

# Andrey Voloshin

**MC Fellow, PhD, Expert in photonics and semiconductors**

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Expert in applied and fundamental research in addition to industry experience. Working experience at the interface of fundamental science and industrial application gave me a unique chance to develop state-of-the-art devices based on semiconductor laser diodes and integrated photonic circuits. Recipient of Marie Skłodowska-Curie Individual Fellowship.



## Experience

31/05/2021 until now

**Co-founder & Chief Product Officer**  
**Deeplight SA**, Lausanne Switzerland

- Building technologies of frequency-agile PICs
- Development of advanced fully integrated laser sources and optical frequency combs
- Interaction with customers, pilot projects with industrial customers
- Product development, customer development, business development
- Participation in exhibitions and trade shows, proposal writing, grant management
- Company administration

01/10/2020 until now

**Postdoctoral Researcher**  
**LPQM EPFL**, Lausanne Switzerland

- Development of soliton microcombs, applied research of high-Q optical microresonators
- Development of advanced laser sources at visible and NIR range of wavelengths
- Development of photonic sensors based on advanced laser sources
- Proposal writing (incl. EU calls), management of funded projects
- Dissemination and exploitation of scientific results
- Supervision of Master and PhD students
- Establishing of new collaborations

## Highlights

- Expert in photonics and semiconductors
- Author of >17 high-profile papers (Nature Comm, Nature Photonics)
- >50 publications and 3 patent&patent applications in total
- Experience in laser and photonic products development
- Co-founder of a startup company in photonics
- Former co-founder of a startup company in IT
- Outstanding coaching and supervising skills
- Academic and industrial experience

## Hobbies

- Whitewater kayaking
- Kayak polo
- Hiking
- Skiing
- Kiting
- Parenting

# Experience

01/01/2017 to 01/09/2020

## Senior Researcher (part-time)

Samsung R&D Institute, Moscow, Russia

- Development of photonic sensor for healthcare and biomedical applications (embedded sensors for portable and wearable devices)
- Feasibility studies in photonics and integrated photonics, validation of prototype concepts
- Writing of scientific&research reports

01/06/2016 to 31/08/2020

## Senior Researcher (full-time)

Russian Quantum Center, Moscow, Russia

- Development of ultra-low-noise lasers and optical frequency combs. Development of electronics.
- Experiments in the world-leading laboratory with semiconductor laser diodes, micro-optics, electro-optics, fiber optics, and integrated photonic circuits. Advanced photonic packaging.
- Assembly of prototypes of several state-of-the-art photonics devices, evaluation with industrial partners (distributed optical fiber sensing)
- Management of scientific and industrial projects (managing a group up to 10 people).
- Proposals&reports writing, publishing of high-impact scientific articles

01/08/2017 to 10/09/2017

## Research internship

LPQM, Swiss Federal Polytechnic School of Lausanne (EPFL), Lausanne Switzerland

- Studies of nonlinear effects in integrated photonic chips
- Stabilization of QCLs by high-Q microresonators

01/01/2013 to 31/12/2015

## Founder and CTO

ShareCloth.com, New York, USA / London, UK / Moscow, Russia

- Development of the technology as CTO, management of R&D team, project management
- Interaction with investors, reporting to the board
- Development of a CAD software (desktop and web-based) for the apparel industry based on a physics simulation engine and AI
- Development of a full-body 3D scanner

01/03/2012 to 16/06/2016

## PhD student

Moscow State University, Department of Physics, Moscow, Russia

- Development of acousto-optic devices based on novel concepts
- Teaching, scientific writing paper, proposals and reports

01/07/2011 to 10/09/2011

## Internship

Department of Chemistry, University of Southern California, Los Angeles, USA

- Development of high power vibrational sum-frequency spectrometer for liquid surfaces, alignment of Ti:Sapphire Amplifier Legend Duo Elite (Coherent), OPA and NDFG

## Degrees

- 06/2016 Ph. D. degree, Lomonosov Moscow State University, Thesis: "Peculiarities of acousto-optic interaction in crystals with strong acoustic anisotropy"
- 01/2012 Specialist in Physics (equiv. to M. Sc. degree), Lomonosov Moscow State University Thesis: "Acousto-optic interaction in crystals with large acoustic anisotropy"

## Honors

- 2021: Marie Skłodowska-Curie Individual Fellowship
- 2016: Diploma for the best research, XX International Conference "Coherent Optics and Optical Spectroscopy"
- 2013: Diploma for the best theoretical research, XVI International conference for young scientists "Wave Electronics and its Applications in Information & Telecommunication Systems"
- 2012: Diploma for the best research (undergraduate student thesis), the competition named after academician Migulin (Russian Science Academy)
- 2010: Diploma for the best research in wave electronics, XII All-Russian workshop "Wave phenomenon in inhomogeneous media"
- 2010: Stipend of Foundation "Dynasty" for young scientist

## Selected publications

1. G. Lihachev, J. Riemensberger, W. Weng, J. Liu, H. Tian, S. Siddharth, V. Snigirev, V. Shadymov, **A. Voloshin**, R. Wang, J. He, S. Bhavé, T.J. Kippenberg, Low-noise frequency-agile photonic integrated lasers for coherent ranging, *Nature communications* 13(1), 2022
2. **A. Voloshin**, N. Kondratiev, G. Lihachev, J. Liu, V. Lobanov, N. Dmitriev, W. Weng, T.J. Kippenberg, I. Bilenko, Dynamics of soliton self-injection locking in optical microresonators, *Nature communications*, 12(1), 2021
3. **A. Voloshin\***, A. Raja\*, H. Guo\*, S. Agafonova\*, J. Liu, A. Gorodnitskiy, M. Karpov, N. Pavlov, E. Lucas, R. Galiev, A. Shitikov, J. Jost, M. Gorodetsky, T.J. Kippenberg, Electrically pumped photonic integrated soliton microcomb, *Nature Communications* 10(680), 2019 (\* - contributed equally)
4. N. Pavlov, S. Koptyaev, G. Lihachev, **A. Voloshin**, A. Gorodnitskiy, M. Ryabko, S. Polonsky, M. Gorodetsky, Narrow-linewidth lasing and soliton Kerr microcombs with ordinary laser diodes, *Nature Photonics* 12(11), 2018
5. V. Balakshy, **A. Voloshin**, Anisotropic acousto-optic interaction in tellurium crystal with acoustic walk-off, *Applied Optics* 55(17), pp. 4542-4549, 2016

## Patents

1. S. Koptyaev G. Lihachev, N. Pavlov, A. Shchekin, I. Bilenko, M. Riabko, M. Gorodetsky, S. Polonsky, **A. Voloshin**, A. Lantsov, A. Medvedev, V. Lobanov, Optical dual-comb source apparatuses including optical microresonator, US patent No. US10224688B2
2. S. Koptyaev G. Lihachev, N. Pavlov, A. Shchekin, I. Bilenko, M. Riabko, S. Polonsky, **A. Voloshin**, V. Lobanov, Compact device with lasers with multiple longitudinal modes, stabilized high-quality microresonators with generation of optical frequency combs, Russian patent No. RU2710002C1 (US patent application is pending)
3. Patent application pending