



## 50<sup>th</sup> ANNIVERSARY OF ESTABLISHMENT THE RESEARCH INSTITUTE FOR TEXTILE CHEMISTRY IN ŽILINA

**Jozef Šesták**

*VÚTCH-CHEMITEX, spol. s r.o., Rybníky 954, 011 68 Žilina, Slovak Republic*  
[jozef.sestak@vutch.sk](mailto:jozef.sestak@vutch.sk)

50 years from establishment of the Research Institute for Textile Chemistry (VÚTCH) will elapse on March 1, 2020. The institute was established on the base of Decision of the Ministry of Economy of the Slovak Socialist Republic No. 10/1970. The research institute started its activity originally in rented premises of the national enterprise Slovena Žilina. It picked up on a long-standing, nearly 18 years' tradition of the company research department and later branch research department at the national enterprise Slovena, which was one of the biggest textile research workplaces in Slovakia. Originally, 22 workers worked in the newly established institute; 6 of them with university education and 10 of them with secondary professional education. 17 workers worked directly in the research. The rented premises covered 862 m<sup>2</sup>. Ing. Rastislav Šalma has been appointed managing director of the institute and he remained in his office until 1979. Principal activity of the institute focused mainly on development and application of new technologies and textile auxiliaries for finishing, development of new textile products, development and construction of machinery for non-traditional finishing processes and evaluation of care and quality of home textiles.

The period of 1980-1989 was a significant stage for VÚTCH not only with regard to further development of the research activity, but also construction of new working spaces and widening the material base of the institute. The research activity focused on inter-branch and inter-sectorial field. Ing. Alojz Strýček, CSc. has been appointed managing director of the institute and, after his promotion to the function of general director of the national enterprise Slovena, Ing. Peter Jerguš, CSc. has been appointed managing director on 1.1.1985. Increasing number of projects included in the state

plan of development of the science and technology points to a permanently growing technical level of the solutions. The most important projects were as follows: New textile auxiliaries and technologies from aqueous and non-aqueous media, New directions of special textile finishes, Development of new assortments of home textiles, Advanced methods for recovery of textile waste. Results of the technical solutions have been implemented in many enterprises: Slovena n.p. Žilina, BZVIL n.p. Ružomberok, Merina n.p. Trenčín, Závody 1. mája n.p. Liptovský Mikuláš, Tatrasvit n.p. Svit, Petrochema n.p. Dubová, Duslo n.p. Šaľa, NCHZ n.o. Nováky, LTZ n.p. Revúca, ĽKZ n.p. Holíč etc. On the base of successful solution of a project a production line for manufacture of shaped car carpets designed for passenger cars Š-742 as well as a line for manufacture of car carpets for passenger cars Škoda-Favorit has been introduced. At a given time all requirements for deliveries of the shaped car carpets up to a quantity of 180 thousand assemblies/year were satisfied. The production lines were manufactured without requesting foreign currency and exclusively from domestic components and materials. Costs of importing one line from capitalist states represented 20-25 million valuta crowns.

For the first 20 years of existence of the institute total of 159 research tasks and projects have been solved in following structure: state projects – 12, sectorial tasks – 8, branch tasks (financed by the Directorate-General Slovakotex) – 33, company tasks – 43, others (study works, services etc.) – 63. An integral part of creative activity of the workers were also results achieved in the field of innovatory movement. In total, the workers of the institute submitted 102 patent applications and 143 proposals for innovation in the period of 1975-

1989. Out of that total, 64 author's certificates have been granted and 99 proposals for innovation have been adopted. In the late 1980s, 202 employees worked in the institute and useful area of own premises in three buildings was 4 450 m<sup>2</sup>.

A strong turbulent period was marked in the institute in the first half of the 1990s. It was caused by serious all-society changes in the frame of Slovakia. In September 1989, Ing. Jozef Šesták was appointed managing director on the base of elections of the employees. He held the above-mentioned office constantly until December 2018. Fate of the industrial research organizations became uncertain. Privatisation process of the state enterprises has begun. The state enterprise VÚTCH has been privatised by own management on 1.9.1994. A period of uncertainty since 1990 was over. The period brought about also a significant reduction of employees up to a level of 108 (on 31.12.1993) as well as decrease of turnover to about 23 mil. Sk. We continued on a limited scale to solve state as well as so-called economic research tasks in the field of research and development in spite of declining support by the state and decreasing interest of the manufacturing enterprises after liquidation of VÚTCH Slovakotex Trenčín. Research works of that time focused on elaboration of projects as follows: TECHNITEX – Development and application of technical textiles, EKOS – Solution of environmental problems in consumer industry, INTEGRA – Integrated and composite textile materials, OLEOCHÉMIA – Application of oleochemical raw materials in manufacture of industrial auxiliaries etc.

