

Curriculum Vitae

Name: David Lukáš
Date of birth: April 18th 1958
Place of birth: Liberec
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Education and academic degree

Professor, Textile technology,
Faculty of Textile Engineering, Technical University of Liberec, Czech Republic, 1996.
Associated professor, Textile technology,
Faculty of Textile Engineering, Technical University of Liberec, Czech Republic, 1993.
Ph.D. in Textile Technology,
Faculty of Textile Engineering, Technical University of Liberec, Czech Republic, 1993.
Master's in Biophysics and Chemical Physics,
Faculty of Mathematics and Physics, Charles University of Prague, Czech Republic, 1982.
Bachelor in Physics,
Faculty of Mathematics and Physics, Charles University of Prague, Czech Republic, 1980.

Positions held

Chair of the Department of Nonwovens,
Faculty of Textile Engineering, Technical University of Liberec, Czech Republic, 2003 – current.
Rector (President/Chancellor),
Technical University of Liberec, Liberec, Czech Republic, 1997 – 2002.
Prorector (Vice-Rector),
Technical University of Liberec, Liberec, Czech Republic, 1996-1997.
Chair of the Academic Senate,
Technical University of Liberec, Liberec, Czech Republic, 1990-1993.

Selected publications for the past five years

Valtera. J., Kalous, T., Pokorný P., Batka O., Bilek M., Chvojka J., Mikes P., Kuzelova Kostakova E., Zabka P., Ornstova J., Beran J., Stanishevsky A. & Lukas D., Fabrication of dual-functional composite yarns with a nanofibrous envelope using high throughput AC needleless and collectorless electrospinning, *Scientific Reports*, 9:1801, 2019, <https://doi.org/10.1038/s41598-019-38557-z>, **IF=4.122**.

Horakova, J., Mikes, P., Saman, A. Jencova V., Svarcova, T., Ackermann, M., Novotny, V., Suchy, T., Lukas D., The effect of ethylene oxide sterilization on electrospun vascular grafts made from biodegradable polyesters, *MATERIALS SCIENCE AND ENGINEERING: C*, **92** (1) 2018, 132-142 (VoS), **IF=5.08**.

Enis, I. Y., Sadikoglu, T. G., Horakova, J. and Lukas, D., The post-morphological analysis of electrospun vascular grafts following mechanical testing, JOURNAL OF POLYMER ENGINEERING, 38 (6) 2018 25-535 (WoS), **IF=0.778**.

Jiřík, M., Bartoš M., Tomášek, P., Malečková, A., Kural, T., Horáková, J., Lukáš, D., Suchý, T., Kochová, P., Hubálek Kalbáčová, M., Králíčková, M., Tonar, Z., Generating standardized image data for testing and calibrating quantification of volumes, surfaces, lengths, and object counts in fibrous and porous materials using X-ray microtomography, MICROSCOPY RESEARCH & TECHNIQUE, 81 (6) 2018 551-568 (WoS), **IF=1.08**.

Buzgo, M., Filova, E., Staffa, AM., Rampichova, M., Doupnik, M., ; Vocetkova, K., Lukasova, V., Kolcun, R., Lukas, D., Necas, A., Amler E., Needleless emulsion electrospinning for the regulated delivery of susceptible proteins, JOURNAL OF TISSUE ENGINEERING AND REGENERATIVE MEDICINE, 12 (3) 2018, 583-597, **IF=4.089**.

Paulett, K. Brayer, WA., Hatch, K, Kalous, T., ; Sewell, J., Liavitskaya, T., Vyazovkin, S., Liu, F., Lukas, D., Stanishevsky, A., Effect of nanocrystalline cellulose addition on needleless alternating current electrospinning and properties of nanofibrous polyacrylonitrile meshes, JOURNAL OF APPLIED POLYMER SCIENCE, 135 (5) 2018 45772-45781 (WoS), IF=1.67

Enis, I.Y., Horakova, J., Sadikoglu, TG, Novak, O., Lukas, D., Mechanical investigation of bilayer vascular grafts electrospun from aliphatic polyesters, POLYMERS FOR ADVANCED TECHNOLOGIES, 28 (2) 2017, 201-213 (WoS), **IF= 1.823**.

