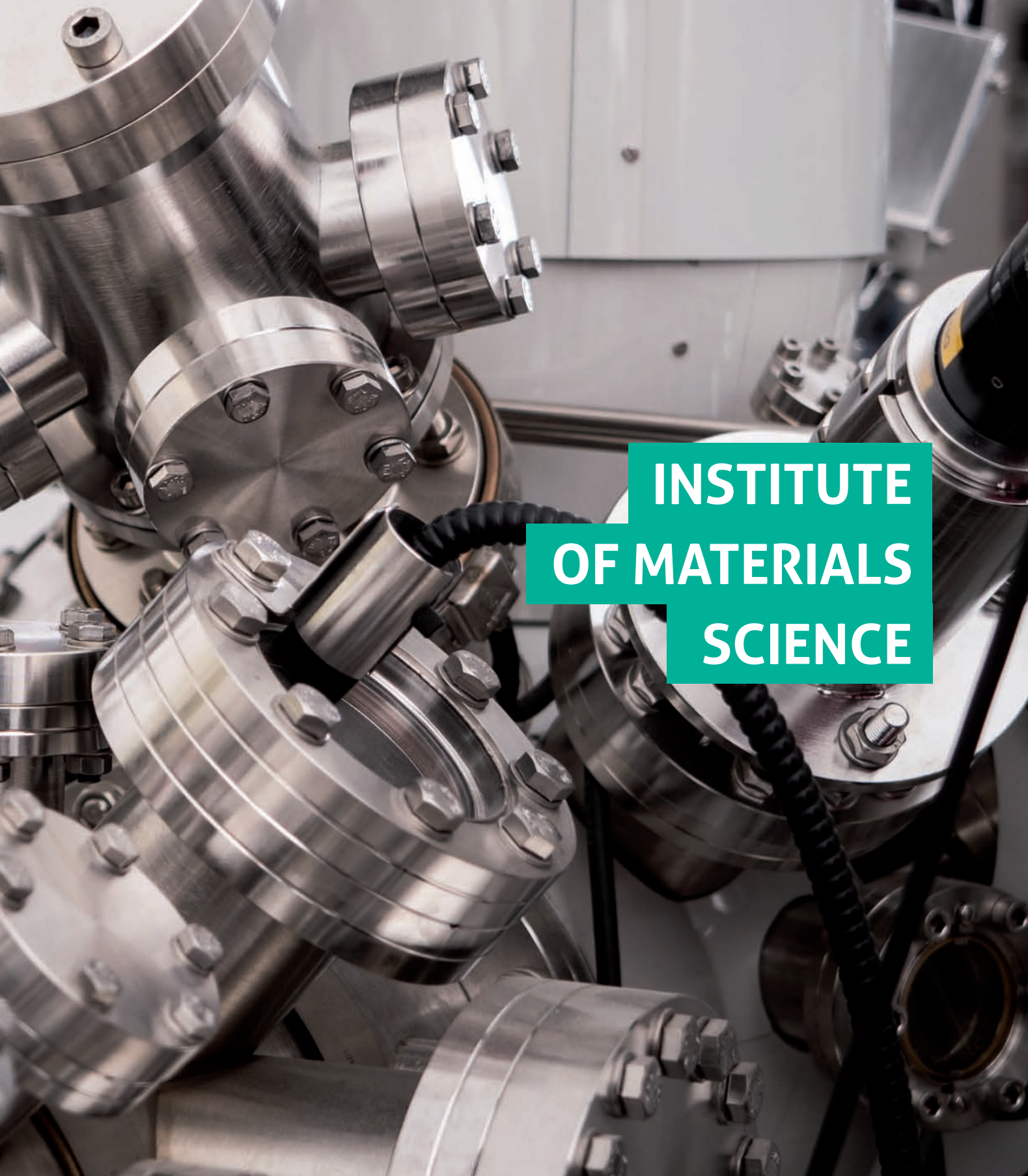

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The Institute of Materials Science is responsible for the bachelor and follow-up masters study programme Chemistry and Materials Technology. The implementation of the study programmes study is guaranteed by 6 patrons i.e. cooperating companies. The aim of the bachelor programme is to provide the student with good knowledges of basic principles of inorganic, organic, physical and analytical chemistry and chemical engineering, as well as basic orientation in macromolecular chemistry and in the structure and properties of solids, i.e. inorganic materials, polymers and metals. In the follow-up study the theoretical knowledges and practical skills needed in engineering practice are deepened, especially in the synthesis and characterization of polymer, composite, ceramic and building materials, in plastics processing technology and polymer composite production, in production technologies of ceramic and building materials and in surface treatments of metals and other materials. The best graduates can continue in doctoral study in programmes Chemistry, Technology and Properties of Materials and Macromolecular Chemistry.

For companies, the Institute of Materials Science offers the possibility to consult practical production technological problems, chemical, structural and physical-mechanical analysis of raw materials and final products. We perform routine tests and special measurements of chemical, physical, structural, thermomechanical, corrosion and processing properties of building materials, ceramics, plastics, composites and metals. We also provide custom development of new materials for construction, construction applications, automotive, electronics and electrical engineering, ballistic protection, reconstruction medicine, biodegradable packaging, IT hardware, 3D printing, adhesives and anti-corrosion treatment of metals. Our specialities are functional nanomaterials, low-density structural and non-combustible insulating materials, geopolymers and other cement-free mortars, materials with controlled lifetime period, refractory materials, ultra-high performance concretes, hybrid cements, materials with high secondary raw material content, polymeric and inorganic biomaterials, materials based on PLA and PHB biopolymers and anti-corrosion protection of magnesium alloys. The academic staff of the Institute cooperates with more than 50 companies and together with them solves around 20 grant projects and contract research contracts, which have resulted in more than 20 patents and many industrial applied innovations in recent years. The Institute is a key research partner of companies in the region, mainly from the field of production of Portland cement and other building materials, as well as from the field of production of refractory materials, functional electrotechnical ceramics and biodegradable plastics.

doc. Ing. František Šoukal, Ph.D.