There was a significant change in structure of the activities of the research institute in the period of 1995-1999. At the end of the period there was significant reduction of the research activities mainly due to economic problems in many textile enterprises, which were subsequently liquidated or which did not cope up with the transformation process after privatisation. Besides, at the end of the 1990s there was further reduction of support of research and development in the form of state government grants. Therefore, it was necessary to work intensively on development of new activities which would contribute towards economic stabilisation of the institute, exploitation of creative potential of the professional team as well as technical potential in the chemical and textile laboratories. Two years after establishment of the authorized testing laboratory SKTC-119 (established on 1.1.1993) it has been noted that it was a correct step. The process of accreditation for selected tests performed by the Slovak National Accreditation Service (SNAS) has been handled as a result of a responsible approach. Share of turnover from testing and certification services amounted to cca 20-25% from total turnover

of the institute in 1995-1996. Reputation of the authorized testing laboratory SKTC-119 has grown continuously amongst the professionals as well as non-expert public in the frame of the Slovak Republic in the above-mentioned period. A remarkable turnaround and growth of turnover in the field of testing and certification activities has occurred since the introduction of compulsory certification of textiles and clothing on 1.7.1997. For example, in 1998 even 3 243 certificates were issued and share of turnover from testing and certification of products amounted to 55-60% from total turnover of the institute in 1998-1999.

The first contacts with the representatives of the International OEKO-TEX® Association for textile human ecology through a partnership with ÖTI Vienna have been established in the above-mentioned period. The aim was to establish SKTC-119 in an appropriate form on the international level. The institute succeeded in making this intention in 1999 when it became a co-opted member of the OEKO-TEX® Association. At that time share from these activities amounted to 7.5% from total turnover of the testing laboratory.

In 1995-1999 an important contribution to stabilisation of the economical results of the institute had also in-house manufacture of chemical specialties, small scale textile and engineering manufacture.

This manufacture was notable also due to the fact that a high share of products constituted implemented results from own research projects, solved in the past. The assortment of textile auxiliaries included mainly washing, softening, levelling and other agents for textile finishing. The production volume was 100-150 t/year. Special electroconductive and antibacterial additives with trade mark BIOSTAT® were manufactured later.

In the beginning of the 21<sup>st</sup> century situation in the institute was associated mainly with expansion of the testing and certification activities. Legislation, laying down obligatory certification of textiles and clothing in the frame of the Slovak Republic has been applied until 2004. This situation has changed fundamentally after entry of the Slovak Republic to the European Union on 1.5.2004. A sharp drop of outputs in this field has been recorded. It was necessary to seek new opportunities for the testing laboratories in the frame of the international OEKO-TEX® system in accordance with the valid EU-legislation and to focus also on safety evaluation of the personal protective equipment.

In the field of research and development we continued to focus on elaboration of projects aimed at development of various special products, articles designed to protect consumer's health and life as well as on development of co-operation with the basic research in the field of application of new advanced technologies (e.g. application of low-

temperature plasma, nanotechnologies, nanoparticles) etc. Among the most important were projects as follows: AMBT – Antimicrobial fibres and textiles, PROTECTION – Research and development of assortment of special protective clothing, NANOTEX – Nanostructural surface modification of fibrous and textile materials, TENETEX – Nonwovens for advanced technical applications. Direct financial support of the international projects was ensured by the 6<sup>th</sup> Frame Programme of the European Commission. In particular, the international projects titled ENVITEX and ITE focused on creation of a database of textile enterprises and a benchmarking study.

Gradually we transferred our activities and experience in the research also to the field of testing. We obtained means to complement the laboratories; we purchased equipment for special tests (flammability, hydrophobic properties, rubbing resistance). Besides, new test methods for finishes applied using nanotechnologies, e.g. in the field of personal protective equipment, have been introduced. The research project ZDRAVIE (HEALTH) – Assessment of influence of selected chemical substances in textiles on consumer's health - was important for further development of the testing activity in the field of assessment of content of harmful substances, constituting a health hazard, in textiles.

After 2005, possibilities for funding the research activities also from support sources of the European structures expanded considerably. We succeeded in obtaining financial means to supplement infrastructure of the testing laboratories through the project IMPLEMENTÁCIA (IMPLEMENTATION). Besides, we took advantage of the first structural funds available for the Slovak Republic upon entry to the European Union. The project INOVATEX – Innovation of testing textiles and clothing to increase the competitiveness of VÚTCH-CHEMITEX, spol. s r.o. - was very important for us. The financial means obtained in the frame of the project significantly contributed to replenishment of technical infrastructure of the testing laboratories, mainly with orientation on inorganic analytical methods and establishment of a laboratory for evaluation of antibacterial efficiency of textile materials.

A significant process of establishment of the notified bodies for selected regulated field of products and services according to the EU Directives was implemented in the period of 2004-2005, which was linked to the entry of the Slovak Republic to the European Union on 1.5.2004. Our institute has been notified under number 1296 for the assortment of personal protective equipment (PPE) by the Slovak Office of Standards, Metrology and Testing (ÚNMS SR). Later, notification for toys has been added to this.

