

Curriculum Vitae

Personal information

First name, Surname, titles

Pavel Peterka, Ing., Ph.D.

E-mail

peterka@ufe.cz

Nationality

Czech

Year of birth

Work experience

Dates

1993 onwards

Occupation or position held

senior research scientist (since 2013)

Activities and responsibilities

basic and applied research, project management, vice-chairman of the Supervisory board

Name and address of employer

Institute of Photonics and Electronics of The Czech Academy of Sciences, v.v.i., (ÚFE)
Chaberská 57, 182 51 Prague

Type of business or sector

photonics, optoelectronics, optical fibers and components, optical fiber communications, lasers

Dates

2001-2003 (13 months in total), 2009 (6 weeks)

Occupation or position held

postdoctoral fellow (2001-2003), professeur invité (2009)

Activities and responsibilities

research in the field of optical fibers and fiber amplifiers

Name and address of employer

Laboratoire de Physique de la Matière Condensée, CNRS - Université de Nice - Sophia
Antipolis, Nice, France

Type of business or sector

photonics, optical fiber communications

Education and training

Dates

1995-2000

Title of qualification awarded

Ph.D.

Principal subjects/ skills covered

Thesis title: "Twin-core optical fibers for fiber lasers"; teaching undergraduate courses

University

Faculty of Electrical Engineering, Czech Technical University in Prague (CTU)

Level

doctoral

Dates

1988-1993

Title of qualification awarded

Ing.

Principal subjects/ skills covered

Lasers and optical fibers, optics communications, photonics, physical engineering

University

Faculty of Nuclear Sciences and Physical Engineering, Czech Technical University in Prague

Level

master

Personal skills & competences

Management skills and competences

2014 - today: member of the Academy Assembly of the Czech Academy of Sciences (CAS)
 2013 - today: Deputy head of the team of Fiber lasers and non-linear optics (ÚFE)
 2013 - 2017: Member of the Council for popularization of science of the CAS
 2012 - today: Vice-chairman of the Supervisory board of the ÚFE
 2007-2012 secretary of the Supervisory board of the ÚFE
 2000 onwards: principal or co-principal investigator of research projects of various programs and providers: National: Czech Science Foundation, Grant Agency of the CAS, Ministry of Education, Youth and Sports, Ministry of Industry and Trade;
 European: Micro-and Nano Technologies (mnt-era.net), part of the 7th Framework Program.
 List of current and recently completed projects is available on my employer web page www.ufe.cz

Teaching

2007 - today: Lecturer of the subject „Fiber lasers and amplifiers“ in the CTU in Prague
 Supervision of master degree theses (1999 onwards) and doctoral theses (2010 onwards)

Award

2010: Special achievement award of the chairman the Czech Science Foundation for the project "Tunable active fiber components based on long-period fiber gratings" (member of the project team)

Volunteer and Professional Society Activities

2016: Co-chairman of the photonics session of the interdisciplinary symposium EU-US Frontiers of Engineering, 17 - 19 October 2016, Aalto University near Helsinki, Finland. Organizers: National Academy of Engineering (NAE) in partnership with the European Council of Academies of Applied Sciences, Technologies, and Engineering (EuroCASE)

2016: Chairman of the International Training School on Fiber Lasers & Optical Fiber Technology, <https://its.ufe.cz/>

2016 - today: Chairman of the conference Micro-structured and Specialty Optical Fibers, part of the symposium SPIE Optics+Optoelectronics

2014 - today: Management committee member of the European Action COST MP1401 "AFLASER"

2012 - today: Board member of the Alpha sub-program 1 of the Technological Agency of the Czech Republic

2011 - 2015: Vice-chairman of the evaluation panel P102 „Electrical Engineering and Electronics“ of the Czech Science Foundation and member of its Discipline committee OK1 „Technical sciences“

2005-2008: lecturer and local organizer of the "Open Science" project aiming at talented students and summer courses for high-school teachers

2004 - 2011: organization of "Open Doors Days" in the ÚFE

2002 onwards: reviewer of scientific papers for Applied Optics, Optics Letters, Optics Express, IEEE Photonics Technology Letters, Optics Communications, Electronics Letters and other journals

Membership

Senior Member of The Optical Society (OSA), Senior Member of The International Society for Optics and Photonics (SPIE), Czech and Slovak Society for Photonics (ČSSF) and European Optical Society (EOS)

Foreign languages

English (excellent, State language exam), Russian (good), German and French (basic)

Selected achievements since 2000

Contribution to discovery of laser-wavelength self-sweeping in fiber lasers.

