CURRICULUM VITAE

Asooc. Prof. ING. MICHAL PETRŮ, PH.D.

Technical University of Liberec, Studentská 1402/2, Liberec 1, 461 17, Czech Republic

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EDUCATION AND ACADEMIC DEGREES

Assoc. Prof., Construction machinery and equipment
Faculty of Mechanical Engineering, Technical university of Liberec (TUL), Czech Republic, 2016.

Ph.D., Construction machinery and equipment
Faculty of Mechanical Engineering, Technical university of Liberec (TUL), Czech Republic, 2012.

Ing., Construction machinery and equipment
Faculty of Mechanical Engineering, Technical university of Liberec (TUL), Czech Republic, 2008.

PROFESSIONAL PROFILE

2020 – present Head of Research Direction, Centre for nanomaterials, advanced technologies and innovation, TU of Liberec

2014 – 2020 Head of department Machinery Construction, Centre for nanomaterials, advanced technologies and innovation, TU of Liberec

2016 – present Associate Professor, Department of Machine Parts and Mechanisms, TU of Liberec

2012 – present Assistant Professor, Department of Machine Parts and Mechanisms, TU of Liberec

2008 – 2012 Assistant, Department of Machine Parts and Mechanisms, TU of Liberec

2009 – 2011 Head of Department of Design Calculations (Triga – MF company)

2008 – 2009 3D CAD – designer (Triga – MF company)

PROFESSIONAL AND SCIENTIFIC ORIENTATION

Pedagogical, scientific research and professional focus is focused on research and complex development in the field of construction, maschine design, optimizing design, numerical modeling, composites and nanomaterials, construction of parts and new technologies, innovations, etc. . for the different areas of industry.

Michal Petru is Head of Research Direction of the Competitive Engineering at Institute for Nanomaterials, Advanced Technologies and Innovation (CXi) is a research center of the Technical University of Liberec (TUL). He did his Ph.D. from the Faculty of Mechanical Engineering, Technical University of Liberec, Czech Republic (2012) and postdoctoral research at CXi (2012-2014). In October 2014 he became Head of the Department of Machinery Construction at TUL. He is author or co-author of many scientific and professional publications for area numerical modeling and optimizing design machine (more than 80 publications in databases SCOPUS and ISI WOS, 50 articles with IF by ISI WOS, more than 300 citation, 2 international patents, 7 national patents, 16 utility samples, 12 prototypes, 12 functional utilities, 3 proven technologies sold to industrial companies

(every more than 1 mil. CZK), 2 monography, 10 Chapter in international books, 3 commercialized results with signed licensing agreements). He has also co-authored 2 books and 10 chapter books published by Elsevier, Springer, IntechOPEN. Nowadays, he is editor of 3 international peer reviewed journals as Polymers [Q1], Materials [Q2], Journal of Composites and Advances Materials [Q4] . A multiple award winner (2017 Award of Elsevier ScienceDirect top 25 list of most cited articles of Biosystems Engineering, 2014 Nominated on the EU Award - EurAgEng Outstanding Paper Award 2014, 2013 ScienceDirect top 25 list of most downloaded articles, ranked 1st on the top 25 for Biosystems Engineering, 2012 Rector's Award for the best publication Czech University of Life Sciences Prague), he actively collaborate/visit India, China, Indonesia, Norway, Germany, USA as a visiting researcher, professor and member of committee of panel of examiners for Ph.D. thesis.

SELECTED PUBLICATIONS (2020, 2019, 2018, 2017)

WANG, X.; PETRŮ, M. (2020). Degradation of bending properties of flax fiber reinforced polymer after natural aging and accelerated aging, Construction and Building Materials, https:// 10.1016/j.conbuildmat.2019.117909 [IF: 4,419, Q1]

NOMAN, M.T.; PETRŮ, M.; AMOR, N.; YANG, T.; MANSOOR, T. (2020). Thermophysiological comfort of sonochemically synthesized nano TiO2 coated woven fabrics, NATURE - Scientific Reports, https: 10.1038/s41598-020-74357-6 [IF: 3,998, Q1]

WANG, X.; ZHOU, C.; AI, J.; PETRŮ, M.; LIU, Y. (2020). Numerical investigation for the fatigue performance of reinforced concrete beams strengthened with external prestressed HFRP sheet, Construction and Building Materials, https:// 10.1016/j.conbuildmat.2019.117601 [IF: 4,419, Q1]

NOMAN, M.T.; PETRŮ, M.(2020). Functional properties of sonochemically synthesized zinc oxide nanoparticles and cotton composites, Nanomaterials, https: 10.3390/nano10091661 [IF: 4,324, Q2]

