Professional Curriculum Vitae

Name:	Prof. Ing. Ján Džugan, Ph.D.
Date of birth:	26 September 1972
Nationality:	Czech
Address:	Červený Újezd 45
	330 21 Zbůch
Phone:	+420 775 201 421
E-mail:	jan.dzugan@comtesfht.cz

Education

- **University of West Bohemia in Pilsen** **27/07/2019**
  Attained professorship in the field of mechanical engineering
- **University of West Bohemia in Pilsen** **27/10/2010**
  Habilitation in the field of mechanical engineering
- **University of West Bohemia in Pilsen** **01/09/1995 – 09/02/1999**
  Ph.D. studies in the field of materials engineering
- University of West Bohemia in Pilsen **01/09/1990 – 26/06/1995**
  Master's level studies in the field of materials engineering
- **Secondary Technical School, Strakonice** **01/09/1986 – 30/06/1990**
  Study in the field of manufacturing technology completed by the secondary school-leaving examination

Employment

- **University of West Bohemia in Pilsen** **since 2012**
  Department of Materials and Engineering Metallurgy – external worker, teaching the Degradation Processes and Service Life, Materials Testing courses; supervisor of Bachelor's, Master's and doctoral theses

- **COMTES FHT a.s.** **since May 2006**
  - **Research and Development Director since 01/01/2013**
    Managing 4 research departments with 70+ workers
  - **Head of the laboratory of mechanical tests and thermophysical measurements 2006–2012**
    - Establishing the laboratory of mechanical tests within the company
    - Project management
    - Communication with customers and partners

- **ŠKODA Výzkum s.r.o., Plzeň** **01/04/1997 – 31/05/2006**
  Accredited testing laboratory for mechanical tests – senior researcher

- **Institute of Safety Research Rossendorf, Germany** **01/05/2002 – 31/07/2004**
  Department of Material Behaviour and Component Safety – researcher

- **Tohoku University, Sendai, Japan** **06/02/2001 – 30/04/2002**
  Fracture Research Institute – researcher

- **Institute of Safety Research Rossendorf, Germany** **01/10/1999 – 31/01/2001**
  Department of Material Behaviour and Component Safety – researcher

- **University of West Bohemia, Pilsen** **01/09/1995 – 31/12/2000**
  Department of Materials and Engineering Metallurgy – teacher and researcher

Research internships

- **Institute of Safety Research Rossendorf, Germany** **November 2005**
  Department of Material Behaviour and Component Safety
- **Institute of Safety Research Rossendorf, Germany** **May 2005**
  Department of Material Behaviour and Component Safety
- **Imperial College of Science, Technology and Medicine, London, UK** **July - August 1997**
  Mechanical Engineering Department

Jan Džugan is a member of the following national and international scientific societies:

- ASTM E-08 on Fatigue and Fracture
- ASMT E28 on Mechanical Testing, in which he is the chairman of a group for implementation of miniature test specimens into existing standard
- **ISO/ASTM 261 on Additive manufacturing**, in which he is the **chairman of the working group for** "Orientation and location dependent properties assessment for AM deposited metallic materials"
- Chairman of the Czech Platform on Additive Manufacturing
- CzechImplant
- Czech Society for New Materials
- European Structure Integrity Society
- Czech Association of Testing Laboratories
- Czech Society for Mechanics

Jan Džugan is the author or co-author of **more than 210 scientific publications according to the Scopus** database, **more than 35 applied research results** (utility models, functional models, established technologies, software) and more than 300 research reports. He is a member of a number of national and international professional organizations. Moreover, Jan Džugan is a **member of evaluation committees** and expert panels both for national and international projects (**Eurostars, H2020**). He is also actively involved in undertaking national and international projects (has participated in more than 40 projects, whereof in 7 projects as investigator and in 13 projects as co-investigator). Since 2010, he has been the

organiser of COMAT international conferences and is a member of the scientific committee of the International Conference on Additive Manufacturing held by ASTM in 2020.
The results of research activities of prof. Džugan in the field of use of miniature specimens for the evaluation of mechanical properties and further characterization of 3D printed materials are currently implanted in existing documents, or in the drafts of new standards (ASTM W08, ASTM ISO WK49229).

The most significant projects in which prof. Džugan has participated as principal investigator:

- EF17_048/0007350: Pre-application research of functionally graduated materials using additive technologies, CZK 84,545 thous. | 84,545 thous.| Ministry of Education, Youth and Sports | 2018– 2022
- LO1412: Development of the West Bohemian Centre of Materials and Metallurgy, National Sustainability Project, CZK 184,640 thous. | CZK 92,319 thous. | Ministry of Education, Youth and Sports | 2015–2019 | – project evaluation: **V - Excellent project results** (with international significance etc.)

