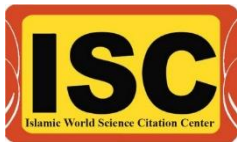




پژوهشکده لیزر و پلاسما



معاونت علمی و فناوری ریاست جمهوری
تأسیسات علمی و فناوری های فوئیکام، لیزر، مواد شیشه و سلامت



اولین کنفرانس ملی حسگرهای فیبرنوری ۶ آبان ۱۴۰۰ 1st Iranian Conference on Optical Fiber Sensors

28 October 2021



شرکت دانش بنیان
نوراتار هووشمند



ICOFS 2021

Program at a Glance

Thursday, 28 October 2021, 8:00-19:30

Time (Tehran)	Time (Porto)	Time (Santander)	Time (Okinawa)	
08:00-09:00	05:30-06:30	06:30-07:30	13:30-14:30	
Short talks (5 minutes)				
Time (Tehran)	Time (Porto)	Time (Santander)	Time (Okinawa)	
09:00-9:15	06:30-06:45	07:30-7:45	14:30-14:45	
Opening				
09:15-11:15	06:45-8:45	07:45-9:45	14:45-16:45	
09:15-09:40	Invited speaker		Dr. Zeinab Chenari	
09:40-11:15	Short talks (10 minutes)			
11:15-11:30	08:45-9:00	09:45-10:00	16:45-17:00	
Break				
11:30-12:30	9:00-10:00	10:00-11:00	17:00-18:00	
11:30-11:55	Invited speaker		Dr. Fereshteh Esmailzadeh	
11:55-12:30	Short talks (10 minutes)			
12:30-13:00	10:00-10:30	11:00-11:30	18:00-18:30	
Break				
13:00-13:50	10:30-11:20	11:30-12:20	18:30-19:20	
Short talks (5 minutes)				
14:00-14:50	11:30-12:20	12:30-13:20	19:30-20:20	
14:00-14:50	Keynote Speech 1		Dr. Georgiy Tkachenko	
14:55-15:45	12:25-13:15	13:25-14:15	20:25-21:15	
	Keynote Speech 2		Dr. Pedro Jorge	
15:45-16:00	13:15-13:30	14:15-14:30	21:15-21:30	
Break				
16:00-17:45	13:30-14:25	14:30-15:25	21:30-22:25	
16:00-16:50	Keynote Speech 3		Prof. José Miguel Lopez-Higuera	
16:55-17:45	14:25-15:15	15:25-16:15	22:25-23:15	
	Keynote Speech 4		Prof. Jose Luis Santos	

Time (Tehran)	Time (Porto)	Time (Santander)	Time (Okinawa)	
17:45-18:00	15:15-15:30	16:15-16:30	23:15-23:30	
	Break			
18:00-19:10	15:30-16:40	16:30-17:40	23:30-00:40	
18:00-18:50	Keynote Speech 4			Dr.Abbas Madani
18:50-19:10	Short talks (Poster)			
19:10-19:30	16:40-17:00	17:40-18:00	00:40-01:00	
	Closing			

Keynote Speech 1

Time: Thursday, 28 October 2021 14:00-14:50 (Tehran)

Title: Ultrathin optical fibers and their applications

Dr. Georgiy Tkachenko

Okinawa Institute of Science and Technology, Japan

Abstract: We make an optical fiber ultrathin by heating and pulling it in a controlled way until the fiber's diameter becomes comparable with the working wavelength of light. Due to the high refractive index contrast between the fiber material and the surrounding medium, guiding of light through the ultrathin region is accompanied by a strong evanescent field near the fiber surface. This field is useful for a broad spectrum of physical experiments and applications. In this talk, I will present our work with ultrathin optical fibers, focusing on optical manipulation of small particles.



G. Tkachenko is from Kharkiv, Ukraine, obtained his PhD at the University of Bordeaux, France, did a post-doc in the group of Prof. Kishan Dholakia at the University of St Andrews, UK. In 2017 he moved to Japan and joined the Light-Matter Interactions for Quantum Technologies Unit lead by Prof. Sile Nic Chormaic at Okinawa Institute of Science and Technology Graduate University.

