Ing. David Roesel, Ph.D.

Date of birth:	14.02.1993
Nationality:	Czech
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Education

2018 – 2022 Photonics Ph.D., **École polytechnique fédérale de Lausanne**, Switzerland
Laboratory for fundamental BioPhotonics EPFL, *Prof. Sylvie Roke*
Water as a contrast agent for imaging interfacial structure and ion transport in giant vesicles.

2015 – 2018 Optics and Nanostructures MSc., **Czech Technical University in Prague**, Czechia
Graduated with Distinction
Synthesis and Characterization of Nanomaterials IPE CAS, *Jan Grym, Ph.D.*
Electrical characterization of ZnO nanorods by a scanning probe
using conductive AFM and a nanomanipulator SEM module.

Jan – Aug 2016 Physics and Astronomy, **University of Waterloo**, Ontario, Canada
Two semesters of MSc. studies, international exchange program of CTU.

2012 – 2015 Physical Electronics BSc., **Czech Technical University in Prague**, Czechia
Graduated with Distinction
Optical Physics Group FNSPE CTU, *Tomáš Škereň, Ph.D.*
Synthesis of embedded nanoparticles using ion implantation.

Mar – May 2011 **St. Christopher's School**, Richmond, Virginia, USA

Aug – Mar 2010 **Tellkampfschule**, Hannover, Germany

Feb – May 2009 **University High School**, Irvine, California, USA

2004 – 2012 **PORG — Gymnázium a zakladní škola**, Prague, Czechia
Top of class, final year GPA equivalent: 95%, school ranked no. 1 in the country.

Internships

Summer 2017 | **5th Summer School in Molecular Biophysics and Systems Biology**, Nové Hrady, Czechia
Study of voltage sensitive trans–membrane proteins through molecular dynamics (GROMACS, VMD).

Summer 2015 | **Summer Research at University of Puget Sound**, Washington, USA
Computer reconstruction of surface morphology of ice crystals from SEM micrographs (CUDA, Python).

Summer 2014 | **Summer Research at Paul Scherrer Institute**, Villigen, Switzerland
Investigation of the interaction of H_2O_2 with ice surfaces (MATLAB).

Summer 2013 | **Summer Research at University of Puget Sound**, Washington, USA
Imaging of surface morphology of rough ice crystals using a variable pressure SEM with a cooled stage.

Summer 2012 | **Summer School at Institute of Nanobiology and Structural Biology**, Nové Hrady, Czechia
Study of protein docking within human hormones via QM/MM simulations (Schrödinger Suite).

Publications

Eremchev†, Roesel† et al. (2023). *Biointerphases*, 18, 031202.
High throughput wide field second harmonic imaging of giant unilamellar vesicles.

Eremchev†, Roesel† et al. (2023). *Biophysical Journal*, 122, 4, 624–631.
Passive transport of Ca^{2+} ions through lipid bilayers imaged by widefield second harmonic microscopy.

Roesel et al. (2022). *Journal of the American Chemical Society*, 144, 51, 23352–23357.
Ion-induced transient potential fluctuations facilitate pore formation and cation transport through lipid membranes.

Roesel et al. (2022). *Applied Physics Letters*, 120, 160501.
Water as a contrast agent to quantify surface chemistry and physics using second harmonic scattering and imaging: A perspective.

Lee†, Roesel† et al. (2021). *The Journal of Chemical Physics*, 155, 184704.
Imaging Cu^{2+} binding to charged phospholipid membranes by high-throughput second harmonic wide-field microscopy.

Tiagulskyi et al. (2020). *Nanomaterials*, 10, 508.
Highly Rectifying Heterojunctions Formed by Annealed ZnO Nanorods on GaN Substrates.

Butterfield et al. (2017). *Journal of Geophysical Research: Atmospheres*, 122(5), 3023–3041.
Quantitative three-dimensional ice roughness from scanning electron microscopy.

Workshops and conferences

July 2022	**EMBO Workshop** Birth and fission of cellular compartments, Bilbao, Spain (invited talk, poster)
	Best Poster Award
July 2021	**Fundamental studies on aqueous interfaces**, Zürich, Switzerland (talk)
June 2021	International Summer School on **Physics at Nanoscale**, Brno, Czechia (poster)
	Hub leader of the EPFL branch
April 2021	**EJTEMM 2021**, Graz, Austria (online poster)
August 2020	Swiss Chemical Society **Fall meeting**, Bern, Switzerland (online talk)
December 2019	EPFL **Photonics day**, Neuchâtel, Switzerland (poster)
November 2019	EPFL **BioEngineering day**, Lausanne, Switzerland (poster)
	Best Poster Award
August 2019	Swiss Chemical Society **Fall meeting**, Zürich, Switzerland (poster)
December 2018	EPFL **Photonics day**, Lausanne, Switzerland (poster)
July 2018	International Conference on **Nanoscience and Technology**, Brno, Czechia (talk)
June 2017	International Summer School on **Physics at Nanoscale**, Devět Skal, Czechia (poster)

Programming Skills

Proficient:	Python, PHP, HTML, CSS
Advanced:	MySQL, SQLite, GNUplot, Git, Qt, LaTeX, MATLAB, LabVIEW
Familiar:	Java, Go, C, C++, Maple, Javascript
Software:	Microsoft Office, LyX, Inkscape, VMD, Gwyddion, OpenSCAD
Certifications:	National Instruments: LabView Core I, LabView Core II

Languages

English:	Proficient (certified CEFR level C2)
German:	Intermediate (certified CEFR level B2)
Slovak:	Native understanding
Czech:	Native

Interests and Activities

Hiking, catamaran sailing, ultimate frisbee, geocaching, snowboarding, mountain biking, programming, 3D printing, reading, photography, playing piano and the ukulele.