MLÝNEK, J.; PETRŮ, M.; MARTINEC, T.; S. S. R. KOLOOR (2020). Fabrication of high-quality polymer composite frame by a new method of fiber winding process, Polymers, https:// 10.3390/POLYM12051037 [IF: 3,426, Q1]

WANG, X.; PETRŮ, M. (2020). Mode I fracture evaluation of carbon fiber reinforced polymer/steel interfaces subject to freeze-thaw cycling, Engineering Failure Analysis, https:// 10.1016/j.engfailanal.2020.104405 [IF: 2.897, Q1]

HASSAN, T.; JAMSHAID, H.; MISHRA, R.; KHAN, M.Q.; PETRŮ, M.; NOVAK, J.; CHOTEBORSKY, R.; HROMASOVA, M. (2020). Acoustic, mechanical and thermal properties of green composites reinforced with natural fiberswaste, https:// 10.3390/polym12030654 [IF: 3,426, Q1]

WONG, K.J.; JOHAR, M.; S. S. R. KOLOOR; PETRŮ, M.; TAMIN, M.N.; (2020). Moisture absorption effects on mode II delamination of carbon/epoxy composites, Polymers, Polymers, https:// 10.3390/POLYM12092162 [IF: 3,426, Q1]

WANG, X.; PETRŮ, M. (2019). Mode I fracture evaluation of CFRP-to-concrete interfaces subject to aggressive environments agents: Freeze-thaw cycles, acid and alkaline solution, Composites Part B: Engineering, https://doi.org/10.1016/j.compositesb.2019.03.068 [IF: 7,635, Q1]

WANG, X.; PETRŮ, M. (2019). Freeze–thaw resistance of epoxy/concrete interface evaluated by a novel wedge splitting test, Construction and Building Materials, https://doi.org/10.1016/j.conbuildmat.2019.03.139 [IF: 4,419, Q1]

Wang, X.; PETRŮ, M., Yu, H. (2019). The effect of surface treatment on the creep behavior of flax fiber reinforced composites under hygrothermal aging conditions, Construction and Building Materials, https://doi.org/10.1016/j.conbuildmat.2019.03.001 [IF: 4,419,Q1]

S. S. R. KOLOOR, N. YIDRIS, M. PETRŮ, M. N. TAMIN (2020). An Energy-Based Concept for Yielding of Multidir. FRP Comp. Structures Using a Mesoscale Lam. Damage Model, Polymers, https://10.3390/polym12010157 [IF: 3,426, Q1]

NOVY, F.; JAMBOR, M.; PETRŮ, M.; TRSKO, L.; FINTOVA, S.; BOKUVKA, O. (2019). Investigation of the brittle fracture of the locomotive draw hook, Engineering Failure Analysis, https:// 10.1016/j.engfailanal.2019.07.019 [IF: 2.897, Q1]

WANG, X.; PETRŮ, M. (2019). Effect of Hygrothermal Aging and Surface Treatment on the Dynamic Mechanical Behavior of Flax Fiber Reinforced Composites, Materials, https://10.3390/ma12152376 [IF: 3,057, Q2]

WANG, X.; PETRŮ, M. (2019). Effect of Hygrothermal Aging and Surface Treatment on the Dynamic Mechanical Behavior of Flax Fiber Reinforced Composites, Materials, https://10.3390/ma12152376 [IF: 3,057, Q2]

AHMADI, M.T., RAZMDIDEH, A; KOLOOR, S.S.R; M. PETRU. (2020). Carbon-based band gap engineering in the h-BN analytical modeling. Materials. https://10.3390/ma13051026 [IF: 3.057. Q2].

S. S. R. KOLOOR, RAHIMIAN-KOLOOR, S.M., KARIMZADEH, A.; HAMDI, M.; M. PETRŮ, M. N. TAMIN (2020). Nano-level damage characterization of graphene/polymer cohesive interface under tensile separation, Polymers, https:// 10.3390/polym11091435 [IF: 3,426, Q1]

PETRŮ, M.; VOSAHLO, J.; (2019). Principles of Increasing the Winding Effectivity of Composite Prepregs to Construction Application, Lecture Notes in Mechanical Engineering, https://10.1007/978-3-030-33146-7_63

PETRŮ, M.; VOSAHLO, J.; (2018). Numerical modelling for optimization of fibres winding process of manufacturing technology for the non-circular aerospaces frame, Manufacturing Technology, https:// 10.21062/ujep/59.2018/a/1213-2489/MT/18/1/90

KULHAVY, P.; PETRŮ, M.; SYROVATKOVA, M. (2017). Possibilities of the Additional Damping of Unidirectional Fiber Composites by Implementation of Viscoelastic Neoprene and Rubber Layers, Shock and Vibration, https:// 10.1155/2017/4163485 [IF: 1,298, Q3]

SELECTED GRANTS AND PROJECTS

Project European Structural and Investment Funds - Operational Programme R&D and Education Reg. No. CZ.02.1.01/0.0/0.0/16_025/0007293 – Modular platform for autonomous chassis of specialized electric vehicles for freight and equipment transportation, 2018 – 2022. Principal investigator TUL: doc. Ing. Michal Petrů, Ph.D.