Vyslouzilova, L., Buzgo, M., Pokorny, P., Chvojka, J., Mickova, A., Rampichova, M., Kula, J., Pejchar, K., Bilek, M., Lukas, D., Needleless coaxial electrospinning: A novel approach to mass production of coaxial nanofibers, INTERNATIONAL JOURNAL OF PHARMACEUTICS, 516 (1-2 2017), 293-300 (WoS), **IF= 3.66**.

Kostakova, E.K., Meszaros, L., Maskova, G., Blazkova, L., Turcsan, T., Lukas, D., Crystallinity of Electrospun and Centrifugal Spun Polycaprolactone Fibers A Comparative Study, JOURNAL OF NANOMATERIALS, Article Number: 8952390, 2017, DOI: 10.1155/2017/8952390 (WoS), **IF=1.758**

Erben, J. Pilarova K. Sanetnik F. Chvojka J. Jencova V. Blazkova L. Havlicek J. Novak O. Mikes P. Prosecka E. Lukas D. Kostakova Kuzelova E., The combination of meltblown and electrospinning for bone tissue engineering, MATERIALS LETTERS, **143**, 172-176, 2015. **IF=2.486**.

Stanishevsky A. Wetuski J. Walock M. Stanishevskaya I. Yockell-Lelievre H. Kostakova E. Lukas D., Ribbon-like and spontaneously folded structures of tungsten oxide nanofibers fabricated via electrospinning, RSC ADVANCES, **5** (85), 69534-69542 2015, **IF=3.840**.

H-index the Sum of Times cited

H-index: 15

Sum of Times Cited without self-citations according to ISI Web of Knowledge: 587 (to date February 2nd 2018)

Grants and projects obtained over the past five years
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MZ ČR: NV15-29241A. 2015-2018. **Nanofibrous biodegradable small-diameter vascular graft.** Recipient: Technical University of Liberec. Principal investigator: David Lukáš. Other participants: University of Defense, Hradec Kralove, Faculty of Military Health; Palacky University in Olomouc, Faculty of Medicine. Subsidies Total: 10,431 thousand CZK, of which 6,441 CZK thousand shares TUL.

TA ČR: TA 03010609. 2013-2015. **Nanofiber and nanoparticle abrasives as the basis for a new generation of tools for ultra-fine surfaces polishing.** Principal investigator: Institute of Plasma Physics ASCR, v.v.i. Investigator: Technical University of Liberec, prof. RNDr. David Lukáš, CSc. Subsidies TUL 3,060 thousand CZK.

GA ČR: P208/12/0105. 2012-2015. **Polymer solutions in external field: molecular understanding of electrospinning.** Investigator: J.E.Purkyně University, prof. RNDr. Ivo Nezbeda, Dr.Cs. Investigator: Technical University of Liberec, prof. RNDr. David Lukáš, CSc. Subsidies TUL 3,196 thousand CZK.

MVO ČR: VG20102014049. 2010-2014. **Research of possible application of new materials (with a focus on nanomaterials) and advanced technologies to protect people against the effects of CBRN materials, with an emphasis on a critical infrastructure.** Coordinating beneficiary / Coordinator: National Institute for Nuclear, Chemical and Biological Protection v.v.i., Ing. George Slabotinský, PhD. Recipient / Manager: TU Liberec, prof. RNDr. David Lukáš, CSc. Subsidies TUL 7,398 thousand CZK.

