

## Faculty of Textile Technology - Today and Tomorrow

Prof. **Darko Ujević**, Ph.D.  
University of Zagreb Faculty of Textile Technology  
Zagreb, Croatia  
e-mail: darko.ujevic@ttf.hr



Dean of the Faculty of Textile Technology prof. Darko Ujević, Ph.D.

ment provided, and, which is also important, the numbers of juniors and scientific educational personnel have been employed.

Today, 1200 students are enrolled at this faculty. The teaching staff includes 25 full professors, 14 associate professors, 47 assistant professors and 12 lecturers. Classrooms and scientific premises take approximately 8000 m<sup>2</sup>, out of which new built building occupy 3500 m<sup>2</sup>. In the new building there are three large lecture rooms, 12 classrooms and three design studios, one modern multimedia e-classroom, four specialized classrooms equipped in cooperation with several companies (*Jadran, Galeb, Kotka, Amadeus* and *Siscia*), 17 modern equipped laboratories and numer-

ous teacher's rooms. The Faculty achieves a very good collaboration with a series of domestic, European and world universities and institutes through joint scientific, bilateral and technological projects, as well as students and teachers exchange programs. There are new built premises such as postgraduate studies centre, publishing office and students' restaurant.

Scientific-educational work and research is organized within a particular Department with good cooperation among the Departments. It has really been a pleasure to see and participate in their collaboration.

The departments, although not all equally large and equally old, are equally important parts of the Faculty

We are facing a great anniversary: 20 years of independent Faculty of Textile Technology and 50 years of university study in the textile field.

Basic guideline of the faculty's development primarily refers to continuous advancement in educational programs, scientific research and professional activities related to national priorities and strategic projects. We have been very conscientious and patient while joining various international scientific and bilateral projects. Furthermore, we have continually been improving our connections with economy.

During the last decade, as a part of development strategy, room capacity has been enlarged, modern equip-



Faculty of Textile Technology inside

of Textile Technology. By working together and mutual interaction they lead the Faculty towards a higher level of competence in the development of educational, scientific research work, international cooperation and achieving higher standards of education and students.

The Faculty is composed of the following departments:

- Department of Textile Chemistry and Ecology
- Department of Clothing Technology
- Department of Textile and Clothing Design
- Department of Textile Design and Management
- Department of Materials, Fibres and Textile Testing
- Department of Applied Chemistry
- Department of Fundamental Natural and Engineering Sciences
- and in establishment – Department for leather, Footwear and Fancy Goods.

It is important to say that the work of the Faculty Management has recently been organized according to a quality system standardized in ISO 9001 2008, while the implementation of teaching has been successfully monitored by the Quality Management Committee.

Today, the Faculty of Textile Technology of the University of Zagreb, being a scientific and educational institution, is one of the leading faculties of the kind in Europe, particularly focused on scientific activities in the field of textile science. The Faculty of Textile Technology is a member of many reputable scientific associations and successfully cooperates with them. These are: **AUTEX** (*Association of Universities for Textiles*), **DAAAM International** (*The Danube Association for Automation & Manufacturing*), **The Textile Institute Manchester** (GB), **CEEPUS** (*Central European Exchange Programme for University Studies*), **IFKT** (*International Federation of Knitting Technologists*), **SDC** (*The Society of Dyers and Colourists*),

**AATCC** (*American Association of Textile Chemists and Colorists*).

The Faculty of Textile Technology has been a member of AUTEX since 1996. Our scientists have regularly presented their papers at annual AUTEX meetings. In 2008 our Faculty organised teaching classes in the 3<sup>rd</sup> semester of the *European master study E-team* (Gent, Terrasse, Zagreb) with teachers from various European universities. AUTEX Conference 2012 will be held in Croatia, Zadar. On the grounds of many years of collaboration and membership, the *Textile Institute* from Manchester, Great Britain, conveyed in 1995 the procedure of verification and accreditation of study programs, so now, university diplomas of The Faculty of Textile and Technology, Zagreb, are recognized in Europe, Commonwealth countries and USA. At the moment, the documents necessary for accreditation of new curricula based on the Bologna Process are being prepared. At this faculty, an individual textile and clothing section has been included into *The Danube Association for Automation & Manufacturing* DAAAM. In 2001 we were awarded the DAAAM International gold medal, in recognition of our long-lasting activity and scientific contribution. The Faculty of Textile Technology is both the founder and the member of DAAAM International Network for Advanced Technolo-

gies whose members are 26 higher education institutions from all over the world.