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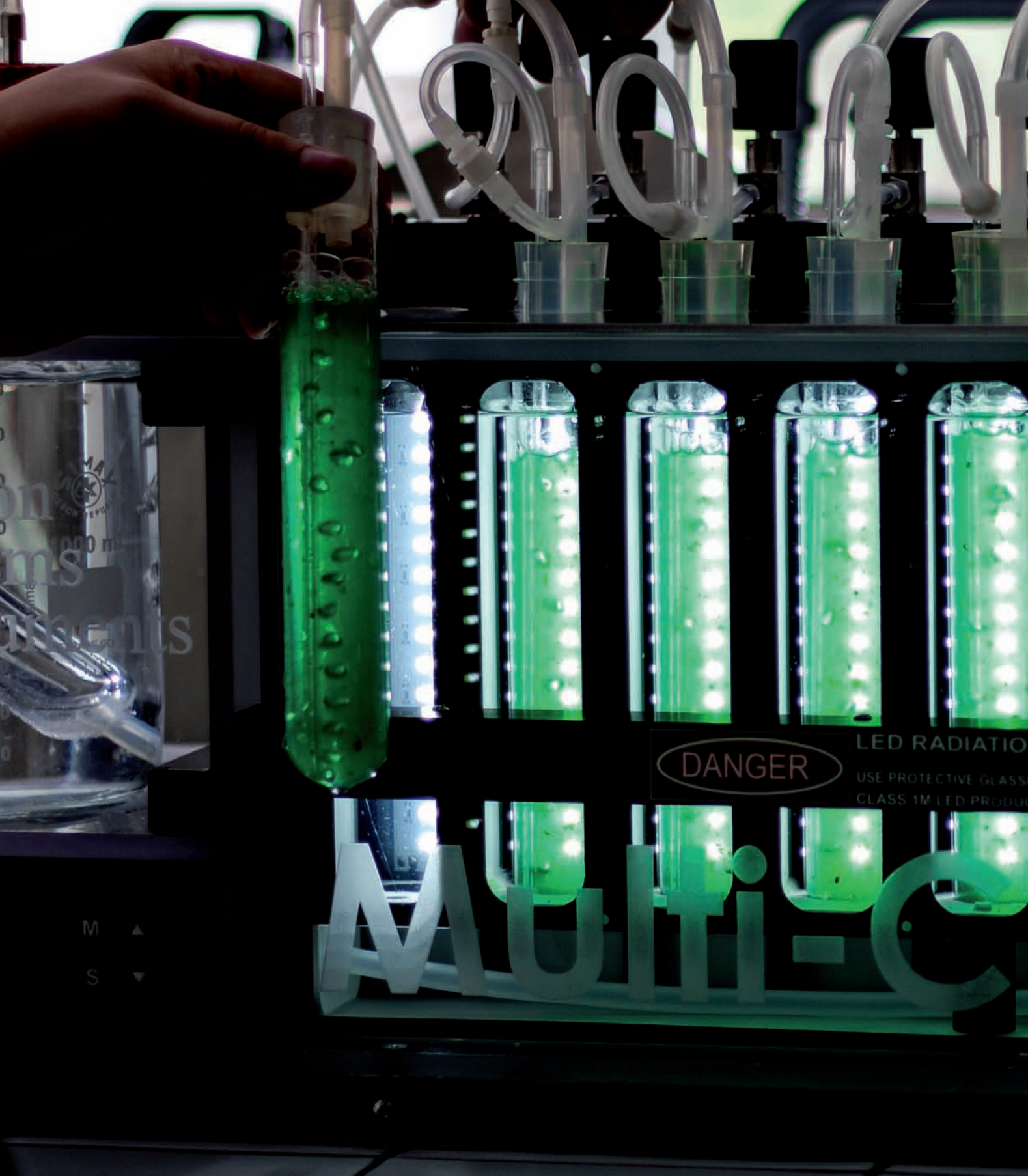
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INSTITUTE OF CHEMISTRY AND TECHNOLOGY OF ENVIRONMENTAL PROTECTION

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The Institute of Chemistry and Technology of Environmental Protection provides teaching in bachelor and follow-up master and doctoral study programmes of the same name. Programmes can be defined as environmental engineering, based on thorough knowledges of analytical chemistry and chemical technologies, supported by knowledge of other disciplines such as ecotoxicology, applied biology and inorganic chemistry. Students are taught in basic chemical disciplines during their bachelor study. Within the scope of specialization, they learn to analyse individual pollutants and propose measures to protect the basic components of the environment, i.e. air, water, soil and biota and further, the issue of transformation of toxic substances in individual components of the environment is solved. In the follow-up masters study programme, they are acquainted with decontamination and remediation technologies, technologies for air protection and waste treatment. Students are also acquainted with risk analysis and assessment including prevention and liquidation of chemical accidents. In accordance with the legislation in force they manage to carry out environmental impact studies (EIA), have an overview of quality systems and ISO standards. Studying enables students to acquire the necessary knowledges and practical experiences, which they can subsequently use in the labour market after graduating from high school. Thanks to this, graduates can work as managers, engineers and technologists in all areas of the chemical and biotechnology industry, especially in water management, waste water treatment plants, air and soil protection, etc.

The scientific research activity of the Institute focuses on both basic and applied research. Basic research is focused on the development of methods for waste water analysis with special focus on the detection of pharmaceutical, hormone, fragrance and artificial sweetener residues, development of methods for analysis of soil organic matter dynamics and quality and analysis of micro-plastics in soils, development of preconcentration techniques for platinum metal analysis and synthesis of a wide range of biologically and optically active organic substances. Applied research is focused primarily on water treatment technology, soil and air protection, general and special industrial toxicology and ecotoxicology, technological processes of municipal waste disposal, plastic biodegradation, preparation of environmentally applicable materials and monitoring and optimization of processes in photovoltaic and thermal systems.

In 2019, the Institute staff participated in the international exchange projects CEEPUS and NETCHEM and further solved a number of projects together with industrial partners and research organizations. Intensive cooperation takes place with the AdMaS Research Center (FAST, VUT) and ASIO spol. s r.o., with which the issues related to the treatment of sewage sludges and waste water treatment within

the TACR projects are solved and with the company Nafigate, a.s., with which the projects of the Ministry of Industry and Trade are solved. International cooperation is actively developed especially with universities and academic and industrial institutions in Germany (University of Koblenz-Landau, University of Applied Sciences Dresden, LKS mbH, Lichtenwalde), Italy (University of Palermo), Scotland (University of Highlands and Islands), Austria (Johannes Kepler University, Linz), France (University of Ruan), USA (Ohio State University), Japan (Kyushu University, Fukuoka) and Israel (Volcani Center, Bet Dagan).

doc. Ing. Jiří Kučerík, Ph.D.