Keynote Speech 2

Time: Thursday, 28 October 2021 14:55-15:45 (Tehran)

Title: Optical micro sensors and micromanipulation: fabrication and applications in single cell analysis.

Dr. Pedro A. S. Jorge

CAP/INESC TEC, Rua do Campo Alegre 687,4169-007 Porto, Portugal

Abstract: The combination of optical tweezers with advanced signal processing is a potential enabler of single cell diagnostics. In particular, its combination with optical fiber technology allows for a new set of versatile sensing tools. A brief overview of recent developments in single cell manipulation and analysis using optical fiber devices will be given, including design, fabrication and application in single cell diagnostic and sensing.



Pedro A. S. Jorge graduated in Applied Physics (Optics and Lasers) at the Univ. of Minho (1996), MSc in Optoelectronics and Lasers at the Physics Department of University of Porto (2000); in 2006 concluded his PhD program at University of Porto in collaboration with the Dept. of Physics and Optical Sciences at the Univ. of Charlotte, North Carolina, USA, with work in luminescence based optical fiber systems for biochemical sensing applications using luminescent nanoparticles. Since 1997 Pedro Jorge has been involved in several research and technology transfer projects related to optical fibre sensing technology, developing new sensing configurations and interrogation techniques for optical sensors. Pedro Jorge is a Senior researcher at INESC TEC where he leads the Biochemical Sensors team exploring the potential of optical fibre and integrated optics technologies in industrial, environmental and medical applications coordinating several projects in these areas. He has more than 200 publications in the fields of sensors in national and international conferences and peer reviewed journals, author of 3 book chapters and also holds one patent. Pedro Jorge is a member of SPIE.

Keynote Speech 3

Time: Thursday, 28 October 2021 16:00-16:50 (Tehran)

Title: Photonic Sensors: Doctrinal Conception and relevant cases

Prof. José Miguel Lopez-Higuera

Photonics Engineering Group, University of Cantabria, 39005 Santander, Spain.

Abstract: Photonics is considered the field of knowledge key for the development of the Organizations of the XXI century. For these organizations - such as the ones of the fourth industrial revolution or Industry 4.0 (I4.0)- sensors play an essential role. Photonic Sensors are a key area of sensors based on Light Sciences and Technologies. A Doctrinal Conception of Photonic Sensors as an “umbrella” in what any sensing approach using light can be easily included, will be offered in this invited lecture. To illustrate this general concept, a quit overview of significant cases using different principles, techniques, and technologies to detect diverse measurands in different sector applications will be offered. After this presentation, any sensing approach using Light will be easily identified as a Photonic Sensor in which optical fiber sensors is, really, a particular case.



José Miguel Lopez-Higuera received his PhD, with extraordinary, award from University Polytechnic of Madrid, Spain in 1989, where he investigated on integrated optics devices on LiNbO₃. He, has worked at University Laboral of Alcalá de Henares (1976-1986), at University Polytechnic of Madrid (1986-1991) and at University of Cantabria (since 1991) where he is Full Professor in Electronics and Photonics (since 2001). He has been teacher of 45 classes/promotions (since 1976) of Telecommunication Engineers in Spain. He founded and is the Head of the Photonics Engineering Group of University of Cantabria (since 1992), CIBER-BBN (2016) and IDIVAL (2017). He is the founder and director of International School on Light Sciences and Technologies (ISLIST) at UIMP where highly reputed speakers (including the Nobel Laureates such as Andre Geim, Sujhi Nakamura and Donna Strickland) are currently delivering invited lectures. He acted as General Chairman of EWOFs, 2004 and OFS23, 2014 and is co-founder of the new Master degree on Light Sciences and Engineering (CILuz) at the University of Cantabria. His research activities have been realized in the frame of more than 150 research projects (+70 with public and competitive funding) acting in +90 of them as manager, coordinator or principal investigator. He has authored or co-authored +850 research publications (including +190 in JCR Journals and +65 invited talks). He has also presented +25 patents and supervised +20 PhD theses. Editor and co-author of four R&D books. Co-Editor of several conference proceedings and magazines. Guest Editor of the Special Issues on Optical Fiber Sensors published on IEEE Sensor Journal (several Editions), on IEEE/OSA Journal of Lightwave Technology, on Optical Fiber Technology, and on SENSORS of MDPI. He is the Primary Guest Editor of special issue on Photonics for I4.0 on IEEE/JSTQE, 2021. He is cofounder of tech based companies: TELNOS, (2005), Empiric Technologies, SL (2010) and Sadiq Engineering (2011). Enabler of Edrónica: Technologies for unmanned vehicles (2016). Prof. López-Higuera is recipient of numerous awards and recognitions. He is Senior IEEE 1998, Fellow SPIE 2012, Fellow OSA 2014, Fellow of IAAM 2021 and Fellow VEBLEO 2021. He is also a member of the Royal Academy of Medicine of Cantabria (2014) and recipient of the Research Award of the Social Council of the University of Cantabria (2014) and The Lifetime Achievement Award by the EWOFs, Limerick, Ireland, May 2016, among others.