Participation in other grants and projects

MŠMT ČR: LO1201. 2014-2018. **Development of the Institute for Nanomaterials, Advanced Technologies and Innovation.** The program aims at the development of the research infrastructure of the Centre for Nanomaterials, Advanced Technology and Innovation. Investigator TUL. Subsidies 184,311 thousand CZK. Prof. RNDr. David Lukáš, CSc.: participates in three activities: 1. Theoretical and experimental research of the spinning process and the process of blending microfiber and nanofiber construction of test equipment; 2. New structures of machines for the production of fiber and nanofiber structures 3. Equipment for the production of fiber and nanofiber structures.

International projects and grants

COST ACTION MP 1206. <http://www.electrospinning-cost.eu/participants>

European multidisciplinary platform for Electrospun Nano-fibres for bio inspired composite materials and innovative industrial applications

David Lukas involved in two working groups:

MŠMT ČR: ME KONTAKT ME 10145. 2010-2012. **Modification of nanofibre materials by plasma technologies for biological applications.** Recipient: Technical University of Liberec; The recipient / Investigator: prof. Ing. Petr Louda, CSc., Faculty of Mechanical Engineering. Co-investigator: prof. RNDr. David Lukáš, PhD., Faculty of Textile Engineering, Co-investigator: Charles University in Prague. Investigator: doc. RNDr. Evžen Amler, CSc., 2nd University Hospital, Charles University, Institute of Biophysics. CARSILA project was a joint Polish-Czech project. Cooperating partner: Technical University of Lodz, Faculty of Mechanical Engineering, Department of Materials Engineering, Multilateral Cooperation - ERA-NET.

Ministry of Education, Youth and Sport, CR: KONTAKT Mobility - Hungarian-Czech Intergovernmental S&T Cooperation Program, project number: MEB040704. 2007-2008. **Study of nanofibrous materials and their usage for composite producing and carbonization.** Bilateral cooperation with Budapest University of Technology and Economics, Faculty of Mechanical Engineering, Department of Polymer Engineering,

Investigator: Technical University of Liberec, Prof. RNDr. David Lukáš, CSc. Subsidy: 132 thousand CZK.

NMP2-CT-2003-505892. 2004-2006. 6th Framework Program of EU. The application of ultrasound for textile technology. TUL Investigator: prof. RNDr. David Lukáš, CSc. Subsidy: 2,988,811 EUR. The aim of the project was the application of ultrasound to accelerate textile processes, especially in composite materials, nanofibres and special nonwovens.

Ministry of Education, Youth and Sport of the Czech Republic: KONTAKT Mobility - Hungarian-Czech Intergovernmental S&T Cooperation Programme, project number: CZ-1/2004. 2005-2006. **Experimentnal Investigation and Theoretical Modelling of Fibrous Structures Concerning Liquid Absorption and Porosity**. Bilateral cooperation with Budapest University of Technology and Economics, Faculty of Mechanical Engineering, Department of Polymer Engineering, Investigator: Technical University of Liberec, Prof. RNDr. David Lukáš, CSc. Subsidy: 113 thousand CZK.

Patents and selected cooperation with industry

Patents granted by the World Intellectual Property Organization

Jirsák O. Sanetrník F. Lukáš D. Martinová L. Chaloupek J. Kotek V. Method of nanofibres production from a polymer solution using electrostatic spinning and a device for carrying out the method US2006290031 **WO2005024101-2006**

Kocis L. Pokorný P. Lukas D. Mikes P. Chvojka J. Kostakova E. Beran J. Bilek M. Valtera J. Method for production of polymeric nanofibers by spinning of solution or melt of polymer in electric field, and a linear formation from polymeric nanofibers prepared by this method, **WO2014094694 A1**.

Lukáš D. Růžicková J. Košťáková E. Novák O. Pokorný P. Bristenský J. Samek L. (2009) Collecting electrode of the device for production of nanofibres through electrostatic spinning of polymer matrices, and device comprising this collecting electrode. **WO2009/049564 A2**. 2009-04-23, International application (PCT), Int. Appl. Num: PCT/CZ2008/000123.

