



# SWISS PHOTONICS

## Smart Lighting

EPFL Lausanne, October 30<sup>th</sup> 2015



**Prof. Dr. Nicolas Grandjean**

**Director Institute of Condensed Matter Physics ICMP, EPFL, Lausanne VD**

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Nicolas Grandjean received a PhD in Physics in 1994 and then joined the CNRS. In 2004 he moved to the EPFL and became Full Professor in 2009. He is the head of the Institute of Condensed Matter Physics. He was awarded the Sandoz Family Foundation grant and *Nakamura Lecturer* award. His research interests are the physics and technology of wide band-gap III-N semiconductors.

**Welcome**



**Dr. Rolando Ferrini**

**Section Head Integrated Light Management, CSEM SA, Muttenz BL**

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Since 2012, Dr. Rolando Ferrini is heading the Integrated Light Management Group at CSEM Muttenz. In 1999, he obtained his PhD in Physics in Pavia (Italy). From 2000 to 2004 at IPEQ-EPFL, he studied the optical properties of photonic crystal devices. From 2004 to 2011 at LOMM-EPFL, he was in charge of the activities on optics, photonics and lighting in collaboration with ILFORD Imaging GmbH.

**Moderation**



**Dr. Christian Hochfilzer**

**Technical Director, Regent Lighting AG, Basel**

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Dr. Christian Hochfilzer is currently Technical Director and Member of the Management Board at Regent Lighting, a major European lighting company. Prior to his current position he was Head of Research and Development at Tridonic Optoelectronics, a global pioneer in Chip on Board Solid State Light Sources. He received his PhD. in solid-state physics from the Technical University in Graz.

**Beyond Illumination – Views on Smart Lighting**

Only back in 2010 the LEDs were on the crossroad to become an accepted light source in the professional lighting market. Today this digital light source is truly accepted and the quest is on to transfer from digital lighting to smart lighting. This presentation will focus on this transition and will highlight the fascinating new opportunities that emerge.



**Prof. Dr. Ulrich Hauser**



**Prof. Toni Venzin**

**Institut für Informations- und Kommunikationstechnologien IKT, USA HTW, Chur GR**  
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**Prof. Dr. Ulrich Hauser-Ehninger**

Academic career:

Dipl.-Ing. (FH) in medical engineering (Germany)

MSc in electronic engineering (Wales, GB)

PhD in High Voltage engineering (Wales, GB)

Full-Time Lecturer at HTW Chur (since 2009)

Industrial career:

SW engineer as a freelancer, Ulm, Germany (1/2 Year)

SW and electrical engineering in a SME, NewTec Pfaffenhofen, Germany (2 Years)

SW engineering at SIEMENS AG, Ulm, Germany (2 Years)

SW engineering at Hamilton Medical AG, Bonaduz, Switzerland (2 Years)

**Prof. Toni Venzin**

Academic career:

Dipl.-Ing. (FH) in electronic engineering (Chur)

NDS in telecommunications (Chur)

Lecturer at HTW Chur, (since 2000)

Leader Labs for lighting and energy efficiency

Industrial career:

Engineer for wired voice telecommunication at Swisscom (15 Years)

Project Manager Chur bus in ticketing and traffic control center (since 2003)

**Lamps and illuminants, a customer's viewpoint**

The talk concentrates on the customer viewpoint on LED lamps with references to other light sources at appropriate locations.

The talk shows the implications of declarations on LED lamp and illuminant packaging. Then the differences between lamps and illuminants are discussed. LED illumination opens up a number of new issues customers hardly take into account at the shopping time.



**Dr. Stephan Junger**

**Senior Scientist, Fraunhofer Institute for Integrated Circuits IIS, Erlangen, Germany**

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Stephan Junger received the Diploma degree and the Dr. rer. nat. degree in physics from the University of Erlangen-Nürnberg, Germany, in 1994 and 2000, respectively. He has been working on holographic Bragg grating couplers with submicron grating periods and on miniaturised optoelectronic sensor systems for spectroscopic applications. Since 2000 he is with Fraunhofer IIS where his research interests as a senior scientist include optoelectronic components, optical sensors, and optical nanostructures where he authored or co-authored more than 25 journal and conference papers and holds 5 patents. He received the Georg-Waerber-Innovation Award in 2012.