This phenomenon may lead to improved fiber laser designs and cost effective pulsed fiber lasers or self-swept lasers. It can also help to reveal physical origins of several types of fiber laser instabilities, namely the triggering of self-Q-switching and longitudinal mode-instabilities. Our contribution to the discovery: first short note of the effect in fiber lasers (1076-1084 nm in Yb-fiber ring laser), explanation of the effect in ring lasers, sweeping in reverse direction, self-sweeping in erbium (~1560 nm) and holmium (~2100 nm) fiber lasers, evaluation of the reflectance of the transient fiber Bragg gratings created in fiber lasers with longitudinal mode instabilities.



**Selected
achievements
since 2000**

(continued from
the previous page)

- P. Peterka, P. Navrátil, J. Maria, B. Dussardier, R. Slavík, P. Honzátka, V. Kubeček, "Self-induced laser line sweeping in double-clad Yb-doped fiber-ring lasers", *Laser Phys. Lett.* 9, 445-450 (2012); and *Laser Phys. Lett.* Vol. 6, 732-736. (2009).
- J. Aubrecht, P. Peterka, P. Koška, O. Podrazký, F. Todorov, P. Honzátka, and I. Kašík, "Self-swept holmium fiber laser near 2100 nm," *Opt. Express* 25, 4120-4125 (2017).

New method of coiling of double-clad fibers for fiber lasers.

The method reduces detrimental nonlinear effects and improves fiber laser efficiency. The rigorous explanation of the pump absorption in double-clad fibers for high-power fiber lasers was given for the first time. It opened new way to optimize the double-clad fiber design.

- P. Peterka, P. Koška, O. Podrazký, V. Matějec, I. Kašík, "Optical fiber gain module, method for its fabrication and double-clad fiber laser device," *CZ Pat.* 305888, 9 March 2016.
- P. Koska, P. Peterka and V. Doya, "Numerical modeling of pump absorption in coiled and twisted double-clad fibers," *IEEE J. Sel. Top. Quantum Electron.* 22(2):55-62, 2016.

Comprehensive numerical model of rare-earth doped fibers and devices.

The developed numerical model was used, e.g., for optimization of thulium doped fiber laser devices and for spectroscopic characterization of rare-earth doped fibers.

- P. Peterka, B. Faure, W. Blanc, M. Karasek and B. Dussardier, "Theoretical modelling of S-band thulium-doped silica fiber amplifiers", *Optical and Quant. Electronics*, 36:201 (2004). 76 citations without self-citations.
- D. A. Simpson, W. E. K Gibbs, S. F. Collins, W. Blanc, B. Dussardier, G. Monnom, P. Peterka, and G. W. Baxter, "Visible and near infra-red up-conversion in Tm3+/Yb3+ co-doped silica fibers under 980 nm excitation," *Opt. Express* 16, 13781 (2008).
- P. Peterka, I. Kašík, A. Dhar, B. Dussardier, and W. Blanc, "Theoretical modeling of fiber laser at 810 nm based on thulium-doped silica fibers with enhanced 3H4 level lifetime," *Opt. Express* 19, 2773-2781 (2011).

New method for pumping of fiber lasers and amplifiers.

The method is based on direct splicing of the signal and pump fibers onto asymmetric double-clad fiber of specially designed cross section. No intermediate pump and signal combiner is needed. The patented method was tested in ytterbium and ytterbium/erbium doped fiber laser devices.

- P. Peterka, I. Kašík, V. Matějec, V. Kubeček, and P. Dvořáček, "Experimental demonstration of novel end-pumping method for double-clad fiber devices," *Opt. Lett.* 31, 3240 (2006).
- P. Peterka, I. Kašík, V. Matějec: "Method and device for coupling the signal and pump into double-clad optical fiber for fiber amplifiers and lasers", *CZ Pat.* 301215, 9 December 2009.

Twin-core fibers for fiber lasers.

Novel designs, fabrication, measurement, numerical modelling and applications in fiber lasers, e.g., in modulational- instability-based ultrashort-pulse fiber lasers

- P. Peterka, I. Kasik, J. Kanka, P. Honzátka, V. Matejec, and M. Hayer. "Twin-core fiber design and preparation for easy splicing". *IEEE Photonics Technology Lett.* 12,1656 (2000).
- P. Peterka, P. Honzátka, J. Kanka, V. Matejec and I. Kasik. "Generation of high repetition rate pulse trains in a fiber laser through a twin-core fiber". in *Proc. SPIE* 5036, 376 (2003).

I am author or co-author of 4 patents, 46 scientific journal papers, more than 100 conference papers, and one book chapter. These works were 421 cited according to the database Web of Science (without self-citations); publication h-factor is 14. List of most of the publications can be found there:

<http://www.ufe.cz/en/pavel-peterka>