PROFESSORS AND ASSOCIATE PROFESSORS

prof. RNDr. Milada Vávrová, CSc. († 28. 6. 2019)
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Ing. Veronika Řezáčová, Ph.D.
Mgr. Michaela Vašinová Galiová, Ph.D.

TECHNICIANS

Ing. Martin Cigánek (since 1. 7. 2019)
Ing. Ján Jančík
Pavla Kleinová
Mgr. Jan Richtár (since 1. 7. 2019)
Ing. Petra Suková (until 30. 6. 2019)
Ing. Tereza Švestková (until 30. 6. 2019)
Ing. Petra Venská
Svatava Wilczewská

LECTOR

Ing. Marta Skoumalová (until 31. 8. 2019)

PH.D. STUDENTS

Ing. Hana Barboříková
Ing. Martin Cigánek
Mgr. Pavel Fojt
Ing. Jakub Fojt
Mgr. Petr Chrást
Ing. Ján Jančík
Ing. Anna Jančík Procházková
Ing. Stanislav Ježek
Ing. Lucie Kabelíková
Ing. Veronika Kerberová
MVDr. Dagmar Kotlíková
Mgr. Blanka Krejčí
Ing. Pavlína Landová
Ing. Petr Levek
Ing. Eva Matejčíková
Ing. Barbora Nývltová
Ing. Václav Pecina
Ing. Michal Petruľák
Ing. Petra Procházková
RNDr. Helena Půčková
Mgr. Jan Richtár
Ing. Petra Suková
Ing. Jiří Sýkora
Ing. Tereza Švestková
Ing. Jana Valíčková
Ing. Petra Venská
PharmDr. Ing. Silvie Kotlíková Vlčnovská

INSTITUTE OF FOOD SCIENCE AND BIOTECHNOLOGY

DIRECTOR
prof. RNDr. Ivana Márová, CSc., 541 149 419, marova@fch.vutbr.cz

DEPUTY DIRECTOR
doc. Ing. Stanislav Obruča, Ph.D., obruca@fch.vutbr.cz

SECRETARY
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The Institute of Food Chemistry and Biotechnology ensures the implementation of the bachelor study programme Chemistry and Technology of Foodstuffs. Within this programme it offers study fields Food Biotechnology, Chemistry of Natural Compounds and Food Chemistry. Students of the above-mentioned bachelor study programmes have the opportunity to continue in the follow-up masters study programme Chemistry and Technology of Foodstuffs, field Food Chemistry and Biotechnology. The Institute also provides a doctoral study programme Chemistry and Technology of Foodstuffs with a field Food Chemistry and also conducts habilitation and professorship procedures in the same field. The study focuses on gaining active knowledges and skills needed in the control and management of modern food and biotechnology production, fermentation technologies of other food, pharmaceutical, cosmetic and chemical technologies and for work in food, biotechnology, genetic, biochemical, microbiological and chemical laboratories. The concept of the field is in accordance with current requirements for specialized and highly qualified workers in modern biotechnology and food productions, research and development laboratories, in control and inspection institutions and in commercial companies.

Graduates of the above-mentioned study programmes can find employment in:

- the agri-food complex
- biotechnology processes in the chemical, pharmaceutical and cosmetics industries
- new fields of the environmental protection industry
- state control institutions
- the development of new technologies and research
- business organizations.

The scientific focus of the IFSB FCH BUT is based on current trends in the development of modern food sciences. The main areas of research include analytical-technological area focused on development and optimization of technological processes, analysis of quality and safety of food, its ingredients, food raw materials and final products and development of modern methods of analysis of content substances. Another part of the research is directed to the area of biotechnology and focuses on the development and optimization of processes directed to processing and valorization of waste from food and agricultural production and their use for the production of industrially important metabolites and substances with high added value. The scientific focus of the Institute also includes modern molecular biotechnologies and their applications to determine the authenticity of food, raw materials and cosmetic products. In recent years, nanotechnologies and possibilities of their use in food industry and cosmetics have been actively developed. In all these areas, the IFSB is open to cooperation.

The IFSB is currently involved in the research program of the Materials Research Center (Laboratory of Biotechnology and Biomaterials). In 2019, the IFSB staff participated in some international projects (LipoFungi, cooperation with Norway; bilateral project GACR - cooperation with Austria), projects of national and international grant agencies (GACR, TACR Gamma - BUT Šance, SoMoPro - funded by EU and JIC Marie Curie funds) and a number of collaborations with industry (e.g. Nafigate, a. s., Favea, a. s., Pharmaceutical Biotechnology, s. r. o., Dekonta a. s., Vinselekt Michlovský, Vinařství Velké Bílovice, s. r. o.,

Photon System Instruments, s. r. o., POEX, a. s., EVECO, s. r. o., Brno). The Institute has a certified sensory laboratory that provides certified courses and evaluators' examinations to the professional public.

IFSB cooperates with a number of foreign and domestic institutions in solving the research tasks of all the above mentioned directions, student theses, specialized analyses and technology transfers (e.g. Research Institute of Brewing and Malting Prague, Veterinary research institute Brno, CEITEC Brno, RBIP Holovousy, Institute of Scientific Instruments CAS Brno, IICH CAS, Czech Globe etc.). International cooperation is actively developed especially with universities and academic and industrial institutions in Norway (University of Trondheim, NMBU As, FTIRScreen As), Sweden (University Lund), Spain (University Huelva), Austria (Vienna, TU Graz, BOKU Tulln) in Italy (University Sassari, University Perugia) and Slovakia (FRI Bratislava, Institute of Chemistry SAS, FCHFT SUT).

prof. RNDr. Ivana Márová, CSc.

PROFESSORS AND ASSOCIATE PROFESSORS

doc. Mgr. Václav Brázda, Ph.D.
prof. Ing. Josef Čáslavský, CSc.
doc. Ing. Pavel Diviš, Ph.D.
prof. RNDr. Jiří Doškař, CSc.
doc. Ing. Adriána Kovalčík, Ph.D.
doc. Ing. Stanislav Obruča, Ph.D.
prof. RNDr. Ivana Márová, CSc.
doc. Ing. Eva Vítová, Ph.D.