Since 1997 the students and teachers exchange with Central European faculties has been enabled by the CEEPUS program in order to improve teaching and scientific activities. Croatian section IFKT was founded in 1993, and in September 2002 it successfully organised 14<sup>th</sup> Congress of the association.

According to postulates of strategic research in the Republic of Croatia and priority goals of EU, new scientific programmes and project for the field of textile science and technology have been worked on for the period from 2007 till 2012. After being internationally revised, those programmes and project were accepted as national priority projects. The important fact is that this enables Croatian scientist to be involved in international projects as well as to use EU pre-accession funds.

Leading scientists of our Faculty are the heads of 16 scientific research national projects and 3 programmes. Those projects and programmes include the following:

**The field of Textile Chemistry Engineering** with project tasks which include : multi-functional materials and ecological processes of textile finishing and care, multi-efficient textile materials, ecologically favourable processes of cellulose modification, dyeing in the processes of sustainable



DAAAM International gold medal

development, interface phenomena of active multifunctional textile materials, and ethics and ecology in textile finishing and care.

**The field of Clothing Engineering** with project tasks: anthropometry, fit and design of conventional and intelligent clothing, intelligent clothing and environment, anthropometric measurements and adaptation of the garment size system, numeric modelling in engineering analysis of textile and clothes.

**The field of Textile Mechanical Technologies** with projects focused on: advanced technical fabrics and processes, multi-functional technical non-woven and knitted fabrics, and design and manufacturing of netting for the protection of fruit and vegetables from hail as well as ergonomic design of worker-furniture-environment system

All scientific research areas from the field of textile and clothing are covered by these prestigious projects.

The projects and programmes were highly ranked and thus published in *The International textile and clothing research register*, in a special issue of the magazine *IJCST* (2007), ISSN 0955-6222, published by *Emerald Library*, UK.

The result of research is shown in innovation achievements. Our scientists have 24 accepted patents, 3 internationally acknowledged patents, several outstanding technical improvements. The patents dealing with intelligent clothing and intelligent beds are in the preparation phase for commercial manufacture.

Apart from high degree of scientific work done through the **Centre for Development and Transfer of Textile and Clothing Technologies and Fashion Design** (CTD), there has been a significant cooperation with textile and clothing industries in making projects, elaborates, studies, expertises and quality testing. The important projects are those of design, development and manufacture of clothes and footwear for the police and national army demands. In the

mid-year 2010 the strategic decision was made to found The Department CTD in the teaching unit in Varaždin. The laboratory accreditation, according to EN 17025, is soon to be issued and it will stand for a new development level, opening the possibility of cooperation with industry.

**HIST** (*Croatian engineering association of textile workers*, founded in 1947) plays a significant role in textile and clothing industry. Thanks to its influence on economy and society, the association HIST has actively supported and participated in the development of the university education in the field of textile. HIST is, as well, the founder and the publisher of

scientific and professional magazine *Textile* (ISSN 0492-5882) which has continually been issued since 1952, having numerous references in secondary publications. The magazine *Textile* is the basic source of publication of research and scientific papers written by Faculty's professional members. It is highly internationally recognized and included in the Thompson base SCI.

Scientists and researchers of The Faculty of Textile Technology realised the importance of joining EU projects on equal basis, so by introducing Service of Textile European Projects (STEP) they made a considerable move in order to coordinate those activities. The



Pre kick off meeting of project partners MAPICC 3D, 2011



Visit to new premises of additional partner: SME - Grado Zero Espace (GZE), Montelupo, Italy, 2010

STEPS's main goal is to primarily give support to young scientists of TTF, as well as the collaborators from the field of economy, when applying for international projects. The Service also wants to educate potential EU project leaders in order to incorporate Croatian textile science and economy into EU patterns.

