

Workshop: Challenges for Swiss Amplifier and Delivery Fibers

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Peter Brunner

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Peter Brunner hat in der angewandten Forschung und Entwicklung in namhaften Medizintechnik-Unternehmen in Fach- und Führungspositionen sowie als Mitglied von Geschäftsleitungen gewirkt. Sein beruflicher Weg führte ihn über Expertentätigkeiten auch zur KTI (Kommission für Technologie und Innovation) und über Jury- und Beratertätigkeiten zur W.A. de Vigier Stiftung, zu venturekick, der Hightech-Jungunternehmerförderung, und zum CSEM.

Welcome from BUAS



Dr. Christoph Harder

President Swissphotonics, Wollerau SZ
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Dr. Christoph S. Harder received the ETH Diploma in 1979 and the Master and PhD in EE in 1980 and 1983 from Caltech, Pasadena, USA. He is cofounder of the IBM Zurich Laser Diode Enterprise which pioneered the first 980nm high power pump laser for telecom optical amplifiers and laser diodes for industrial and consumer applications with ultrahigh reliability. He is the recipient of a Fulbright scholarship and the OSA Fellow recognition. Christoph is now heading a consulting company and is cofounder of Swissphotonics and has been its president for the last few years.

He has published more than 100 papers and 20 patents and has held a variety of staff and management positions at ETH, Caltech, IBM, Uniphase, JDS Uniphase, Nortel and Bookham and has volunteered on society boards and committees.

Info on Horizon 2020 calls, Moderation



Dr. Emile Dupont

SME & Innovation section leader, Euresearch
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Emile Dupont received his PhD in microsystems and technologies from EPFL. After working for a couple of years in a small enterprise in the Lake Lemman area, he is now the *SME & Innovation* section leader at Euresearch, where he helps Swiss companies in finding international partners and research funding opportunities.

The Enterprise Europe Network to find international partners for research and technology development

The *Enterprise Europe Network* is the world's largest support network for SMEs with international ambitions with close to 600 member organisations in over 50 countries. In Switzerland, Euresearch helps Swiss-based researcher in finding the perfect international partner for technological collaborations or research projects.



Dr. Andrea Braglia

CEO, OPI Photonics, Torino, IT
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Dr. Andrea Braglia, Physic Engineer and PhD in Electronics, began his working experience in the R&D group of Datalogic Automation Laser Marking. Later, he moved to Politecnico di Torino, where he worked at the development of high power industrial lasers and beam delivery systems. In 2012 he founded OPI Photonics, which he presently leads as CEO.

Innovative fibre cables for short laser pulse delivery

Laser machining using ultra-short pulses is experiencing a remarkable growth, which is however hampered by the necessity of free-space beam delivery due to the high peak power involved. Today, a new class of hollow core photonics crystal fibres is paving the way to the fibre delivery of high-peak power, high-energy lasers, easing the application of such laser technology in material processing.



Prof. Dr. Valerio Romano

Professor at Institute for Applied Laser-, Photonics- and Surface Technologies ALPS, Bern University of Applied Sciences BUAS, Burgdorf, BE
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His research topics are special optical fibers and laser-materials interaction. He is Professor for Applied Photonics at the BUAS and Lecturer as well as research group leader at the University of Bern. With Swissphotonics, he is board member and coordinator of the Swiss National Fiber Lab SNFL.

Capabilities of the Swiss granulated silica fiber research effort

During the last two decades optical fibers have continuously found new application fields such as sensing, lasers, amplifiers and beam delivery just to name a few. As a consequence the search for well adapted fiber production techniques has been intensively brought onward. In this presentation we report shortly on the fiber activities of the University of Bern and BUAS as well as on progress achieved in the the granulated silica fiber production method. The method gives a high freedom in doping and in shape and is therefore well suited for the production of special optical fibers. The talk will also point out the perspectives for scientific and commercial applications.



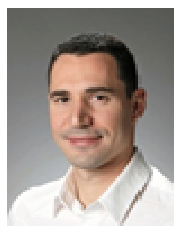
Prof. Camille-Sophie Brès

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Prof. Camille-Sophie Brès is an assistant professor at EPFL. She obtained her B.Eng. in electrical engineering from McGill University (2002) and her PhD. from Princeton University (2007). Prior to joining EPFL in 2011, she was a research scientist at the University of California San Diego. Prof. Brès has published over 100 articles in peer reviewed journals and conferences and is the recipient of an ERC starting grant in 2013.

Performance and outlook for insulator-free 2 micron fiber lasers

We report on performance and outlook of unidirectional isolator-free 2 micron thulium doped fibre laser, relying on theta cavity properties. The core pumped laser provides sub-Watt output power with 25% slope and 150nm flat tuning range, making such architecture competitive, if not superior, with the conventional ring cavities. We also show the importance of the doped-fibre nonlinearity on spectral shaping.






Prof. Dr. Fabien Sorin



Head of Laboratory of FIMAP at EPFL, Lausanne
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Prof. Fabien Sorin graduated with a PhD from the Massachusetts Institute of Technology (MIT) in Cambridge, USA, in 2008. After working as a research scientist at MIT, he joined the company Saint-Gobain as a research engineer in France in 2011. Since 2013, he is an assistant professor in the Institute of Materials (IMX) at EPFL, where he founded the *Laboratoire des Fibres et Matériaux Photoniques* FIMAP.