Project MV VI20152018005. Development of flood control systems to enhance the protection of the population and infrastructure, 2015-2018. Principal investigator TUL: doc. Ing. Michal Petrů, Ph.D.

MPO TRIO FV40207: Modularity of agricultural machinery with the support of advanced production technologies, 2019-2022, Reg. No. FV40207. Principal investigator TUL: doc. Ing. Michal Petru,Ph.D.

Project OP PIK: CZ.01.1.02/0.0/0.0/15_013/0004773 - Design of an active stroller using modern technology, 2016-2018. Principal investigator TUL: doc. Ing. Michal Petrů, Ph.D.

TAČR Delta: TF0200051. Development of technology and production of one-piece GFRP blades for wind turbines, 2016-2017. Principal investigator TUL: doc. Ing. Michal Petrů, Ph.D.

Project TACR TH01020796. Optimization of heat fluxes on a laminating machine using modern methods of modeling, 2015-2017.

Project managers TUL: Ing. Tomáš Martinec , Ph.D., doc. Ing. Michal Petrů, Ph.D.,

Norway Grants - Call 2 – Collabor. in the execution of doctoral study programmes focusing on engineering, materials and mechatronics, 2015 – 2016. Principal investigator TUL: Ing. Michal Petrů, Ph.D.,

Project GESHER/MOST LJ14005. New applications in production technology and the use of composite frames from fiber composites, 2014-2015. Keynote person TUL: doc. Ing. Michal Petrů, Ph.D.,

SELECTED RESULTS APPLIED IN INDUSTRIAL PARTNERS

SIERATOVSKI, J., SOLTYS, M., PETRŮ, M., NOVAK, O., KOVACIC, V., MARTINEC, T.: Lamella for fireproof gates and a fireproof gate comprising these lamellas, Europen patent n. EP3511510 (A1), 8.7.2020 License (Company Jap-Jacina).

SEVCIK, L., PETRŮ, M., MARTINEC, T., TŮMA, P., KUBÍN, J.: Prototype of production modular line for production of sophisticated wound adhesion covers, Technology for company ING Medical, 2018.

SIERATOVSKI, L., SOLTYS, M., PETRŮ, M., ET AL: Lamella for lamella fire resistant gate, in particular for high-speed lamella fire-resistant gate, in particular high-speed fire-resistant gate, containing these lamella. Patent 307613, 28.11. 2018 License (Company Jap-Jacina)

JACINA, P., SIERATOVSKI, L., TVAROH, J., PETRŮ, M.: A mobile anti-flood panel. Patent 307377, 1.12.2017. License (Company Jap-Jacina).

VECERNIK, J., PETRŮ, M., POTESIL, T., ET AL: GFRP composite modified by hybrid nanoparticle systems for the production of wind blades, 2017.

ŠEVČÍK, L., PETRŮ, M., VEJRYCH D., A NÝDRLE, M. Means for application of polymer solution on cord spinning electrode. EP2746439, 16.2.2016. License (Company Elmarco).

ŠEVČÍK, L., TŮMA, P., PETRŮ, M., MARTINEC, T., KOVÁŘ, R. Composite stiffener. Patent n. 305681, 3.2.2016. Patent sold to company Magna.

ŠEVČÍK, L., PETRŮ, M. AND COL. Storage tank of polymer solution or polymer melt of an apparatus for producing nanofibers by electrostatic spinning and apparatus for producing nanofibers by electrostatic spinning being provided with such storage tank of polymer solution or polymer melt, Patent n.305529, 7.10.2015. License (Company Elmarco).

INTERNSHIPS/MOBILITY

2020 USA, UC Davis, UC Santa Cruz

2019 Australia, Perth Convention and Exhibition Centre, West Australia

2019 India, IIT Delhi, IIT Chennai, Anna University, Chennai

2018 India, IESS 2018 Chennai, (CZ Delegate of the 5th Meeting of the Indo-Czech Joint Working Group on Heavy Engineering held at Chennai)

2018 China (CZ Delegate of the Second Meeting for China- Czech Cooperation Center under the Framework of the Belt and Road Initiative)

2017 China, Zhejiang Sci-Tech University, Zhejiang Hengshi Fabrics Co. Ltd.

2016 Indonesia, US Medan, UI Jakarta

2015 Norway, University of Stavanger