**Color sensors for smart lighting applications**

LED luminaires require precise intensity and color matching, but temperature and aging effects result in an unwanted change in luminance and chromaticity. Color-sensing feedback achieves precise color accuracy and we demonstrate low-cost color sensors with eight and more spectral channels that are fabricated using a CMOS process. These devices add intelligence to tunable luminaires and ensure high quality of light.



**Dr. Marco Rossetti**

**Project Manager, Exalos AG, Schlieren ZH**

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Product manager at EXALOS since 2008, Dr. Rossetti has been leading the market release of innovative optoelectronic components with emission in the visible spectrum. Formerly research scientist at Sharp (UK) and PhD student at the EPFL, he has also contributed to the development of GaN-based lasers for Blu-ray DVD readers and performed studies of InAs/GaAs-based devices for telecom and medical applications.

**High power blue lasers for white light generation**

Laser-based white emitters are a true alternative to LEDs for applications where a high luminance and small form factor is required. The operation in the stimulated emission regime can be turned into a key advantage to overcome the efficiency droop or phosphor overheating that plague standard LEDs at high current densities. Furthermore, white light generation schemes and fixture design may benefit of the spatial coherence of the laser light to go far beyond present lighting concepts.



**Andreas Richner**

**CEO Ribag Licht AG, Safenwil AG**  
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Andreas Richner is CEO of the independent family company Ribag Licht AG located in Safenwil, Switzerland. The internationally active lighting specialist is characterised by a passion for lighting aesthetics, with over 20 years creating innovative lighting solutions. As a visionary with a strong sense of invention, Andreas Richner quickly saw the potential in organic LED technology and has now launched the world's first family of OLED light fittings.

**Fascination OLED**

OLED is more than a new light source. For Ribag, OLED is no less than the redefinition of lighting aesthetics. A first summary can now be made, eighteen months after launch of the light programme OVISO. Based on practical experiences and successfully completed lighting projects, Andreas Richner will give an insight into the commercial uses and challenges of this new lighting technology.



**Daniel Föger**

**Msc, Development Project Manager, Bartenbach GmbH, Aldrans, Tirol, Austria**  
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Studied experimental physics at the University of Innsbruck and the University of Technology Vienna from 2006 to 2013. His Masterthesis was carried out on the research field of quantum optics and dealt with the characterisation of semiconductor quantum dots as single photon sources. Employed in the R&D group of Bartenbach since 2013, managed and involved in several international R&D-projects, development-projects. Born on Oct 1st 1986 in Innsbruck in Tirol.

**Modern lighting systems which puts human needs in the foreground**

Based on two research projects (Guiding Light and Light4U) new lighting concepts for elderly people in domestic apartments are studied. The results and findings of these projects should improve the knowledge concerning the general lighting needs of elderly people and furthermore outline recommendations for lighting design in residential areas.



**Prof. Marilyne Andersen**

**Head of Interdisciplinary Laboratory of Performance-Integrated Design LIPID, EPFL, Lausanne VD**  
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Marilyne Andersen is Full Professor and Dean of ENAC at EPFL. Her research focuses on building performance in the architectural context, with a special interest in the use and optimization of daylight. She owns a MSc in Physics and a PhD from EPFL, was a visiting scholar in Bekleley, and a faculty member at MIT for 6 years before joining EPFL in 2010.

**Perceptual, comfort and health aspects of natural lighting in a space**

This presentation will explore the multifaceted nature of daylight performance in architectural spaces by discussing ongoing research regarding the dynamics of daylighting performance considering three interpretations of *well-being* in a space: as a human inhabitant of a living space, as a user of a (work)space, and as a witness of a delightful space.



**Erny Niederberger**

**Senior Scientist CC Electronics, Hochschule Luzern HSLU - Technik & Architektur, Horw LU**  
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His topics are optical simulation, optical measurements, optoelectronics, LED integration and optical sensing. For five years, he is working on the HSLU in Licht@HSLU projects for supporting small and medium Swiss companies. Another topic is aerosol analysis based on optical measurement methods. He has more ten year experience as developer and project leader in the industry.

**LED Luminaire for Human centric, smart and energy efficient residential lighting**

Two smart lighting demonstrator luminaires will be presented. They are smart, human centric and efficient. They are enabling dynamic lighting at home. The Competence Center Electronics of Hochschule Luzern has independently developed the prototypes. The intention is to support small and medium Swiss companies to develop their own smart, human centric and efficient luminaires.