Prof. Džugan is at present a member of the Research Board of the Technology Agency of the Czech Republic (TAČR) and a member of the Scientific Board of the University of West Bohemia in Pilsen.

Professional activities related to additive technologies:

- Chairman of the ASTM F42 Mechanical Properties Characterization of Additively Manufactured Metallic Materials working group
- Member of ISO/ASTM joint group 261 on Additive manufacturing
- Chairman of Czech Technology Platform for Additive Manufacturing
- Close cooperation with leading figures / research organizations, e.g.
    - Dr. Mohsen Seifi – Director for the field of additive manufacturing - ASTM, USA,
    - Dr. Nima Shamsei – Chairperson of the ASTM Excellence Center for Additive Manufacturing, Auburn University, USA,
    - ITRI, Taiwan (joint projects in the field of 3D printing)
    - MIRDC, Taiwan (joint projects in the field of 3D printing)
    - ARTC, Singapore, long-term collaborative research in the field of 3D printing
    - INEGY, Porto, Portugal – joint research in the field of simulation of technological processes of 3D printing
- Collaboration with Czech companies using 3D printing, both in project area and in collaborative research (e.g. ZF Engineering, Doosan Power, ŠKODA JS, ProSpon, Protetika Plzeň)
- Project investigator/co-investigator:
    - EF17_048/0007350: Pre-application research of functionally graduated materials using additive technologies, CZK 84,545 thous. | CZK 84,545 thous. | Ministry of Education, Youth and Sports | 2018–2022. **Project investigator**
    - TM01000061:Development of beta-titanium based individual implants produced by additive manufacturing processes, CZK 31,131 thous. | CZK 21,352 thous. | TA ČR | 2020–2022. **Project co-investigator**
    - GA19-03282S: Influence of complex and cyclic loading modes on lifetime of machine parts made by additive manufacturing, CZK 9,862 thous. | GA ČR | 2019–2021. **Project co-investigator**

- TH03010354: Gradient functionally structured hip implant with a long life span, CZK 37,922 thous. | CZK 22,632 thous. | TA ČR | 2018–2021. **Project co-investigator**
- TF02000067: Additive manufacture of high value joint replacement – reliability, performance, individuality, CZK 20,114 thous. | CZK 14,824 thous. | TA ČR | 2016–2019. **Project co-investigator**

Publishing activity for 2018–2020:

