

## Curriculum Vitae

**Assoc. Prof. Ing. Ivo Stachiv, Ph.D.**

**Phone:** +420 586532427 **Email:** [stachiv@fzu.cz](mailto:stachiv@fzu.cz)

**Nationality:** Czech

**Highest Degree:**

**Ph.D.** (2009) *National Taiwan University*, Graduate Institute of Applied Mechanics (Research: Applied mechanics /physics & Nanotechnology)



**Experience:**

- 03/2009 – now **Institute of Physics, Czech Academy of Sciences, Prague, Czech Republic (Scientist; Assoc. Scientist 09/2016 – 12/2021; Postdoc 03/2009 – 08/2016)**  
[Duties: propose research new directions; preparation of SCI journal papers and research projects; apply for research fund; supervision of postgraduate students and/or postdocs]
- 02/2018 – now **Dražní revize, s.r.o., Ostrava, Czech Republic (Head of Research and Development)**  
[Research: Smart sensors for industry 4.0; Smart multifunctional structures with embedded sensing elements and AI software]
- 08/2016 – 12/2019 **School of Sciences, Harbin Institute of Technology - Shenzhen (HITSZ), Shenzhen, Guangdong, China. (Associate Professor)**  
[Research: Multilayered structures; Depression and dementia; Biosensors for early an biomarkers detection and early onset-detection of dementia]
- 02/2015 – 07/2016 **Department of Mechanical Engineering, National Kaohsiung University of Applied Sciences, Kaohsiung, Taiwan. (Assistant Professor)**  
[Research: Nanomechanics and Nanomaterials; characterization: nanoindentation, In-situ TEM nanoindentation, Compression test, mathematical modeling; MD simulations]
- 08/2013 – 02/2015 **AIM-HI, National Chung Cheng University, Chiayi, Taiwan. (Postdoc)**  
[Research: Modelling and simulations of micro-/nanomaterials]
- 09/2010 – 07/2013 **Institute of Physics, Academia Sinica, Taipei, Taiwan. (Postdoc)**  
[Research: Polymer physics and complex fluid problems; Numerical modeling of solid fluid interactions for AFM measurement in viscous fluids]
- 05/2007 – 07/2007 **Department of Mechanical Engineering, University of Washington at Seattle, Seattle, WA, USA (invited by: Prof. W.-C. Wang). (Visiting International Predoctoral fellow)**  
[Research: experimental and numerical investigations on the optical macro-/micro viscosimeter]

**Areas of interest:**

Metamaterials; Micro-/nanomechanics; Functional (SMA) thin films; Sensors; Multifunctional

structures; Robotics; Early-stage diagnosis of neurodegenerative diseases.

- Solid and polymer-based materials with controllable mechanical and physical properties (e.g., materials with SMA components, solid to liquid materials, materials with negative indexes);
- Early-stage diagnosis of neurodegenerative diseases – ultrasensitive biomarkers identification and detection methods, novel neuropsychological assessments, SPECT.
- Design of solid and polymer structures with controllable physical and mechanical properties for various applications utilizing functional materials and thin films;
- Study the properties and behaviour of structures with sputtered SMA films combined with other active materials (e.g., magneto-electrical material layers);
- Ultrasensitive mass, force, fluid, spin and quantum sensors based on magneto-electrical and smart memory alloy structures and films deposited partially on the elastic substrates;
- Micro-/nanorobotics – design of propulsion systems utilizing SMA/SMP materials

### **Languages:**

Czech: *native speaker*

English: *fluent*

Chinese: *intermediate*

Polish: *passive*

### **Scientific / teaching awards:**

- 2020 Ph.D. student supervision pay award, Institute of Physics, Czech Academy of Sciences, Prague, Czech Rep.
- 2019 Master degree thesis award (Ministry of Education of the People`s Republic of China) – thesis supervisor.
- 2015-2016 National Kaohsiung University of Applied Sciences, Academic Year Talent Merit Pay Award (for excellence in teaching and research), Kaohsiung, Taiwan.

### **Funded projects as (co-)Principal Investigator – academic project (last 5 years):**

#### **Ongoing projects (Institute of Physics of ASCR)**

- 22-14387J – Design and manufacturing of 4D metamaterials based on printed structures with embedded elements of smart materials (4META), *Grant Agency of Czech Republic*, 2022-2024.
- 21-12994J – Smart MEMS/NEMS resonators with functional material layers utilizing local and global nonlinearities for ultrasensitive (bio)sensing applications, *Grant Agency of Czech Republic*, 2021-2023.
- 905299048034 – Contactless high frequency resonators utilizing lattice softening in NiMnGa for micro-robot applications, *Guangdong Province Science and Technology Agency*, 2020-2023.