Keynote Speech 4

Time: Thursday, 28 October 2021 16:55-17:45 (Tehran)

Title: Paths for Optical Sensing

Prof. Jose Luis Santos ^{1,2}

¹ *Department of Physics and Astronomy, Faculty of Sciences, University of Porto, Rua do Campo Alegre*

687, 4169-007 Porto, Portugal; josantos@fc.up.pt.

² *CAP/INESC TEC, Rua do Campo Alegre 687,4169-007 Porto, Portugal*

Abstract: Optical sensing has for long been associated with leading-edge performance and recent developments indicate this trend will continue. Progresses both at the level of well-established optical technologies and on the uncovered of fundamental optical science with direct impact on sensing and measurement justifies such statement. Here it is presented a glimpse of those progresses, assessing in particular their impact when the sensing platform is the optical fiber. It starts with the identification of the main features of optical sensing and the characteristics that positively differentiate this sensing technology comparatively with others, particularly those that are electrical based. Then, it is emphasized the potential of the combination plasmonics and optical sensing, mainly when it is enhanced by the immense range of possibilities opened through the access to the metamaterials world. The final section delivers some inputs on the fascinating new world of optical sensing in the realm of quantum mechanics, where truly qualitatively novel possibilities for measurement and sensing stand for discovery.



José Luís Santos received his graduation in Physics from University of Porto, Portugal, and Ph.D. degree from the same University, benefiting from collaboration with the University of Kent at Canterbury, UK.

He is currently a Professor of Physics at the Physics and Astronomy Department of Faculty of Sciences of University of Porto, Portugal.

Optical fiber sensing is the main area of his research, with focus on interferometric and wavelength encoded devices. He is author or co-author of more than 230 scientific articles and co-author of 5 patents. With Professor Faramarz Farahi of University of North Carolina was Editor of Handbook of Optical Sensors, CRC Press 2014.

Keynote Speech 5

Time: Thursday, 28 October 2021 18:00-18:50

Title: Rolled-up microtube ring resonators for optofluidic sensing applications

Dr. Abbas Madani

Advanced Microelectronic Center Aachen (AMO GmbH)

Department of Engineering, The University of Cambridge, Cambridge UK

Institute for Integrative Nanosciences, IFW Dresden, Helmholtz str. 20, 01069 Dresden, Germany

madani@amo.de

Abstract: A novel platform for optofluidic applications is realized by monolithic integration of an array of ultra-compact three-dimensional (3D) vertically rolled-up microtube ring resonators (VRU-MRRs) with polymer waveguides. The on-chip integrated system is realized by rolling up 2D differentially strained TiO₂ nanomembranes into 3D microtubular cavities on a nanophotonic chip and seamlessly overlaid over several integrated waveguides. Whispering-gallery modes are observed in the telecom wavelength range, and their spectral peak positions shift significantly when measurements are performed while immersing the tubes or filling their hollow cores with water, thus manifesting a compact, robust all-integrated optofluidic microtube ring resonator with a high functionality, and well suited for dense multiplexing of sensors. The achievement of this work opens up fascinating opportunities to realize massively parallel optofluidic microsystems with exceptional multi-functionality and flexibility for analysis of biomaterials in lab-in-a-tube systems on a single chip.