Among numerous FP7 projects, TTF takes part as the leading partner of the project *FP7-REGPOT-2008-1: Unlocking the Croatian Textile Research Potentials (T-Pot)*. There are only four European partners included in the T-Pot project: STFI – Sächsisches Textilforschungsinstitut (DE), INFMP – Institute of Natural Fibers and Medical Plants (PL), Centre of Technological Innovation – Leitat (ES) i GZE – Grado Zero Espace (IT), and the one coordinating the project: *FP7-SME-2007-2: Sustainable Measures for Industrial Laundry Expansion Strategies (SMILES)*. General conditions of those projects are development and forming of Smart Laundry 2015 through research which should result in reducing water use, energy consumption and emitting CO<sub>2</sub>. Along with TTF, there are various institutions cooperating in the project: 7 SME and 6 RTD institutions from Belgium, France, Poland, Germany, Slovenia and Netherlands. In the meantime the Faculty of Textile Technology has become a partner of another important FP7 project entitled: *One - shot Manufacturing on large scale of 3D up graded panels and stiffeners for lightweight thermoplastic textile composite structures (MAPICC 3D)*, in cooperation with 23 European faculties and institutions.

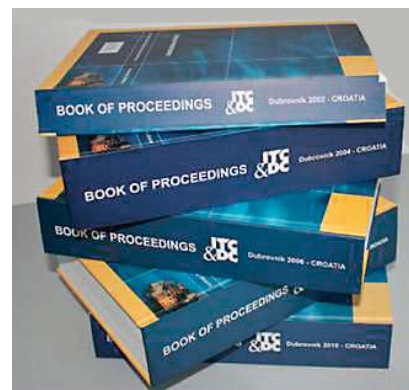
Thus, the significant results are evident, appreciable and impressive. Throughout more than a decade 17 bilateral projects have been carried out by eminent scientific and professional organisations from the world of textile (Austria, Belgium, Hungary, Slovenia, Great Britain and Serbia). In the strategy of textile and clothing economy development of Europe un-



Kick-off Meeting of the SMILES Consortium at the head office of project coordinator FBT in Brussels (EU), 2007

til 2020, the stress has been put on research, development and innovation activity. The priority fields have been determined, which should be relevant both to research centres and industry.

Due to initiatives of the manager of the project FP7 and the Dean, the decision was made to found the **Textile Scientific Research Centre (TSRC)** at the Faculty of Textile Technology, University of Zagreb. The TSRC is to give support, coordination and collaboration in scientific research or artistic research at the TTF as well as connection with other international and domestic scientific institutions and economy. The idea is that TSRC gathers forthcoming FP7 projects in order to strengthen scientific research positions in Europe and in the world. Since 2002 the Faculty of Textile Technology, University of Zagreb, has organised the *International Textile Clothing & Design Conference – Magic world of textiles (ITC&DC)*, in the International University Studies Centre in Dubrovnik. ITC&DC has become one of the most important European and world conferences. It has also become an international forum for presentation and exchange of knowledge, experience, ideas and results, as well as textile and clothing design and marketing.



Book of Proceedings of the ITC&DC 2002-2010

Regarding the success which ITC&DC has met, such a kind of important international cooperation is one of priority guidance on Faculty's activities. This is why I took the initiative to introduce awards at the 5<sup>th</sup> ITC&DC (03-06 October 2010), so five special awards were given at the Conference. That time, among other thing, I said: *"There are great deeds and small deeds, there are recognized and less recognized activities. ITC&DC is a great and recognized deed. In Europe and in the world it has been recognized as one of the best and top quality scientific congresses.*

I expressed my gratitude to the head and the president of the scientific committee and the ITC&DC team who have successfully organised all the five congresses so far.

Having in mind what the economy needs are, during 2007 I initiated the organisation of another important conference – *Textile Science and Economy* (TZG), first held in January 2008. The Faculty of Textile Technology organises the conference on the Faculty's Day. The other institutions involved are The Science and Technology Council of Croatian Academy of Sciences and Arts and The Croatian Academy of Technical Sciences. The purpose of the conference is to strengthen the collaboration between TTF and Croatian economy and to include Croatian textile and clothing industry into EU programmes.



