

PERSONAL INFORMATION Ing. Dominik Legut, Ph.D.



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Sex male | Date of birth 15/12/1976 | Nationality czech

WORKING POSITION Senior scientist and HPC consultant

WORKING EXPERIENCES

- from June/2018 **Head of IT4Innovations Flagship Material Design via Exascale Computing**
IT4Innovations - national supercomputing center VSB Technical University Ostrava, Czech Republic
- from Sept/2015 **University lecturer and Senior scientist**
T4Innovations - national supercomputing center VSB Technical University Ostrava, Czech Republic
▪ Electronic structure modeling, subject of Ph.D. and MSc. study
- from Feb/2012 **Senior scientist**
Nanotechnology Center and IT4Innovations - national supercomputing center VSB Technical University Ostrava, Czech Republic
- Sept/2009 - Jan/2012 **Postdoc**
Material Center Leoben, Leoben, Austria
- Jan/2007 - Sept/2009 **Postdoc**
Department of Condensed Matter Physics and Astronomy, Uppsala University, Sweden
- Sept/2000 - Jan/2012 **Scientific assistant**
Institute of Physics of Materials, Academy of Science of the Czech Republic, v. v. i.

EDUCATION

- Dec/2004 **Ph.D. in Material Engineering**
Brno University of Technology, Faculty of Chemistry, Brno Czech Republic
- June/2000 **M.Sc. In Chemistry of Materials**
Brno University of Technology, Faculty of Chemistry, Brno Czech Republic

PUBLICATION RECORD (April 2019)

Number of publications (WoS): 91

Number of citations/without selfcitation (WoS): 956/830, H-index (WoS): 17

8 most relevant publications (2007-2018):

1. **D. Legut**, M. Friák and M. Šob: *Why is polonium simple cubic and so highly anisotropic?*, Phys. Rev. Lett. **104**, 187401 (2007), 38x cited
2. H. Tian, Z. W. Seh, K. Yan, Z. Fu, P. Tang, Y. Lu, R. Zhang, **D. Legut**, Y. Cui, Q. Zhang, *Theoretical Investigation of Two-Dimensional Layered Materials as Protective Films for Lithium and Sodium Metal Anodes*, Advan. Ene. Mat. **7**, 1602528 (2017). 34x cited
3. **D. Legut**, M. Friák and M. Šob: *Phase stability, elasticity, and theoretical strength of polonium from first principles*, Phys. Rev. B **81**, 214118 (2010) 26x cited
4. R. F. Zhang, **D. Legut**, Z. J. Lin, Y. S. Zhao, H. K. Mao, and S. Veprek: *Stability and strength of transition-metal tetraborides and triborides*, Phys. Rev. Lett. **108**, 255502 (2012) 102x cited
5. H. Zhang, Z. Fu, R. Zhang, Q. Zhang, H. Tian, **D. Legut**, T. C. Germann, Y. Guo, S. Due, and J. S. Francisco: *Designing flexible 2D transition metal carbides with strain-controllable lithium storage*, Proc. Nat. Acad. USA **114**, E11082-E11091 (2017). 6x cited

6. R. F. Zhang, **D. Legut**, R. Niewa, A.S. Argon, and S. Veprek, Shear-induced structural transformation and plasticity in ultraincompressible ReB₂ limit its hardness, *Phys. Rev. B* **82**, 104104 (2010). 42x cited

7. T. Fan, P. Grychtol, R. Knut, C. Hernández-García, D. D. Hickstein, D. Zusin, Ch. Gentry, F. Dollar, Ch. Mancuso, C. W. Hogle, O. Kfir, **D. Legut**, K. Carva, J. L. Ellisa, Dorneya, C. Chena, O. G. Shpyrko, E. E. Fullerton, O. Cohenc, P. M. Oppeneer, D. Milošević, A. Becker, A. A. Jaron-Becker, T. Popmintcheva, M. M. Mumane, and H. Kapteyn, *Bright circularly polarized soft X-ray high harmonics for X-ray magnetic circular dichroism*, *Proc. Nat. Acad. USA* **112**, 14206 (2015). 111x cited