#### **Finished projects**

- 13045866720 – Mechanics of micro-structures with embedded SMA elements, *Start-up research fund of HIT-Shenzhen*; 2016-2019.
- 15-13174J – Micromechanical resonators with intentionally changeable physical and mechanical properties applicable in various biomaterials and physical sensors, *bilateral project GACR (Czech) – MOST (Taiwan)*, 2015-2017.

- MOST 104-2218-E-151-002- – Shape memory hybrid composite micro-structures with controllable physical and mechanical properties applicable in micro-/nanosized mechanical sensors, *MOST (Taiwan)*, 2015- 2016.

### **Industrial / applied research projects in Drazni revize s.r.o. as Head of R&D:**

#### **Ongoing projects**

- TM01000016 – Affordable Railroad Smart Sensing System 4.0, *Technology Agency of Czech Republic*, 2020-2022.
- FW01010281 – Axle Counter 4.0, *Technology Agency of Czech Republic*, 2020-2023.

#### **Profession Service (Editor & committee):**

*Special issue editor: Metals (IF=2.351); Frontiers in Mechanical Engineering (to be announced)*  
*Associate editor: Modeling and Numerical Simulation of Material Science; Future Integrative medicine.*

*Reviewer for many SCI journals in areas of Applied physics; Nanotechnology; Smart structures; Smart materials; Applied mechanics, neurodegenerative diseases (e.g.; Journal of Applied Physics, Applied Physics A; American Journal of Alzheimer's Disease and Other Dementias, etc.)*

#### **Project evaluation expert:**

- Technology Agency of Czech Republic, European Union ([www.tacr.cz](http://www.tacr.cz))
- Research projects of Charles University, Prague ([www.cuni.cz](http://www.cuni.cz))

#### **Past 2 years SCI journal papers (\* corresponding author):**

1. C.-Y. Kuo, **I. Stachiv\***, T. Nikolai. Current and future trends in Alzheimer`s disease diagnosis and treatment: biomarkers, risk factors and (non-)pharmacological interventions, *Int. J. Mol. Sci.* (IF = 5.923) - *under review*.
2. S. Samal\*, O. Kosjakova, D. Vokoun, **I. Stachiv**, P. Poddar. Shape change and recovery of PMMA coated NiTi alloy under thermal cycles for SMA and SE substrate. *Polymers* (IF = 5.923) - *under review*.
3. C.-Y. Kuo, H.-Y. Tseng\*, **I. Stachiv\***, C.-H. Tsai, Y.-C. Lai, T. Nikolai. Combining neuropsychological assessment with MRI and SPECT to delineate Alzheimer`s disease from behavioral variant of Frontotemporal dementia and primarily progressive aphasia in tonal native speaking non-western individuals, *Front. Aging. Neurosci.* (IF = 5.750) -*under review*.
4. **I. Stachiv\***, Z. Machu, O. Sevecek, Y.-R. Jeng\*, W.-L., Li; M. Kotoul, J. Prasek. Achievable accuracy of resonating nanomechanical systems for mass sensing of larger analytes in GDa range. *Int. J. Mech. Sciences* (IF = 5.329) - *under review*.
5. **I. Stachiv\*** and C.-Y. Kuo, Healthy diet, depression and quality of life: A narrative review of biological mechanisms and primary prevention opportunities (Letters to editors), *World Journal of Psychiatry*, accepted (IF = 4.571).
6. **I. Stachiv\***, Z. Machu, O. Sevecek, O. Tuhovcak, M. Kotoul, Y.-R. Jeng\* Resolving measurement of large (~GDa) chemical / biomolecule complexes with multimode nanomechanical resonators, *Sens. Act. B: Chem.* Accepted (IF = 7.460)
7. **I. Stachiv\***, E. Alarcon, M. Lamac Shape Memory Alloys and Polymers for MEMS/NEMS Applications: Review on Recent Findings and Challenges in Design, Preparation, and Characterization, *Metals 11* (2021) 415 (IF=2.351) [Editor`s choice].

8. **I. Stachiv**\*, L. Gan, C.-Y. Kuo, P. Sittner, O. Sevecek, Mass Spectrometry of Heavy Analytes and Large Biological Aggregates by Monitoring Changes in the Quality Factor of Nanomechanical Resonators in Air, *ACS Sensors* 5 (2020) 2128 (IF=7.711).
9. C.-Y. Kuo, **I. Stachiv**\*, T. Nikolai Association of Late Life Depression, (Non-) Modifiable Risk and Protective Factors with Dementia and Alzheimer's Disease: Literature Review on Current Evidences, Preventive Interventions and Possible Future Trends in Prevention and Treatment of Dementia, *Int. J. Environ. Res. Public Health* 17 (2020) 7475 (IF=3.390).