Dr. Abbas Madani is a senior scientist at the Advanced Micro-Electronic Centre Aachen, Aachen, Germany and also is an adjunct/invited professor at the physic department of the Shahid Beheshti university, Tehran, Iran. He received Ph.D. degree in Rolled-up Photonics from Germany in 2016. His research is focused on the areas of graphene photonics, photonic sensors, optofluidic, and also nonlinear optics. He has supervised 6 master students and 4 Ph.D. students and published more than 20 research papers in various international journals. He visited as the invited speaker in several countries e.g., UK, Poland, Iran, Belgium, Spain, Nederland, EPFL in Switzerland etc. and presented his research work at various international conferences/workshops. Dr. Madani has been awarded seven years scholarship from ‘Institute for Integrative Nanosciences, IFW Dresden, Germany and also awarded two years scholarship from Cambridge University, UK to do his second postdoctoral there. He is an expert in Nanophotonic, Si Photonic, fiber optics, Laser, Optofluidics, Sensors, and Integrated Photonics, VCSELs.

Time (Tehran)	Time (Porto)	Time (Santander)	Time (Okinawa)	Short Talk (5 Minutes)	
08:00-09:00	05:30-06:30	06:30-07:30	13:30-14:30	Presenter	Chair
				Shakhawan Jalal Jabar, Mohammad Kouhi, Robabeh Talebzadeh <i>Tabriz Branch, Islamic Azad University, Tabriz</i>	Investigation of Fiber Optic Surface Plasmon Resonance Biosensor Containing Graphene and Titanium Dioxide Thin Film
				Parisa Borjikhani, M.Ismail Zibaii, and Nosrat Granpayeh <i>K. N. Toosi University of Technology, Tehran</i>	Comparison of Tapered Optical Fiber Sensors Based on Gold, Silver, Copper and Aluminum Nanoparticles
				Niusha Eslami, Mohammad Ismail Zibaii, Nosrat Granpayeh <i>K. N. Toosi University of Technology, Tehran</i>	Simulation of a Titanium oxide coated H shaped Optical Fiber Plasmonic Sensor for Enhancing Performance
				Armin EskandariNasab, Mehdi Tajaldini <i>Graduate University of Advanced Technology, Kerman</i>	Designing an Isopropanol Optical Fiber Temperature Sensor based on Deep Learning
				F.Bashiri Godarzi, Ali Hasanshahi, Javad Khalilzadeh, Ali Riahi <i>Imam Hossein University, Tehran</i>	Experimental study of the effect of diaphragm thickness and cavity length on Fabry-Perot optical fiber sensor for gas pressure measurement
				Ali Ojaghloo, Parviz Parvin, Hamed Moradi, Fatemeh Shahi <i>Amirkabir University of Technology, Tehran</i>	Sensitivity investigation of optical fiber sensors based on Fabry-Pérot interferometry using MoS2 and GO membrane for detection of acoustic waves
				Zahra Rasuli Emadi, Mahdi Bahadoran <i>Shiraz University of Technology, Shiraz</i>	Fabry-Perot Refractive index sensor using perforated ridge bus-waveguide
				Marzieh Omid, M. Ismail Zibaii, Nosrat Granpayeh <i>K. N. Toosi University of Technology, Tehran</i>	Simulation of Myelinated Axons of Brain Nerve Cells as an optical waveguide