ASSISTANT PROFESSORS

PhDr. Miroslav Hrstka, Ph.D.
Ing. Petra Matoušková, Ph.D.
Ing. Andrea Němcová, Ph.D.
Ing. Jaromír Pořízka, Ph.D.
Mgr. Jan Smetana, Ph.D.
Ing. Štěpánka Trachtová, Ph.D. (MD)
RNDr. Mária Veselá, Ph.D.
RNDr. Milena Vespalcová, Ph.D.
Ing. Jana Zemanová, Ph.D.

TECHNICIANS

Radka Nováková
Lenka Somrová

PH.D. STUDENTS

Markus von Busse
Ing. Natálie Burešová
Ing. Dana Byrtusová
Ing. Mária Ďubašáková
Ing. Lenka Fialová
Ing. Michaela Čutová
Ing. Eva Fryšová
Ing. Viliam Hlaváček
Ing. Julie Hoová
Ing. Helena Hudečková
Mgr. Jana Konečná
Ing. Iveta Kostovová
Ing. Jakub Křikala
Ing. Dan Kučera
Mgr. Vojtěch Kundrát
Ing. Martina Mahdalová
Ing. Lucie Müllerová
Ing. Ivana Nováčková
Ing. Renata Pavelková
Ing. Iva Pernicová
Ing. Otília Porubiaková
Ing. Lenka Punčochářová
Ing. Marek Rapta
Ing. Marek Reichstädter
Ing. Denisa Romanovská
Ing. Lenka Ryšavá
RNDr. Petr Ryšávka
Ing. Peter Sadel
Ing. Eva Slaninová
Ing. Kateřina Sůkalová
Ing. Martin Szotkowski
Ing. Michal Sýkora
Ing. Adéla Šimíčková
Ing. Václav Štursa
Ing. Elena Šťávová
Ing. Marie Vysoká

MATERIALS RESEARCH CENTRE

DIRECTOR
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FINANCIAL MANAGER OF THE CENTRE
Mgr. Lucie Hrbková, 541 149 482, hrbkova@fch.vut.cz

BUSINESS MANAGER OF THE CENTRE
Mgr. Martin Bartoš, 541 149 446, bartos@fch.vut.cz

SECRETARY
Dagmar Terichová, 541 149 813, terichova@fch.vut.cz

The Materials Research Centre (MRC) is a specialized research centre focused primarily on applied research of inorganic materials, advanced organic materials and biomaterials - with an emphasis on their chemical side and properties. The Center is also developing its own basic research, which serves as an inspirational source for potential applications. The main objective of MRC is to strengthen cooperation between university research and the application sector through contractual research and joint research projects, thus speeding up the transfer of knowledges and technologies into practice. Given its affiliation to the Faculty of Chemistry at BUT also aims to involve as many students as possible in real contract research projects and cooperation with the application sphere to enable their further professional development.

MRC IMPLEMENTS RESEARCH ACTIVITIES IN THE FOLLOWING AREAS:

Inorganic materials • Inorganic non-metallic materials are the largest group of man-made materials in terms of volume. These include mainly building materials, i.e. concrete, binders, ceramics, glass, as well as refractories for industrial high-temperature aggregates or functional ceramic materials. The Laboratory of Inorganic Materials focuses on research and development of selected types of inorganic materials in cooperation with more than 100 companies in the field.

Metals and Corrosion • The Metal and Corrosion Laboratory offers analyses of various kinds of not only metallic materials, the development of protective coatings and the identification of causes and course of corrosion. Thanks to state-of-the-art instrumentation and laboratory equipment and facilities, it successfully helps industrial companies and research institutions with everything about metals and corrosion.

Biocolloids • The Biocolloid Laboratory is engaged in basic and applied research with emphasis on colloids, dispersions and hydrogels of natural and synthetic origin. It has high-tech equipment for fluorescence spectroscopy, thermal analysis and calorimetry, characterization of liquid and soft solid colloids or for the study of diffusion. Applications include the fields of medicine, pharmacy, cosmetics, household and consumer chemistry, nanotechnology, soil and environmental management or agriculture.

Biotechnology and Biomaterials • Methods and technologies for microbial production of industrially important substances such as biomaterials, enzymes, vitamins, pigments, and other natural molecules are researched in the Biotechnology and Biomaterials Laboratory. For produced chemicals and materials, applications are primarily developed in the fields of pharmacy, health care, food and cosmetics. In

parallel, the laboratory is focused on characterizing the potential effect of various materials and organic products on living cells of all types.

Organic Electronics and Photonics • The laboratory is engaged in applied and basic research in the field of advanced organic materials in electronics and photonics. It offers expertises in the field of organic synthesis of new functional materials, characterization and study of electron, optical, electrical and optoelectric properties and the design, construction and characterization of components and devices for organic electronics, sensorics and photonics.

Bioplastics • The use of any plastic has an environmental impact and incorrect application of bioplastics is definitely not an exception. Several years of work with these materials and the accumulated experience with their processing show meaningful applications of these materials. With high-tech instrumentation and laboratory equipment, the Bioplastics Laboratory helps industrial companies develop and test these materials for applications where their deployment reduces the environmental burden.

Analytical and environmental chemistry • The main research topics are oriented primarily on environmental protection and technology, but the laboratory also deals with the analysis of samples from industry and transport. These are mainly qualitative and quantitative analyses of organic substances, heavy metals, nanoparticles and microplastics in waters and soils. The laboratory also deals with the dynamics of soil carbon, the quality of soil organic matter and methods for rapid analysis of soil properties. The laboratory also offers biodegradability analyses of (bio)plastics and much more.

In 2019, the MRC succeeded in developing industrial partnerships in the field of applied research, both in the form of contract research and joint projects. The volume of contract research reached CZK 12.01 million. In cooperation with companies, 27 grant projects were implemented, of which 7 under the TACR programs (5 new since 2019), 16 projects under the Ministry of Industry and Trade program called Trio (10 new), 2 projects under the OP EIC under Ministry of Industry and Trade (1 new), 1 H2020 project and 1 IHSS project. In addition, another 17 grant projects of basic and applied research were implemented at the MRC, either individually or in cooperation with other research organizations. Specifically, there were 10 GACR projects (5 new), 5 projects under the responsibility of the Ministry of Education, Youth and Sports, 1 JMK project - SoMoPro and 1 new project Interreg CZ-SK. In total, CZK 57.91 million was awarded to MRC in the framework of domestic grant titles in 2019 and CZK 5.1 million in foreign projects in 2019.