1. Trojanová Z, Džugan J, Halmešová K, Németh G, Minárik P, Lukáč P, Bohlen J. Influence of Accumulative Roll Bonding on the Texture and Tensile Properties of an AZ31 Magnesium Alloy Sheets. Materials. 2018; 11(1):73. Q2
2. Dzugan, J., Spaniel, M., Prantl, A., Konopik, P., Ruzicka, J., Kuzelka, J.: identification of ductile damage parameters for pressure vessel steel, Nuclear Engineering and Design, Nuclear Engineering and Design (2018), 328, pp. 372-380. Q1
3. Dzugan, J. et. al.: Effects of thickness and orientation on the small scale fracture behavior of additively manufactured Ti-6Al-4V, Materials Characterization (2018), https://doi.org/10.1016/j.matchar.2018.04.003. Q1
4. Trojanová, Z.; Halmešová, K.; Drozd, Z.; Šíma, V.; Lukáč, P.; Džugan, J.; Minárik, P. Thermal Conductivity of an AZ31 Sheet after Accumulative Roll Bonding. Crystals 2018, 8, 278. Q2
5. Trojanová, Z., Drozd, Z., Lukáč, P., Džugan, J., Halmešová, K.: Amplitude-dependent internal friction in AZ31 alloy sheets submitted to accumulative roll bonding, Fizika Nizkikh TemperaturVolume 44, Issue 9, September 2018, Pages 1233-1240. Q4
6. Drozd, Z., Trojanová, Z., Halmešová, K., Džugan, J., Lukáč, P., Minárik, P.: Anisotropy of thermal expansion in an AZ31 Magnesium Alloy Subjected to the Accumulative Roll Bonding, Vol. 134 (2018), No. 3, ACTA PHYSICA POLONICA A, pp.820-823. Q3
7. Trojanová, Z., Džugan, J., Halmešová, K., Németh, G., Minárik, P., Lukáč, P.: Effect of Accumulative Roll Bonding of an AZ31 Alloy on the Microstructure and Tensile Stress, Vol. 134 (2018), No. 3, ACTA PHYSICA POLONICA A, pp.863-866. Q3
8. Máthis, M., Michal Köver, M., Stráská, J., Trojanová, Z., Džugan, J., Halmešová, K.: Micro-tensile behavior of Mg-Al-Zn alloy processed by equal channel angular pressing, Materials 2018, 11(9), 1644; https://doi.org/10.3390/ma11091644. Q2
9. Hilšer, O., Rusz, S., Szkandera, P., Čížek, L., Kraus, M., Džugan, J., Maziarz, W.: Study of the Microstructure and Mechanical Properties Evolution of AZ61 Magnesium Alloy Subjected to Severe Plastic Deformation, Metals 2018. Q1
10. Trojanova, Z., Halmešová, K., Džugan, J., Palček, P., Minárik, P., Likáč, P.: Influence of strain rate on deformation behaviour of an AX52 alloy processed by equal channel angular pressing (ECAP), Letters on Materials 8 (4s), 2018 pp. 517-523, DOI: 10.22226/2410-3535-2018-4-517-523.
11. Palán, J.; Procházka, R.; Džugan, J.; Nacházel, J.; Duchek, M.; Németh, G.; Máthis, K.; Minárik, P.; Horváth, K. Comprehensive Evaluation of the Properties of Ultrafine to Nanocrystalline Grade 2 Titanium Wires. Materials 2018, 11, 2522. Q2
12. Dlouhy J, Podany P, Dzugan J. Strengthening from Cu Addition in 0.2C-(1-2) Mn Steels during Tempering. Materials. 2019; 12(2):247. Q2
13. Hodek, J.; Prantl, A.; Džugan, J.; Strunz, P. Determination of Directional Residual Stresses by the Contour Method. Metals 2019, 9, 1104. Q1
14. DŽUGAN, J., MELZER, D., KOUKOLÍKOVÁ, M., VAVŘÍK, J., SEIFI, M.: Characterization of Functionally Graded Materials Based on Inconel 718 and Stainless Steel 316L Manufactured by DED Process, ASTM, STP1631 on Fourth ASTM Symposium on Structural Integrity of Additive Manufactured Materials & Parts,

15. Raghavan, S., Soh, N., Hao, L.J., Khan, N.A., Muthu, R., Dzugan, J.: Tensile Property Variation with Wall Thickness in Selective Laser Melted Parts, Solid Freeform Fabrication 2019: Proceedings of the 30th Annual International, Solid Freeform Fabrication Symposium – An Additive Manufacturing Conference, August 12-14, 2019, Austin, Texas, USA.
16. Preisler, D.; Janeček, M.; Harcuba, P.; Džugan, J.; Halmešová, K.; Málek, J.; Veverková, A.; Stráský, J. The Effect of Hot Working on the Mechanical Properties of High Strength Biomedical Ti-Nb-Ta-Zr-O Alloy. Materials 2019, 12, 4233. Q2
17. Trojanová, Z., Drozd, Z., Škraban, T., Minárik, P., Džugan, J., Halmešová, K., Németh, G., Lukáč, P., Chmelík, F.: Effect of Rotary Swaging on Microstructure and Mechanical Properties of an AZ31 Magnesium Alloy, Advanced Engineering Materials, Volume 22, Issue 1, 1 January 2020 Q2
18. Mertová, K.; Palán, J.; Duchek, M.; Studecký, T.; Džugan, J.; Poláková, I. Continuous Production of Pure Titanium with Ultrafine to Nanocrystalline Microstructure. Materials 2020, 13, 336. Q2
19. Džugan, J., Halmešová, K., Ackermann, M., Koukolíková, M., Trojanová, Z.: Thermo-physical properties investigation in relation to deposition orientation for SLM deposited H13 steel, Thermochimica Acta, 2020. Q2
20. Trojanová, Z.; Drozd, Z.; Lukáč, P.; Minárik, P.; Németh, G.; Seetharaman, S.; Džugan, J.; Gupta, M. Magnesium Reinforced with Inconel 718 Particles Prepared Ex Situ—Microstructure and Properties. Materials 2020, 13, 798. Q2
21. Dlouhy, J.; Podany, P.; Džugan, J. Influence of Martensite Deformation on Cu Precipitation Strengthening. Metals 2020, 10, 282. Q1
22. Drozd: Strengthening and thermally activated processes in an AX61/Saffil metal matrix composite, Crystals 2020, 10(6), 466; https://doi.org/10.3390/cryst10060466. Q2
23. Michalcová, A.; Vojtěch, D.; Vavřík, J.; Bartha, K.; Beran, P.; Drahokoupil, J.; Džugan, J.; Palán, J.; Čížek, J.; Lejček, P. Structure and Properties of High-Strength Ti Grade 4 Prepared by Severe Plastic Deformation and Subsequent Heat Treatment. Materials 2020, 13, 1116. Q2
24. Trojanová, Z., Halmešová, K., Džugan, J. et. al:: Effect of equal channel angular extrusion on thermal conductivity of an AX52 magnesium alloy, Crystals 2020, 10, 497; doi:10.3390/cryst10060497. Q2
25. Azinpoura, E., Darabia, R., Cesar de Sa, J., Santos, A., Hodek, J. Dzugan, J.: Fracture analysis in directed energy deposition (DED) processed 316L stainless steel using a phase-field approach, Finite Elements in Analysis and Design, 2020, Finite Elements in Analysis and Design, 177,103417. Q1
26. Kiran, A., Hodek, J., Vavřík, J., Džugan, J.: Numerical simulation of Direct Energy Deposition AM process and experimental validation, Materials 2020, 13 Q2
27. Poláková, I.; Zemko, M.; Rund, M.; Džugan, J. Using DEFORM Software for Determination of Parameters for Two Fracture Criteria on DIN 34CrNiMo6. Metals 2020, 10, 445. Q1
28. Farahnak, P., Urbánek, M., Konopík, P. et al. Influence of thickness reduction on forming limits of mild steel DC01. Int J Mater Form (2020). https://doi.org/10.1007/s12289-019-01513-3 Q2