Dr. Tavakol Nazari
Dr. Jalal Rohollahnejad

Time (Tehran)	Time (Porto)	Time (Santander)	Time (Okinawa)	
09:00-9:15	06:30-6:45	07:30-7:45	14:30-14:45	
Opening				
09:15-11:15	06:45-8:45	07:45-9:45	14:45-16:45	Short Talk (10 Minutes)
	Presenter		Title	Chair
09:15-09:40	Dr. Zeinab Chenari <i>Shahid Beheshti University, Tehran</i>		Fabrication and characterization of whispering-gallery-mode micro resonators	Dr. Soodabeh Noori Dr. Abolfazl Bahrampour
09:40-09:55	Homayoun Khosrojerdi, Hamid Latifi, Omid Ranjbar, Mohammad Ismail Zibaii <i>Shahid Beheshti University, Tehran</i>		Design and fabrication of tunable fiber fabry-perot filter with flat-concave cavity based on ceramic ferrule and nanostage with close loop control mode	
09:55-10:10	Ali Tamimi, Mohammadhossein Ghezelayagh, Abbas Bashiri <i>Imam Hossein University, Tehran</i>		Design and construction of visible light instantaneous wavelength measurement device	
10:10-10:25	Ali Rajabi Firoozabad, O. Reza Ranjbar Naeini, Mahdi Mirzaei, Hamid Latifi <i>Shahid Beheshti University, Tehran</i>		Fabrication of optical fiber Fabry-Perot strain sensor based on the Vernier effect	
10:25-10:40	Kobra taravideh, Roghaieh parvizi, Ebrahim Sadeghi <i>Yasouj University, Yasouj</i>		Preparation and investigation Optical Fiber Sensor coated Gold Thin Film based on Surface Plasmon Resonance	
10:40-10:55	Vahid Dastjerdi, Omid Haji Ali Khamse, Alireza Momtazian Fard, Mohammad Vahedi <i>Iran University of Science & Technology, Tehran</i>		Design and fabrication of distributed fiber optic sensor based on phase analysis method and field test results	
10:55-11:10	Ali Asghar Askari, Mojtaba Arjomand, Lale Rahiminejad, Morteza Mozafari <i>Malek Ashtar University of Technology, Isfahan</i>		Design and manufacturing of a fiber optic distributed temperature sensor based on Raman effect	
Time (Tehran)	Time (Porto)	Time (Santander)	Time (Okinawa)	
11:15-11:30	8:45-9:00	9:45-10:00	16:45-17:00	
Break				

Time (Tehran)	Time (Porto)	Time (Santander)	Time (Okinawa)	Short Talk (10 Minutes)	
11:30-12:30	9:00-10:00	10:00-11:00	17:00-18:00		
	Presenter			Title	Chair
11:30-11:55	Dr. Fereshteh Esmailzadeh <i>Sharif University, Tehran</i>			A proposal for distributed humidity sensor based on the induced LPFG	Dr. Ehsan Shojaee Dr. Mohammad Vahedi
11:55-12:30	Zohreh Teymoordel, Roghaieh Parvizi, Ebrahim Sadeghi <i>Yasouj University, Yasouj</i>			Synthesis and characterization of MoS ₂ nanostructure and coating on the optical fiber towards a humidity sensing application	
	Hamid Reza Solaimany Nazar, Vahid Ahmadi, Ali Reza Solaimany Nazar <i>Tarbiat Modares University, Tehran</i>			Mach-Zehnder interferometric fiber optic sensor for measuring methyl orange dye concentration in water	
	Fatemeh Arefnia, M. Ismail Zibaii, Davoud Dorranean, Hassan Rezaadost <i>Shahid Beheshti University, Tehran</i>			Design and fabrication of a polymer optical fiber based on citrate	
12:30-13:00	10:00-10:30	11:00-11:30	18:00-18:30		
Break					
13:00-13:50	10:30-11:20	11:30-12:20	18:30-19:20	Short Talk (5 Minutes)	
	Presenter			Title	Chair
	Mojtaba Arjmand, Laleh Rahimi-Nezhad, Ali Asghar Askari, Morteza Mozafari <i>Malek-Ashtar University of Technology, Esfahan</i>			Implementation of temperature calibration of Raman distributed sensor for temperature measurement along optical fiber	Dr. Mohammad Hossein Ghezeayagh
	Lale Rahimi, Ali-Asghar Askari, Mojtaba Arjmand, Morteza Mozafari <i>Malek-Ashtar University, Esfahan</i>			Comparison of using 2-D Non-local means, median methods, and a hybrid of them in the processing of the temperature profile of a distributed fiber Raman sensor	
	Mahdis Bayat, Masoud Rezvani Jalal, Masoud Pishdast, Alireza Abdikian <i>Malayer University, Malayer</i>			Simulation of sound wave excitation by electrostriction mechanism in laser pulse transmission through an optical fiber	
	Mohsen Mansoursamaei, Abdollah Malakzadeh, Mahdi Gholampour <i>Imam Hossein University, Tehran</i>			Comparison of reflection width and peak power of a uniform FBG in tilted cantilever beam technique for simultaneous measurement of temperature and strain	