In 2020, the MRC foresees an increase in project funds by projects that have already been allocated but will not start until early 2020. In 2020, the MRC will strive for an increase in foreign project funds.

doc. Ing. Tomáš Opravil, Ph.D.

SCIENTIFIC RESEARCHERS

Ing. Eva Bartoníčková, Ph.D.
Ing. Vlastimil Bílek, Ph.D.
Mgr. Martin Boháč, Ph.D. (until 31. 5. 2019)
doc. Mgr. Václav Brázda, Ph.D.
Ing. Matěj Březina, Ph.D.
doc. Pavel Diviš Ing., Ph.D.
Ing. Pavel Doležal, Ph.D.
Mgr. Helena Weissmannová Doležalová, Ph.D.
Ing. Leoš Doskočil, Ph.D.
Ing. Vojtěch Enev, Ph.D.
Ing. Silvestr Figalla, Ph.D.
Ing. Zuzana Fišerová, Ph.D.
prof. Ing. Jaromír Havlica, DrSc.
Ing. Patricie Heinrichová, Ph.D.
Ing. Michal Hrabal, Ph.D.
Ing. Andrea Hurčíková, Ph.D.
doc. Ing. Josef Chladil, CSc.
Ing. Michal Kalina, Ph.D.

Ing. Lukáš Kalina, Ph.D.
doc. Ing. Miloš Kalousek, Ph.D. (since 1. 7. 2019)
prof. Ing. Martina Klučáková, Ph.D.
Ing. Iva Kolářová, Ph.D.
Mgr. Renata Komendová, Ph.D.
Ing. Bc. Soňa Kontárová, Ph.D.
Ing. Jan Koplík, Ph.D.
Mgr. Alexander Kovalenko, Ph.D.
doc. Ing. Adriána Kovalčík, Ph.D.
doc. Ing. Zdenka Kozáková, Ph.D.
doc. Ing. Jozef Krajčovič, Ph.D.
doc. RNDr. František Krčma, Ph.D.
Ing. Jitka Krouská, Ph.D.
doc. Ing. Jiří Kučerík, Ph.D.
doc. Ing. Miloš Lavický, Ph.D. (since 1. 7. 2019)
RNDr. Stanislav Luňák, CSc.
prof. RNDr. Ivana Márová, CSc.
Ing. Jiří Másilko, Ph.D.
Ing. Petra Matoušková, Ph.D.
doc. Mgr. Věra Mazánková, Ph.D.
Ing. Přemysl Menčík, Ph.D.
Ing. Ludmila Mravcová, Ph.D.
doc. Ing. Filip Mravec, Ph.D.
Ing. Andrea Němcová, Ph.D.
Ing. Radoslav Novotný, Ph.D.
doc. Ing. Stanislav Obruča, Ph.D.
Ing. Lukáš Omasta, Ph.D.
doc. Ing. Tomáš Opravil, Ph.D.
Ing. Jan Otoupalík, Ph.D. (since 1. 7. 2019)
prof. Ing. Miloslav Pekař, CSc.
doc. RNDr. Jaroslav Petrůj, CSc.
prof. Ing. Tomáš Podrábský, CSc.
Ing. Jaromír Pořízka, Ph.D.
Ing. Jan Pospíšil, Ph.D.
Mgr. Radek Přikryl, Ph.D.
prof. Ing. Petr Ptáček, Ph.D.
Mgr. David Rais, Ph.D. (since 1. 5. 2019)
Ing. Marie Rusinová, Ph.D. (since 1. 7. 2019)
doc. Ing. Ota Salyk, CSc.
Ing. Petr Sedláček, Ph.D.
Ing. Jiří Smilek, Ph.D.
Ing. Tomáš Solný, Ph.D.
Ing. Pavel Šiler, Ph.D.
doc. Ing. František Šoukal, Ph.D.
Ing. Eva Štěpánková, Ph.D.
Ing. Jiří Švec, Ph.D.
Ing. Lucie Trojtlerová (since 1. 9. 2019)
doc. Mgr. Martin Vala, Ph.D.
Ing. Tereza Venerová, Ph.D.
doc. Ing. Eva Vítová, Ph.D.
Ing. Jaromír Wasserbauer, Ph.D.
prof. Ing. Martin Weiter, Ph.D.
doc. Mgr. Ivaylo Zhivkov, Ph.D.

TECHNICAL SUPPORT

Bc. Ondřej Bača (since 1. 7. 2019)
Ing. Denisa Beranová
Ing. Martin Brtnický (since 1. 5. 2019)
Ing. Martin Buchtík
Ing. Dana Byrtusová
Ing. Martin Cigánek
Ing. Lucie Dlabajová
Mgr. Jan Dvořák
Ing. Jiří Ehlich (1. 2. 2019–31. 8. 2019)
Ing. Jakub Fojt (since 1. 5. 2019)
Bc. Jan Fučík (since 1. 7. 2019)
Zuzana Gregušková
Ing. Jan Hajzler
Ing. Martina Havlíková
Ing. Julie Hoová
Ing. Petr Hrubý
Bc. Valeriia Iliushchenko (since 1. 11. 2019)
Ing. Martin Janča
Ing. Ján Jančík
Vojtěch Jašek (since 1. 6. 2019)
Ing. Šárka Jelínková
Ing. Adam Jugl
Roman Jurnečka (since 1. 6. 2019)
Eliška Kameníková (since 1. 5. 2019)
Ing. Jan Kotrla
Ing. Xenie Kouřilová (since 1. 8. 2019)
Ing. Matouš Kratochvíl (until 30. 6. 2019)
Ing. Michaela Krystýnová
Leona Kubíková
Ing. Dan Kučera Ph.D.
Ing. Michal Marko
Ing. Aneta Marková
Ing. Lukáš Matějka
Ing. Veronika Melčová
Sylva Mihočová
Bc. Marta Miklasová (since 1. 7. 2019)
Ing. Lucie Müllerová (since 1. 5. 2019)
Ing. Ivana Nováčková