Promises of multi-material fiber developed at EPFL

Hybrid Multi-material optical fibers constitute a novel scientific and technological platform that offers the opportunity to bring advanced functionalities in combination with light delivery. In this talk I will present the materials design, processing approach and examples of fiber devices that can be realized. Applications in sensing, smart fabrics and health care will be discussed.

 <p>Dr. François Caloz</p>	<p>Head of int. standardization at Diamond SA, Losone TI www.diamond-fo.com francois.caloz@diamond-fo.com</p> <p>PhD in Physics (ETH) with experience in fiber optical measurement techniques, laboratory management, standardization, technical sales and product development. 16 years at Diamond SA, responsible for technical support and project management on important international customer specific projects. In addition, he acts as key account manager and as Business development manager as well as Diamond representative in IEC standardization committee.</p> <p>High power optical fiber connectivity for photonics applications Diamond SA is a company specialized in the high precision machining of small hard material parts and has been active in the field of fiber optics for more than 30 years. During the years Diamond developed own technologies to address the problem of connecting optical fibers, both for telecommunication applications as for the market of amplifiers, where high optical power has to be transmitted.</p>
<p>Dr. Ulrich Dürr</p>	<p>Technical Consultant and Chairman of the board of Meridian AG, Thun BE www.meridian.ch u.duerr@meridian.ch</p> <p>Professor for Physics (Uni. Stuttgart) Head of Development for industrial/medical Laser Systems (Lasag AG) CEO (Meridian AG) Head Laser Application/Innovation/Market developmen (Lasag AG) President of the Board (Meridian)</p> <p>Market Requirements for next Generation Fiberlaser for Medical Application Various pigments allow to selectively irradiate defined areas of tissue for heat treatment. As the absorption of many of these pigments is in the visible spectral region suitable medical lasers have to be developed. Frequency doubled Fiberlasers are a possible solution. The advantage of these lasers for medical applications are discussed and some requirements of a SME to Swiss National Fiber Laboratory SNFL.</p>
 <p>Dr. Lukas Krainer</p>	<p>CEO and Co-Founder of Onefive GmbH, Zürich www.onefive.com lukas.krainer@onefive.com</p> <p>Since 2012: Executive Board Member of Swissphotonics Since 2008: Managing Director & Co-owner of A.L.S. GmbH Since 2005: Independent Expert at E.C. Since 2005: CEO, Co-founder & Co-owner at Onefive GmbH 2005-2006: Head of RFID at GRE Inc. 2003-2005: Post-doc position ETH 2002-2003: Laser Scientist at GigaTera AG</p> <p>Market requirements for a short pulse delivery fiber and amplifier fibers Theoretical and practical power limitations in ultrafast fiber lasers and delivery systems</p>
 <p>Dr. Claus Dold</p>	<p>Head of Process Technologies and Product Manager Laser at Ewag AG, Etziken SO www.ewag.com claus.dold@ewag.com</p> <p>Dr. Claus Dold studied mechanical engineering at the ETH followed by a PhD thesis on picosecond laser processing of diamond cutting edges, lead by Prof. Dr. Konrad Wegener at the institute of machine tools and manufacturing. Today he is head of the process technology department at EWAG AG as well as the product manager for laser technology.</p> <p>Requirements (pulse distortion, wavelength and power) on delievery fibers in manufacturing processes Rapid developments in fiber laser and fiber delivery systems enable industries to build more compact machines while improving cycle times on the workpiece and increasing reliability of the laser system. Current boundaries of optical fibers are rising pulse energies and increasing repetition rates. This has large effects in beam path design and laser beam positioning devices.</p>

	<p>Head of Group for Fibre optics GFO, EPFL, Lausanne VD gfo.epfl.ch luc.thevenaz@epfl.ch</p> <p>Professor at the EPFL since September, 2008. At EPFL on different postdoctoral positions since 1988. Research in fibre optics and optical signal processing for the development of new frontiers in sensing and communications. Leading one of the major groups in the world on distributed fibre optics sensors and a pioneer group in laser diode spectroscopy. Pioneer and specialist about slow & fast light in optical fibres. Management of a total of 34 research projects, supported by Swiss national agencies, the European Union, the European Space Agency and companies. Teaching of modern optics for students in Electrical Engineering (2 lectures) Supervisor of 12 completed PhD theses and currently Director of 3 PhD students.</p>
	<p>Leader of Optical Fibers and Fiber Lasers group, at the Institute for Applied Physics IAP, University of Bern www.iap.unibe.ch manuel.ryser@iap.unibe.ch</p> <p>Dr. Manuel Ryser received his PhD in experimental physics in 2009 from the University of Bern in research and development of functional monitoring of biological tissues with microscopic and fiber-optic sensing techniques. Currently he is co-leader of the Optical Fibers and Fiber Lasers Group and works in the fields of fiber-optic light sources, fiber-optic sensors and fabrication and application of specialty optical fibers. The Optical Fibers and Fiber Lasers group is part of the Swiss National Fiber Laboratory SNFL.</p>

Working Groups

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