29. Pehlivan, E., Roudnicka, M., Dzugan, J., (...), Dalibor, D., Daniel, M.: Effects of build orientation and sample geometry on the mechanical response of miniature CP-Ti Grade 2 strut samples manufactured by laser powder bed fusion, 2020, Additive Manufacturing, 35,101403. Q1
30. Salem, A., Liu, Z.H., Dzugan, J., Gotterbarm, M., Koerner, C.: Small Scale Testing of IN718 Single Crystals manufactured by EB-PBF, Additive Manufacturing, 36, 101449, 2020. Q1
31. Mertová, K., Džugan, J., Roudnická, M., Daniel, M., Vojtěch, V., Seifi, M., Lewandowski, J.J.: Build size and orientation influence on mechanical properties of powder bed fusion deposited titanium parts. Metals, Accepted for publication. Q1
32. Zerbst et al.: Damage tolerant design and assessment of additively manufactured metallic components subjected to cyclic loading. State-of-the-art, problems, challenges, under review, Progress in Materials Science, under review, IF 31.56, Q1
33. Stráský, J. et al.: Simultaneous achievement of high-strength and low modulus of elasticity in biomedical Ti alloys, Scripta Materialia, under review Q1
34. Azinpour; E., de Sa; J.C., Machado; M., Reis; A., Hodek; J., Dzugan, J.: A Study on Microstructure and Mechanical Properties of Austenite 316L Fabricated Using Direct Energy Deposition to Predict Fracture Behaviour with Respect to Porosity Value, Computational Materials Science, under review Q2
35. Dlouhy, J., Polakova; I., Podany; P., Dzugan, J: Rapid Cu precipitation during controlled rolling of 0.2C steel, Materials Science & Engineering A, under review Q1
36. Melzer, D., Dzugan; J., Koukolikova; M., Rzepa; R., Vavrik, J.: Structural integrity and mechanical properties of the Functionally Graded Material based on 316L/IN718 processed by DED technology, Materials Science & Engineering A, under review Q1
37. Dzugan, J., Seifi, M., Rzepa, S., Rund, M., Koukolikova, M., Viehrig, H.-W., Lewandowski, J.J.: Local fracture toughness properties assessment of DMLS produced Ti-6Al-4V alloy in three states, Engineering fracture mechanics, under review Q1
38. Dzugan, J., Seifi, M., Prochazka, R., Rund, M., Podany, P., Rzepa, S., Lewandowski, J.J.: Mechanical Properties Characterization of Metallic Components Produced by Additive Manufacturing, Fatigue & Fracture Of Engng. Materials & Structures, under review. Q1

Book chapter:

- Dzugan, J., Konopik, P., Rund, M.: Fracture Toughness Determination with the Use of Miniaturized Specimens, Contact and Fracture Mechanics, InTech (2018), dx.doi.org/10.5772/intechopen.73093.