Bc. Martina Novotná (since 1. 7. 2019)
Ing. Jakub Palovčík
Ing. Renata Pavelková
Ing. Václav Pecina (since 1. 6. 2019)
Ing. Iva Pernicová
Ing. Aneta Pospíšilová (since 1. 6. 2019)
Ing. Lenka Punčochářová (since 1. 9. 2019)
Mgr. Jan Richtár
Bc. Ivana Románeková (since 1. 6. 2019)
Bc. Martin Sedlačík (since 1. 11. 2019)
Ing. Eva Slaninová
Bc. Kateřina Smejkalová (since 1. 11. 2019)
Ing. Marcela Smilková
Ing. Šárka Sovová (since 1. 8. 2019)
Ing. Stanislav Stříteský
Ing. Jana Szabová
Ing. Halina Szklorzová
Ing. Martin Szotkowski
Mgr. Zuzana Šedrlová (since 16. 9. 2019)
Bc. Barbora Šmírová (since 1. 11. 2019)
Ing. Nikola Šuleková
Bc. Martina Švábová (since 14. 10. 2019)
Ing. Tereza Švestková (since 1. 6. 2019)
Gabriela Trávníčková (since 1. 6. 2019)
Bc. Darina Truchlá (since 1. 11. 2019)
Ing. Jan Truksa (until 30. 9. 2019)
Ing. Šárka Tumová
Ing. Alžběta Vargová (until 30. 6. 2019)
Ing. Jan Vojtíšek
Ing. Marie Vysoká
Ing. Kateřina Žáková (until 31. 10. 2019)

ADMINISTRATION

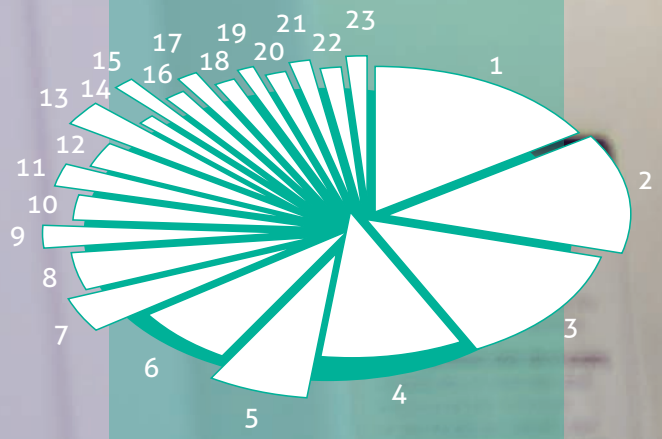
Mgr. Martin Bartoš
Mgr. Zuzana Burešová
Pavla Dobrovská
Mgr. Tomáš Hebký
Marta Horáčková
Mgr. Lucie Hrbková
Daniela Macháčová
Michaela Mrkvicová
Dagmar Terichová
Eva Vizentová

Study programs	type	length	title
Chemistry and Technology of Foodstuffs	B	3	Bc.
Chemistry and Chemical Technologies	B	3	Bc.
Chemistry and Technology of Materials	B	3	Bc.
Chemistry and Technology of Environmental Protection	B	3	Bc.
Chemistry and Technology of Environmental Protection	N	2	Ing.
Chemistry and Technology of Foodstuffs	N	2	Ing.
Chemistry for Medical Applications	N	2	Ing.
Chemistry, Technology and Properties of Materials	N	2	Ing.
Consumer Chemistry	N	2	Ing.
Chemistry, Technology and Properties of Materials	D	4	Ph.D.
Chemistry and Technology of Foodstuffs	D	4	Ph.D.
Chemistry and Technology of Environmental Protection	D	4	Ph.D.
Physical Chemistry	D	4	Ph.D.
Macromolecular Chemistry	D	4	Ph.D.
Study programs in English			
Physical Chemistry	D	4	Ph.D.
Macromolecular Chemistry	D	4	Ph.D.
Chemistry and Technology of Foodstuffs	D	4	Ph.D.
Chemistry, Technology and Properties of Materials	D	4	Ph.D.

The aim of the faculty in the educational field is to offer a diversified approach to quality education in order to seek out and develop students' talents, reduce study failure rate and to allow disadvantaged groups (e.g. socially and culturally disadvantaged) access to quality education.

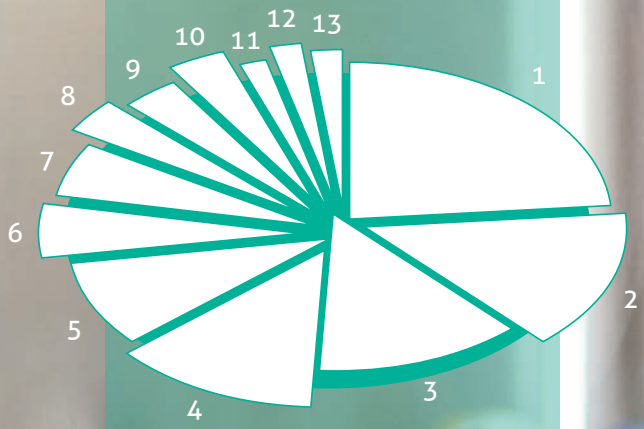
STUDY PROGRAMMES

TRIPS OF STUDENTS



1	Austria	12	16 %
2	Norway	10	13 %
3	Slovenia	10	13 %
4	Spain	7	9 %
4	Germany	5	7 %
6	Portugal	5	7 %
7	Russia	3	4 %
8	Italy	3	4 %
9	Taiwan	2	3 %
10	Poland	2	3 %
11	Slovakia	2	3 %
12	Bulgaria	2	3 %
13	Belgium	2	3 %
14	Great Britain	1	1 %
15	Denmark	1	1 %
16	Brazil	1	1 %
17	Sweden	1	1 %
18	Japan	1	1 %
19	Croatia	1	1 %
20	Hungary	1	1 %
21	Lithuania	1	1 %
22	France	1	1 %
23	Switzerland	1	1 %

ARRIVALS OF FOREIGN STUDENTS



1	Portugal	13	24 %
2	Spain	8	15 %
3	Brazil	7	13 %
4	Turkey	7	13 %
5	Lithuania	5	9 %
6	Bulgaria	3	5 %
7	Italy	3	5 %
8	South Korea	2	4 %
9	Austria	2	4 %
10	Slovakia	2	4 %
11	Germany	1	2 %
12	Taiwan	1	2 %
13	Oman	1	2 %

The Faculty of Chemistry makes the best eff ort to increase international cooperation, mutual mobility and joint projects in educational and creative activities. The aim is to create an environment that will have a clear international character, taking into account the world context and international experience in the preparation and implementation of study programs and joint research projects.