	Zahra Rasuli Emadi, Mahdi Bahadoran, Gholamreza Honarasa <i>Shiraz University of Technology, Shiraz</i>			Refractive index gas sensor based on fano resonance induced by air holes in the bus-waveguide of a microring resonator	
	M. Ghahremani Moghadam, Ahmadreza Daraei, M.Mahdi Babakhani-Fard , M. Ismail Zibaii <i>Sistan and Baluchestan University, Zahedan</i>			Simulation of a Chemical Sensor based on the Defective Photonic Crystal Fiber Structure	
	M.Mahdi Babakhani-Fard, Ahmadreza Daraei, M. Ghahremani Moghadam, M. Ismail Zibaii <i>Sistan and Baluchestan University, Zahedan</i>			Modeling of a Polarization Rotator Photonic Crystal Resonator on Insulator for Label-Free DNA Detection	
	Marzieh Omid, M. Ismail Zibaii, Nosrat Granpayeh <i>K. N. Toosi University of Technology, Tehran</i>			Simulation of Nerve Fiber Based on Anti-Resonant Reflecting Optical Waveguide	
Time (Tehran)	Time (Porto)	Time (Santander)	Time (Okinawa)	Keynote Speech	
14:00-14:50	11:30-12:20	12:30-13:20	19:30-20:20		
	Presenter			Title	Chair
14:00-14:50	Dr. Georgiy Tkachenko <i>Okinawa Institute of Science and Technology, Japan</i>			Ultrathin optical fibers and their applications	Prof. Nosratollah Geranpayeh
14:55-15:45	12:25-13:15	13:25-14:15	20:25-21:15		
	Presenter			Title	
	Dr. Pedro Jorge <i>INESC TEC Porto, Portugal</i>			Optical micro sensors and micromanipulation: fabrication and applications in single cell analysis.	
15:45-16:00	13:15-13:30	14:15-14:30	21:15-21:30		
Break					
16:00-17:45	13:30-14:25	14:30-15:25	21:30-22:25		
	Presenter			Title	Chair
16:00-16:50	Prof. José Miguel Lopez-Higuera <i>University of Cantabria, Spain</i>			Photonic Sensors: Doctrinal Conception and relevant cases	Prof. Hamid Latifi
16:55-17:45	14:25-15:15	15:25-16:15	22:25-23:15		
	Presenter			Title	
	Prof. Jose Luis Santos <i>University of Porto/ CAP/INESC TEC Porto, Portugal</i>			Paths for Optical Sensing	

	Time (Porto)	Time (Santander)	Time (Okinawa)	
17:45-18:00	15:15-15:30	16:15-16:30	23:15-23:30	
	Break			
18:00-19:10	15:30-16:40	16:30-17:40	23:30-00:40	Short Talk (5 Minutes)
	Presenter		Title	Chair
18:00-18:50	Keynote Speech Dr.Abbas Madani <i>AMO GmbH, University of Cambridge, United Kingdom</i>		Rolled-up microtube ring resonators for optofluidic sensing applications	Dr. Mohammad Ismail Zibaii
18:50-19:10	Firoozeh Ghaneie, O.R. Ranjbar-Naeini, Neda Aminolroaya, Mohammadreza Salehi M.,A.Hosein Parandvash, Hamid Latifi <i>Shahid Beheshti University, Tehran</i>		Detection of droplets in the optofluidic chip by using a tapered optical fiber	
	Fatemeh Azizpour, M. Reza Rashidian Vaziri, M. Reza Jafarfard, Hedieh Pazokian, Mohsen Montazerolghaem <i>University of Science and Technology, Tehran</i>		Fabrication of micro-channels in glass by laser back-writing technique and their characterization	
	Pedram Rezaee Sirous, Saeed Batebi <i>Guilan University, Rasht</i>		Optical measurement of semiconductor layer	
19:10-19:30	16:40-17:00	17:40-18:00	00:40-01:00	
	Closing			