Patents granted by the Industrial Property Office

Kočíš L. Pokorný P. Lukáš D. Mikeš P. Chvojka J. Košťáková E. Beran J. Bílek M. Valtera J. Amler E. Buzgo M. Míčková A. Preparation of the polymer nanofiber by spinning solution or melt of polymer in electric field, and linear formation of polymeric nanofibres created in this method, the patent CZ 304137

Pokorný P. Lukáš D. Mikeš P. Martinová L. Zálešáková D. Vodseďálková K. Sanetrník F. (2011) A method and device for production of nanofibres by wash-over method of electrostatic spinning, Awarded: November 22, 2011, patent 22.11.2011, patent CZ 302876

Lukáš D. Růžicková J. Košťáková E. Novák O. Pokorný P. Bristenský J. Samek L. (2007) The collecting electrode as the device for production of nanofibres through electrostatic spinning of polymer matrices, and a device comprising a collecting electrode, CZ Patent CZ 2007-727.

Pokorný P. Košťáková E. Lukáš D. (2007) Equipment for production of nanofibres through electrostatic spinning, utility model, registration number 18094, 2007.

Pokorný P. Lukáš D. Mikeš P. (2009) The X-ray emitter and / or accelerator of electrically charged particles, patent CZ 305429, **2009-424**.

Pokorný P. Lukáš D. Mikeš P. Vysloužilová L. Chvojka J. Hégrová B. Lukáš R. Amler E. Buzgo M. Louda P. (2011) A method of forming a functional nanofiber layer and a device for implementing the method, CZ Patent 302901, 2011-328.

Chvojka J. Lukáš D. Košťáková E. Mikeš P. Pokorný P. Brustmann (2013), The layered material / fabric for polishing hard surfaces, utility model 27192, 2013-28918.

Chvojka J. Lukáš D. Košťáková E. Mikeš P. Pokorný P. Chaloupek J. Saterník F. (2014) Nanofiber material with incorporated particles, utility model 28410, 2014-29564.

Lukáš D. Mikeš P. Kuželová-Košťáková E. Pokorný P. Novák O. Sanetník F. Chvojka J. Havlíček J. Jenčová V. Horáková J. Blažková L. Pilařová K. Erben J. Kovačičin J. (2014) Equipment for manufacturing a composite textile material comprising polymer nanofibres, utility model 28190, 2014-30498.

Commercialization of patents and utility models

Pokorný P. Lukáš D. Mikeš P. Martinová L. Zálešáková D. Vodsedálková K. Sanetník F. (2011) A method and a device for production of nanofibres by wash-over method of electrostatic spinning, Awarded: November 22, 2011, patent CZ 302 876. Sold for around 5 million CZK in 2013.

Jirsák, Sanetník, Lukáš, Martinová, Chaloupek, Kotek, solution using electrostatic spinning and a device for carrying out the method US2006290031 WO2005024101-2006.

Developed in 2003, in the same year patented. The Czech patent 294274 was awarded in 2004 and the international patent WO 2005/024101 was granted in 2005. A licensing agreement for the use of the patent was transferred to Elmarco Ltd., company, Liberec, in 2004. At present, the patent is extended to the most developed countries. **Annual revenue from the license:** 2011 – 2,053 thousand CZK, 2012 - 1,443 thousand CZK, 2013 – 1,051 thousand CZK, 2014 - 311 thousand CZK, 2015 - 270 thousand CZK. **Total license revenues for the period 2011-2015** is 5,128 thousand CZK.

Amler E. Míčková A. Jakubová R. Plencner M. Prosecká E. Filová E. Rampichová M. Pokorný I. Lukáš D. Martinová L. Košťáková E. Pokorný P. Mesh of nanofibers with incorporated liposomes, **Utility model 20293**, application number 2009-21122, Patent share of TUL was sold to NANOPROGRES s.p.o. for about 90 thousand CZK.