INTERNATIONALIZATION OF STUDY, STUDENT TRIPS ABROAD

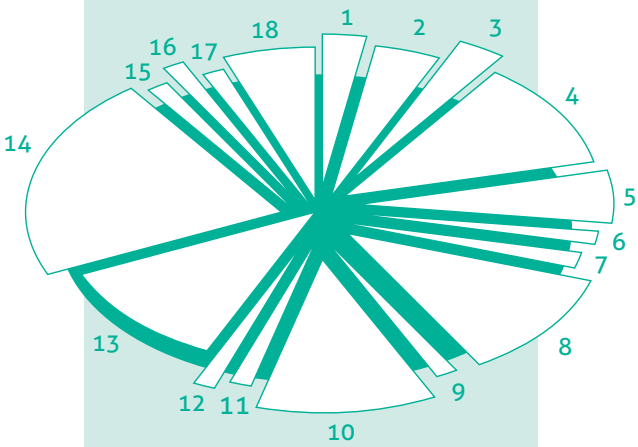
In its activities, the Faculty of Chemistry actively reflects current social developments and closely monitors the latest scientific findings as well as the needs of its partners. Therefore, the natural part of the Faculty's activities is external communication along with the promotion of the results achieved, thereby ensuring its presence in public space and social prestige. These objectives are achieved through increasing and intensified cooperation with employers, graduates, the application sector, regional actors, secondary schools and other partners, as well as the public and public institutions. In 2019, events with many years of tradition were organized, such as Chemistry Day, Open Days, Scientists' Night, Student Professional Conference, and the Faculty also participated in events organized by other organizations such as Science Festival, Science Gaming, Science at School, Majáles, Chemical Olympics and more. The Faculty participated in the fairs of post-secondary and lifelong learning. As part of the ongoing implementation of the OP RDE "MOST" project, monitoring and analysis of the requirements and needs of employers and graduates was carried out and the acquired knowledges were further used for re-accreditation of the original bachelor study programs as separate programs and for new accreditation of the professional bachelor program. The meeting of FCH graduates, which took place as part of the celebrations of the 120th anniversary of the BUT foundation, received an extraordinary response. Great attention was paid to expanding activities towards secondary schools, whose long-term strategic goal is to capture motivated students in a timely manner and ultimately to increase the success of their studies. In 2019, among other things, there were workshops for secondary school students in the graduation week at the Faculty, the Faculty participated in the Minierasmus project and a program of popularization lectures designed to complement the teaching of chemistry at secondary schools was launched. Press, TV and other multimedia channels have been widely used to promote studies, events at the Faculty, results, science and research (see updated information on the Faculty and BUT websites). Attention was paid to capturing new trends in communication (social networks) and ensuring visibility and current content also in these new communication platforms. The new Faculty web using a visual concept unified throughout the BUT, optimized for mobile browsing, has been systematically enriched with new content and its English version has been launched. A number of activities aimed at graduates were prepared for implementation, including the preparation of the Faculty alumni club.


