

RNDr. Martin Ledinský, PhD.

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Present position:

Senior researcher, leader of the Thin Films for Photovoltaics group, FZU AS CR

Professional career

2017 - now: Leader of the Thin Films for Photovoltaics group at FZU AS CR

2001 - now: Scientific Researcher at FZU AS CR

Education

2009: Faculty of Mathematics and Physics of Charles University, specialization in quantum optics-optoelectronics (PhD.), Thesis: *Opto-electronical and structural properties of thin silicon films*

2004: Pedagogic minima for high school physics

2003: Faculty of Mathematics and Physics of Charles University, optics-optoelectronics (Mgr.)

Master thesis: *Strukturní a optoelektronické vlastnosti moderních materiálů pro sluneční články*

Foreign internships and employment

2018 (February-April): KAUST Solar center, KAUST, Saudi Arabia (prof. De Wolf)

2013-2014: Institute of Microtechnology, EPFL, Switzerland (prof. Ballif)

Awards by the scientific community

2013 Otto Wichterle award

Award for young scientist

2017 Award of the Chair of the Academy of Sciences of the Czech Republic and the Neuron Fund

For the popularization of science

Research activities in last five years related to the proposed project:

- **Invited talk** “Thin Films for Silicon Based Photovoltaic Under Zoom” at the 2020 fall MRS meeting, Boston, MA, USA
- Research stay 2018 (February-April) as a **visiting professor in KAUST** Photovoltaics-Laboratory (KPV-LAB), KAUST, Saudi Arabia (prof. De Wolf) – characterization of halide perovskite thin films (Raman, photoluminescence, atomic force microscopy...)
- **Invited talk** at the Material Science and Engineering Graduate Seminar, KAUST, Saudi Arabia
- **Junior grant GACR 17-26041Y**: Evolution of organic-inorganic halide perovskites opto-electronic properties under illumination
This project was evaluated by grade **Excellent**.
- Publishing manuscript in **high IF journals** with topic of halide perovskites (see below)
- **Popularization of science** in particular photovoltaics and physics in general

Publications:

116 publications in reviewed impact journals, **3990 citations**.

H-index: 22

7 most important scientific papers:

1. S. De Wolf, J. Holovsky, S.-J. Moon, P. Löper, B. Niesen, **M. Ledinsky**, F.-J. Haug, J.-H. Yum, C. Ballif *Organometallic Halide Perovskites: Sharp Optical Absorption Edge and Its Relation to Photovoltaic Performance*, *J. Phys. Chem. Lett.* 5 (2014) 1035 - 1039. IF = 8.709, **cited 1808 times**
2. **M. Ledinský**, P. Löper, B. Niesen, J. Holovský, S. Moon, J. Yum, S. De Wolf, A. Fejfar, C. Ballif *Raman Spectroscopy of Organic–Inorganic Halide Perovskites*, *J. Phys. Chem. Lett.* 6 (2015) 401 - 406. IF = 8.709, **cited 180 times**
3. **M. Ledinsky**; Schönfeldová, T.; Holovský, J.; Aydin, E.; Hájková, Z.; Landová, L.; Neyková, N.; Fejfar, A.; De Wolf, S. *Temperature Dependence of the Urbach Energy in Lead Iodide Perovskites*. *J. Phys. Chem. Lett.* 2019, 10 (6), 1368–1373. IF = 8.709 **cited 140 times**
4. P. Löper, S.-J. Moon, S. Martín de Nicolas, B. Niesen, **M. Ledinsky**, S. Nicolay, J. Bailat, J.-H. Yum, S. De Wolf, C. Ballif: *Organic-inorganic halide perovskite / crystalline silicon four-terminal tandem solar cells* *Phys. Chem. Chem. Phys.* 17 (2015) 1619 - 1629. IF = 4.198 **cited 260 times**
5. P. Loper, B. Niesen, Soo-Jin Moon, S. Martin de Nicolas, J. Holovský, Z. Remeš, **M. Ledinský**, F.-J. Haug, Jun-Ho Yum, S. De Wolf, C. Ballif: *Organic–Inorganic Halide Perovskites: Perspectives for Silicon-Based Tandem Solar Cells* *IEEE J. Photovoltaics* 4 (2014) 1545 - 1551. IF = 3.000 **cited 109 times**
6. **M. Ledinsky**, A. Vlk, T. Schönfeldová, J. Holovský, E. Aydin, H. Dang, Z. Hájková, L. Landová, J. Valenta, A. Fejfar, S. De Wolf: *Impact of Cation Multiplicity on Halide Perovskite Defect Densities and Solar Cell Voltages*. *J. Phys. Chem. C* 2020, 50 (124), 27333–27339. IF = 4.309 **cited 13 times**
7. J. Holovský, A. Amalathas, L. Landová, B. Dzurňák, B. Conrad, **M. Ledinský**, Z. Hájková, O. Pop-Georgievski, J. Svoboda, T. Yang, and Q. Jeangros: *Lead Halide Residue as a Source of Light-Induced Reversible Defects in Hybrid Perovskite Layers and Solar Cells*, *ACS Energy Lett.* 2019, 4(12), 3011–3017. IF = 19.003 **cited 40 times**

Academic activities

Lectures:

- Since 2011 Superconductivity and low temperature physics (KIPL, FJFI - ČVUT Prague)
- 2007 and 2008 mathematical analysis 1,2 (FJFI - ČVUT Prague, exercises)
- Participating in lectures for MFF UK (NOFY060 Experimental methods in physics II), FJFI (Selected chapters from nanoelectronics), FEL (34 NSE: New trends in electronic), TUL (Chapters from nanoelectronics)
- Presentations/seminars at MFF UK, FEL, VUT, TUL, ZCU...

Supervisor of Master Thesis:

Tereza Schonfeldová (2017/2018, FJFI - ČVUT Prague, currently Ph.D. student at EPFL)

- Study of optoelectronic properties of organo-metallic perovskite thin films

Supervisor of Doctoral Thesis:

Robert Hlaváč (2023 ongoing, FJFI - ČVUT Prague)

- Passivation radiative properties of organo-metallic halide perovskite thin films

Swarnendu Banerjee (2021 ongoing, KIPL FJFI - ČVUT Prague)

- Local electrical characterization of organo-metallic halide perovskite thin films

Aleš Vlk (2019 ongoing, KIPL, FJFI - ČVUT Prague)

- Study of defects in organo-metallic halide perovskite thin films