Amler E. Míčková A. Jakubová R. Plencner M. Prosecká E. Filová E. Rampichová M. Pokorný I. Lukáš D. Martinová L. Košťáková E. Pokorný P. The hollow nanofibers enriched by liposomes, Utility model 19818, application number 2009-21123, Patent share of TUL was sold to NANOPROGRES s.p.o. for about 90 thousand CZK.

Significant industrial cooperation

Cluster NANOPROGRES

MPO ČR: OPPI – CZ.1.03/5.1.00/12.00018. **NANOPROGRES**. 2011-2014. Prof. David Lukáš, a member of the steering committee, a principal investigator and an expert guarantor of the sub-project no. 1. The development of reproducible methods for the production of "core-shell" nanofibers.

R & D team of prof. Lukáš and prof. Beran:

Financial amounts for investment delivery for NANOPROGRES I:

Development of devices for production of nanofibres in the clean room environment of class C: 8,9 CZK mil.

Total for research reports and for delivery of investment for NANOPROGRES II: A Reports 4,150,000 thousand CZK,

Development and construction of two functional models of electrospinning apparatus for preparing a composite nanofiber composite materials 12,000,000 thousand CZK
Expectation:

Next studies and delivery of investment at present (i.e. April 2016), Ministry of Industry and Trade of The Czech Republic / CzechInvest approved the project NANOPROGRES III: about 16,000,000 thousand CZK.

<http://nanoprogres.cz/cs/podnikatelsky-program/zakladni-model-klastru-nanoprogres-podnikatelsky>

Contract research of Technical University of Liberec with **Cummins Inc.**, (USA): Research and development of nanofiber materials for motors and automotive industry in 2008-2010. The total volume of 396 thousand USD. Prof. David Lukáš a member of the research team. Development of computer simulation parameters nanofiber filtration layers using a hydrodynamic model of cellular automata.

Scholarships

Visiting professor, 2015

School of Materials Science and Engineering, Clemson University, Clemson, South Carolina, United States of America, (three months).

Visiting professor, 2009-2010

School of Materials Science and Engineering, Clemson University, Clemson, South Carolina, United States of America, (seven months).

Visiting professor, 2005

Department of Textiles and Clothing, University of California, Davis, United States of America, (three month).

Visiting scholar, 1994

Department of Mechanics, School of Mechanical Engineering, Denmark University of Technology, Copenhagen – Lingby, (three months).

Visiting scholar 1988, Department of Nonwovens, Faculty of Textile Engineering, Institut Textilnoj i Ljogkoj Promyshlennosti Imeni Kyrova, San Peterburg, Russia, (three months).

Scientific boards and professional memberships

Scientific Boards

A member of the Scientific Board of the Technical University of Liberec, 1996-so far.

A member of the Scientific Board of the Faculty of Technology, Tomas Bata University in Zlín, 2012-2015.

A member of the Scientific Board of the Institute for Nanomaterials, Advanced Technologies and Innovation, Technical University of Liberec, 2012-so far.

A member of the Scientific Board of the Faculty of Mechanical Engineering, Technical University of Liberec, 2005-so far.

A member of the Scientific Board of the Faculty of Textile Engineering, Technical University of Liberec, 2003-so far.

Professional memberships

Member of the Governing Council Meeting of the Fiber Society, USA, 2015-2017.

Union of Czech mathematicians and physicists, member

Czech Society for Mechanics, Chairman of the Expert Group for Mechanics of Nanomaterials

Honours and awards

Plaque awarded by the Faculty of Mechanical Engineering on the occasion of the 60th anniversary of the founding of the University of Mechanical Engineering in Liberec (later VSST -TUL), 2013.

Fulbright Scholar Program, Advanced Research and University Lecturing Awards in the United States, 2009-2010.

Medal of Faculty of the Textile Engineering "for the work of top Czech and foreign textile specialists", 2010.

Bronze medal for the development of the Faculty of Economic, Technical University of Liberec, 2002.

Plaque for the development of Czech higher education, Charles University in Prague, 1998.

David Lukáš – IS VaVal researcher identifier (vedidk):3868427