Fashion Wardrobe



Book of Proceedings of the TZG 2008-2011

Five years ago a significant fashion-stage activity of our Faculty called *Fashion Wardrobe* was launched. The events took place at several prestigious locations in Zagreb. The Fashion Wardrobe also organises a young designers contest in Croatia, having role model in *MittleMode* and *Royal College of Arts*. Today the *Fashion Wardrobe* has become an internationally recognized event. It gathers fashion design professionals from all over the world, which places Zagreb and Croatia on the world's fashion map. Our goal and commitment is to continuously work on the improvement of teaching processes and the curricula upgrading. Comprehensive curricula, equally focused on science and industry is one of the reasons why many students have shown an interest and to study at this Faculty. Teaching and pedagogical approach of my colleagues towards students is character-

ised by enthusiasm, professionalism, morality and responsibility. Two years ago our Faculty, the first among the faculties of the University of Zagreb, successfully passed a demanding curricula evaluation according to the new Higher Education Law imposed by an international commission. Teaching process is really a distinguished part of our work. Since 2005 The Faculty of Textile Technology has been educating students in study programs of university studies: *Textile Technology and Engineering*, *Textile and Fashion Design* and occupational study *Textile, Clothing and Footwear Technology*. The study programmes of the Faculty

of Textile and Technology are performed on three levels, within two university studies, while polyvalent graduate study provides wider professional knowledge and scientific insights gained at undergraduate study and so it is expected to be continued. The programmes of all the courses proposed are based on contemporary scientific know-how in textiles and textile technologies, as well as on the newest developments and trends in global fashion design. There is also a need to make indigenous Croatian fashion recognized and preserved. After they graduate, the students are qualified to carry out the most complicated engineering tasks based on scientific ap-

studij	godina	semestar	Tekstilna tehnologija i inženjerstvo TTI					Tekstilni i modni dizajn TMD			
			poslijediplomski	III.		Doktorski studij: TEKSTILNA ZNANOST I TEHNOLOGIJA Specijalistički studiji: TEKSTIL KAO UMJETNOST VISOKA MODA DIZAJN I TEHNOLOGIJA IZRADE MODNE ODJEĆE					
diplomski	II.	4	Projektiranje i menadžment tekstila PMT	Tekstilna kemija, materijali i ekologija TKME	Odjevno inženjerstvo OI	Industrijski dizajn tekstila i odjeće IDT	Industrijski dizajn odjeće IDO	Modni dizajn MD	Kostimografija K	Teorija i kultura mode TKM	Dizajn tekstila DT
	I.	2									
	I.	1									
prediplomski	III.	6	PMT	TKME	OI	Industrijski dizajn tekstila i odjeće IDTO	Modni dizajn MD	Dizajn tekstila DT	zajednička tri semestra		
	II.	4									
	I.	2									
uvjeti upisa			položena državna matura					provjera sposobnosti likovnog izražavanja kroz razredbeni postupak			
			provjera sposobnosti likovnog izražavanja kroz razredbeni postupak					položena državna matura			

Structure and types of university study at the Faculty of Textile Technology



Bachelor of science graduation ceremony at the Faculty of Textile Technology in Zagreb

proach to solving problems. They are also qualified to design, organise and lead the processes in textile companies in all parts of textile technologies. On the other hand, they become competent and able to estimate art and design values of a product and to give suggestions for improvements in this aspect of production.

The Faculty to students' own scale and wishes – it is a motto in our brochures in English and in Croatian. The high rate of interest for the modul of textile and clothing design has been great for many years, but the enrolment of freshmen in the school year 2010/2011 shows an extra interest Postgraduate doctoral program *Textile Science and Technology* is based on the research in the field of textile technology, science on fabrics textile chemistry and technology, as well as science in the field of clothing technology in order to educate top scientists in interdisciplinary approach to new technologies.

In the past 50 years of higher education in the field of textile, 972 graduates got the academic degree (BS) in

Engineering, 73 postgraduates with Master degrees and 38 Ph D degrees. The Faculty has made a new programme of a graduate course lectured in English called *Textile Technology and Engineering Master Programme*. Realisation of this course will enable The University of Zagreb to be in closer relations with European integration processes and improve foreign student mobility in the field of textile technology and engineering. Considering fast development trends in technical sciences, especially in textile technology, the teaching staff of our Faculty has published many higher education textbooks, which covers content of most of our courses.

Fast development of high-tech technologies due to new scientific insights, calls for permanent, lifetime education. This is why study programmes are made for the working professionals in order to enable them to get a higher academic degree, as well as specific seminars for additional education, which is a project of lifelong education.