8. S. Valencia, A. Kleibert, A. Gaupp, J. Rusz, **D. Legut**, W. Gudat, and P. M. Oppeneer: *Quadratic X-Ray Magneto-Optical Effect upon Reflection in a Near-Normal-Incidence Configuration at the M Edges of 3d-Transition Metals*, *Phys. Rev. Lett.* **104**, 187401 (2010). 21x cited

PROJECT SKILLS

- PI of Grant Agency of the Czech Republic, No. 17-27790S: *New materials for nuclear fuels for IVth generation reactors* (2017-2019)
- co-PI of Grant Agency of the Czech Republic, No. 17-23964S: *Dispersively strengthened high entropic alloys for usage at extreme conditions* (2017-2019)
- 24 projects for CPU time at the Czech national supercomputing center IT4Innovations obtained with over 170mil. corehours
- Bilateral grant with Univ. Leoben, Leoben, Austria 2018-2019, No. 8J18AT004: *Explanation and understanding of the magnetostriction in Fe-Ti alloys*
- Donau project with Slovakia and Austria 2017-2018, No. 8X17046, *Complex study of effects in low-dimensional quantum spin systems*
- Bilateral grant with University of Muenster, Germany (7AMB13DE004) 2013-2014, 2018-2019, No. 8J18DE004: *Metal-graphene interfaces – foundations of novel spintronic materials*
- Bilateral grant with Pedagogical University, Cracow, Poland (MEB051015) 2010-2011.
- Work at Condensed Matter Physics panel of Czech Science Foundation as vice-chairman (2017-2019), chairman (2019-2021)
- Head of Res. Progr. 2 Path2Exascale, Operational Programme Research, Development and Education (budget 503mil. CZK)
- Head of IT4Innovations Flagship “Material Design - Towards Reality - via Exascale Computing”

PEDAGOGICAL SKILLS

Postdoc Mentor

- Post-Doc Mgr. Rudolf Sýkora, Ph.D. Exchange interactions in low-dimensional magnetic systems, VSB-TUO (2013-2015)
- Post-Doc Dr. K. Lebecki: Raman and IR spectroscopy induced by lattice vibrations, VSB-TUO (2014-2015)
- Post-Doc Dr. S. Skiadopolou, Novel multiferroics in NiMnTeO₆ family, VSB TUO (2017-2018)
- Post-Doc Dr J. Chovan, Low dimensional magnetic systems, VSB TUO (2017-2018)
- at present in group we have two Post-Doc started S. Arapan (mol. dynamics), A. Kadzielawa (superconductivity and el. structure calculations) and one Ph.D. (mechanic properties of the heterostructures and 2D materials), one master student Lukáš Kývala (exc. and correlation effects of actinide compounds) and one bachelor student Michal Farana (phase stability of Cr-W alloys) and student J. Výmola

Supervisor of bachelor and master thesis

- Bc thesis (co-supervisor): Pavlína Hemzalová – Ab initio calcs. of elect. and crystal. struct. of Te, Fac. of Chem. Brno Univ. of Techn. (2006)
- Dipl. thesis (co-supervisor): Monika Všianská – Electronic structures of indium and tin, Fac. of Chem., Brno Univ. of Technology (2006)
- Bc. thesis (supervisor): Lukáš Sojka – Electronic structure, phase stability and optical properties Ce doped TiO₂, VSB-TUO (2015)
- Bc. thesis (supervisor): Barbora Kacerovská – Electr. struct., thermal expans. and thermodyn. of U-Pu-Th carbides, VSB TUO (2015)
- Bc. thesis (supervisor): Lukáš Kývala – Latt. dyn. of actinides and actinide compounds from first-principles calculations VSB TUO (2018)

Organizing skills

- 3. workshops for junior scientists VSB TUO

Native language czech

Other language

	UNDERSTANDING		SPEAKING		WRITING
	Listening	Reading	Spoken interaction	Spoken communication	
English	C2	C2	C2	C2	C2
Swedish	B1	B1	B1	B1	B1
Deutsch	B1	B1	A2	A2	A2

Levels: A1/A2: Basic user - B1/B2: Independent user - C1/C2 Proficient user
Common European Framework of Reference for Language