So far the last decade in the 50-year's history of the institute has its specific attributes as well.

During these ten years there have been periods of progress and troubles. We have succeeded in obtaining financial support for 12 key projects with a government grant in the frame of public calls of the Slovak Research and Development Agency (APVV). An important achievement was acquiring a major project supported from the EU structural funds of 1.25 mil. Eur in the period of 2011-2014. We obtained also financial support for renewal and replenishment of the infrastructure of the laboratories of over 175 thousand Eur in the frame of this project. Topics in the field of research and development became nanotechnologies, application of low-temperature plasma on textile materials and research in the field of smart textiles and clothing. In the above-mentioned period there was a significant change in structure of incomes of our commercial company. The original share 70/20/10 (research and development/ services of SKTC-119/ manufacture) has gradually changed to 30/60/10 (research and development/services of SKTC-119/ others).

Change in orientation of research and development mainly on advanced technologies and products is evident from following research projects: NANSÓL – Research, preparation and introduction of nanosol manufacture for nanostructural modification of textile materials, AMBIPOL – Research and preparation of antimicrobial nanosol and methods for evaluation of antimicrobial properties of textiles, VY-INTECH-TEX – Research of technologies and products for smart and technical textiles, NANO-MULTI-TEX – Research of nanotechnologies and preparation of multifunctional textiles for soldier protection at the battlefield, PLAZ-NANO-TEX – Research of influence of low-temperature plasma on enhancement of permanency of surface finish applied on textile materials using nanosols, INTELIGENTEX – Smart textiles and clothing for mobile monitoring of human vital functions. Many of the above-mentioned themes are being investigated also at present in the frame of research projects focusing mainly on the field of smart textiles and clothing and/or protection of quality and originality of products as well as health protection.

Intensity of work in the field of competencies of the Notified Body No. 1296 for personal protective clothing increased, on the other hand volume of R&D works decreased. Applications for assessment of PPE conformity with technical regulations, submitted by the tendering authorities (state bodies, wholesalers trading in PPE etc.) showed an increasing trend every year; at present the Notified Body has even 20-25 big applications/year. The largest turnover and increase in the number of certificates showed certification in the international OEKO-TEX® system in the last 10 years. Co-operation with the OEKO-TEX®

Association started already in 1998-1999, but only after audit performed by the representatives of OEKO-TEX® in August 2013 we received status of an associated member of the OEKO-TEX® Association with authorisation to issue certificates for textiles and clothing according to the STANDARD 100 by OEKO-TEX® with world-wide validity.

Services provided by the accredited testing laboratories are covered completely by the Accreditation Certificate No. S-068, issued by the Slovak National Accreditation Service.

At present 380 accredited methods are used to test textile raw materials, textile and clothing products, personal protective equipment, toys, skins, leather, paper, paper tissue, cardboard, plastics, washing, cleaning and cosmetic agents. The testing laboratories are accredited also on an international level, in the U.S. Consumer Product Safety Commission as CPSC Accepted Testing Laboratories under registration number Lab ID 1513.

Services provided in the field of testing and certification of products, in so-called legally regulated sphere, require expertise, training and skill of the team, therefore we work hard in expert working groups established by the Slovak Office of Standards, Metrology and Testing and participate in the meetings of the Horizontal Committee of the notified bodies directly in Brussels. The goal is to ensure direct application of the European legislation in conditions of manufacturers of PPE on the territory of the Slovak Republic.

Very important is also our active participation in the Technical Commission for PPE established by the Slovak Office of Standards, Metrology and Testing focusing on application of the latest knowledge in the field of technical standards for PPE applied in the processes of PPE conformity assessment.

In conclusion, I would like to say thank you to my staff whose hard work, enthusiasm, creative invention and professional skill contributed during the 50 years' history of the institute to its reputation and acceptance at home and abroad. Ing. Dana Rástočná Illová, PhD. became managing director of the company VÚTCH-CHEMITEX, spol. s r.o. in January 2019.

I would also like to thank all manufacturing enterprises and companies co-operating closely with the institute in the past. Some contacts have been terminated over time, but we received new requirements from the business sector which confirm repeatedly positive sense of our activities. In the past as well as at present we co-operated with the academic sphere, colleges, universities and institutes of the Slovak Academy of Sciences. We benefited from exchange of expertise and new theoretical knowledge, acquired in the frame of the co-operation, on their application in industrial practice.

I believe that also in the next years we shall keep the high credit among the co-operating companies and organisations to full satisfaction of the concerned parties.



**Ing. Jozef Šesták, CSc.**

Managing Director of VÚTCH and VÚTCH-CHEMITEX, spol. s r.o.  
in the period of September 1989 – December 2018