Students' extra activities include publishing of T'n'T a students' magazine

and sports section which regularly participates at technical faculties' competitions. We are not the best ones, but always the winners in fair play. Students are also given an opportunity to participate in scientific researches for which they were often awarded. Students of design courses regularly organise fashion shows and exhibitions. Their well-received project was the one of complete costume design and construction for the opera *The Magic Flute* by W.A. Mozart, performed at The Croatian National Theatre in Zagreb.



Students' magazine T'n'T

The students' restaurant was opened on December 2, 2009. It has been welcomed by students because, beside providing them with cooked meals, it gives them an opportunity to stay within the faculty building the whole day and to socialise. While talking to many students, I felt it gave them an extra impulse to study at this Faculty. Teaching timetable often requires students to stay here throughout the day, whether at classes or at practical work, so having a restaurant at hand is beneficial to them. Food and drink is available by students' smart cards.

My great wish is that The Faculty of Textile Technology in future keeps on with its continuous development, with correctness in communication as well as mutual respect of all the personnel in favour of welfare and advancement of the Faculty.

The enthusiasm shared by our colleagues in teaching and scientific research activities should be respected and encouraged. It is very important to be well informed about entrepreneurial, organised and coordinated management of the Faculty in accor-



Student restaurant - student's favourite meeting place at the Faculty of Textile Technology

dance with the Statute of TTF and the Statute of the University of Zagreb. The development vision of TTF is based on the following guidelines: „*Work excellence should keep this Faculty at the top position among scientific research institutions, teaching staff should be adequately awarded for its work, and for students to remain the pride of this Faculty, the University and Croatia. The relationship among the staff in our scientific institution should be friendly and caring. Furthermore, our task is to strengthen scientific research potentials and to promote excellence, recognition, quality and internationalisation. The further priorities are to modernize and adapt curricula according to European and global experience and existing trends. It also includes better system of course organisation, continuous and complete joining in international projects, creation of mutual programmes with faculties from abroad based on so far good partnership experience (i.e. the development of bilateral cooperation and projects). A new project called Working paper series – Textile & Design has been launched and particularly arranged for young scientists and mentors of the Faculty. A virtual magazine TE-DI will have been for the first time issued on the Faculty's Day on 25 January 2011. Further development and affirmation of scien-*



*tific and economic forums as well as internationalization of students' magazine T'n'T (the first international issue was already realized with Slovenian colleagues) are also important aspects of Faculty's activity. We should try to establish a special foundation in order to award best students and assisting professors and provide Dean's award, as well as to financially support juniors and assisting professors to enrol in doctoral studies or other forms of scientific improvement. It is also important to create computing applications as the basis of result evaluation and continuity of research. We should also work on improving the conditions of course progress – adaptation and branding – a special students' groups adapta-*

*tion to real demands of the Bologna process. We should continually encourage systematic and firm cooperation with economists offering our best acquired knowledge. To improve the Centre for lifelong learning today, it is not only the need but necessity, so after we have received the laboratory accreditation, we shall put at disposition our laboratory and scientific potentials.“*

Management of a scientific institution nowadays means to deal with many complex and responsible activities and it calls for very responsible guidance on human resources and potentials. As I said before, I point out the importance of constant information transparency in all long and short-term goals and business decisions. It is primarily necessary to keep stable financial positions in the conditions of doing business in the times of recession. It is a powerful business vision and determination that we need in order to fulfil current and future projects at our Faculty. Our priority goals are to keep the leading position of TTF as regional promoter of excellence, to maintain the Faculty's reputation, to develop international cooperation, to permanently keep on improving curricula, to improve students' studying standards and conditions as well as overall support to students' activities.

Congratulations to everyone for their contributions and achievements, especially to the visionaries of the Faculty of Textile Technology, all previous deans and their associates. Great concern for the development and contribution of the Faculty of Textile Technology form a fascinating and inspiring basis that I want to transfer to new generations. The life and work of the Faculty of Textile Technology is something special. And finally, something personal: *“I am honored to be the dean of the Faculty of Textile Technology”.*

*Our successes are great. They are the pledge for today and for future. They are pride and satisfaction of generations.*