MARKETING


lock
mbar
19
rpm
120

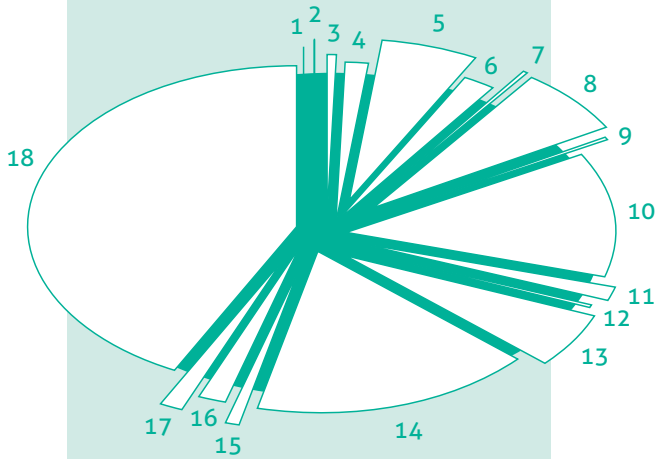
RESEARCH ACTIVITIES OF THE FACULTY AND COOPERATION WITH THE APPLICATION SPHERE

PROJECTS PROGRAM



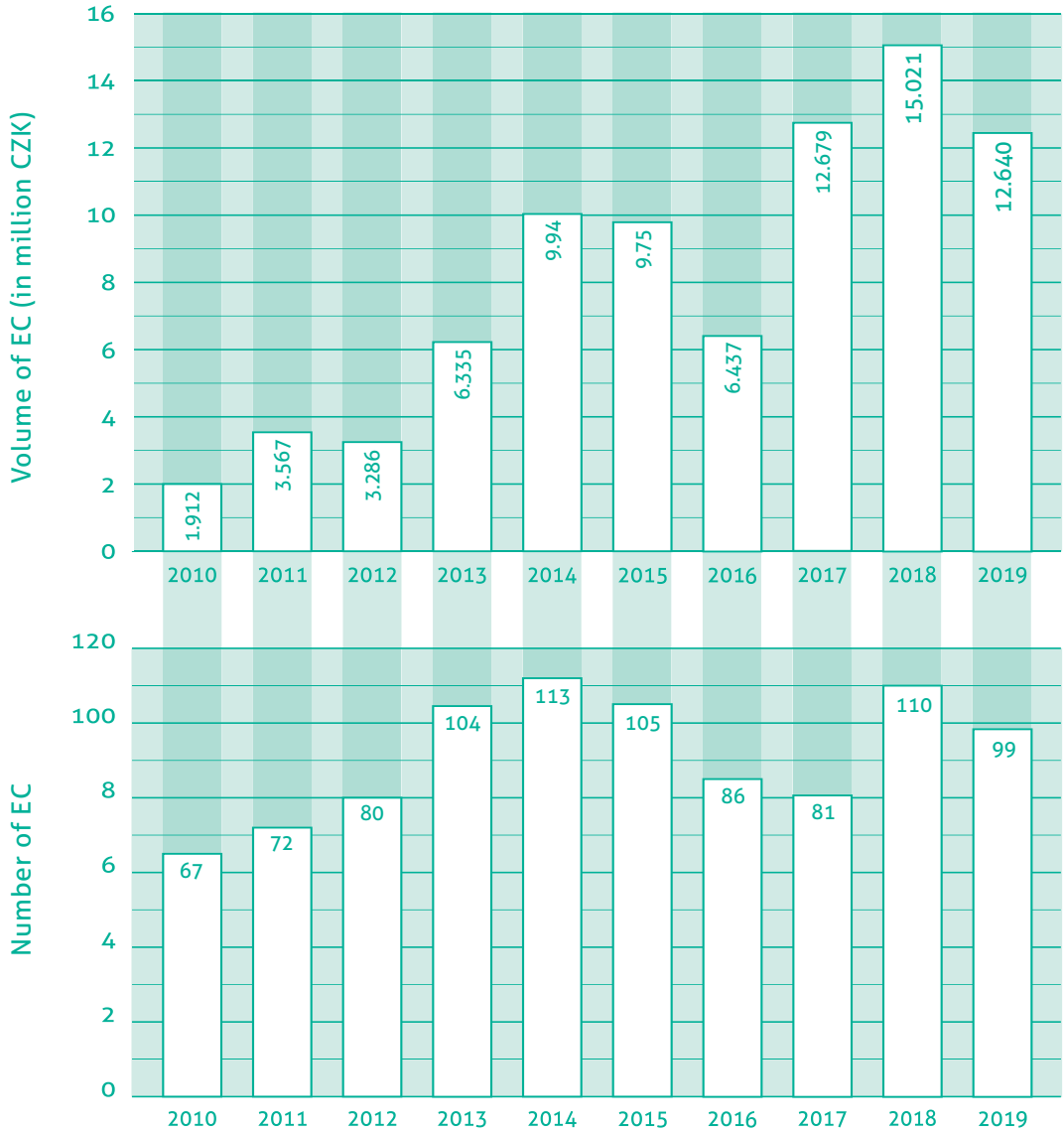
1	AKTION	2
2	CEEPUS	3
3	R&D projects abroad	2
4	Development progr.	8
5	OP VVV NIV	4
6	OP MeMov	1
7	COST	1
8	Specifik research	8
9	Czech-Norwegian progr.	1
10	GACR	8
11	MI CR	1
12	MH CR	1
13	TACR	8
14	MIT CR	15
15	OP PIK	1
16	SoMoPro	1
17	H2020	1
	Total	**66**
18	PO VVV IV capital investment projects	4
	Total	**70**

PROJECTS FINANCING
(in thou. CZK)



1	AKTION	58
2	CEEPUS	154
3	R&D projects abroad	565
4	Development progr.	1 680
5	OP VVV NIV	6 272
6	OP MeMov	2 308
7	COST	136
8	Specifik research	7 501
9	Czech-Norwegian progr.	401
10	GACR	13 925
11	MI CR	1 294
12	MH CR	337
13	TACR	6 227
14	MIT CR	18 909
15	OP PIK	775
16	SoMoPro	1 805
17	H2020	1 749
	Total	**64 096**
18	PO VVV IV capital investment projects	46 936
	Total	**111 032**

ECONOMIC CONTRACTS



The priority objective of the Faculty of Chemistry in this area is to support quality research with high social benefi ts so that the results of research and development are internationally relevant and eff ectively transferred to the application sphere. A prerequisite for achieving this is to ensure the sustainability and effi ciency of the utilization of the built research capacities, largely made up of the Materials Research Centre. The Faculty of Chemistry refl ects the current social development, the latest scientifi c knowledge and the needs of partners in its activities. At the same time, it actively communicates and promotes its results and opinions, thus increasing its prestige in public space.

PUBLICATION ACTIVITY

1	Article in journal	116
2	Journal article (WoS)	91
3	Book or chapter in book	1
4	Functional sample	2
5	Research report	2
6	Utility model	3
7	Article in proceedings	70


PUBLICATION
ACTIVITY


0.8
0.5
mg/l
NH_4^+
MColortest™
114750

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Department of Organic Chemistry, Moscow State University, Moscow, Rusko
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Open University, Milton Keynes, Velká Británie
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SWC InTech, s. r. o., Brno
TDK Electronics, s. r. o., Šumperk
Tescan, s. r. o., Brno
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Têxteis Penedo S.A., Portugalsko
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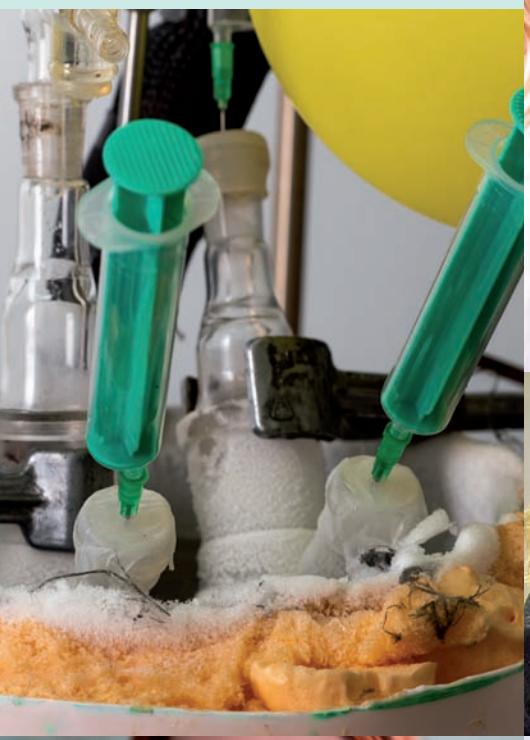


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BRNO UNIVERSITY OF TECHNOLOGY
FACULTY OF CHEMISTRY

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Authors: doc. Ing. František Šoukal, Ph.D., doc. Ing. Jiří Kučerík, Ph.D., prof. RNDr. Ivana Márova, CSc., doc. Ing. Tomáš Opravil, Ph.D., prof. Ing. Miloslav Pekař, CSc., prof. Ing. Martin Weiter, Ph.D.
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