

## *The Electrical and Computer Engineering Program presents ECEN Seminar Series*

# What is LiFi?

Prof. Harald Haas

Chair of Mobile Communications at the University of Edinburgh

Co-founder and Chief Scientific Officer of PureLiFi Ltd

**Wednesday, 20<sup>th</sup> January, 2016**

**12 – 1 PM**

**Lecture Hall 144**

***Light lunch will be served***

We will start by clarifying the differences between visible light communications (VLC) and LiFi. This is followed by the introduction of the key building blocks required to create full LiFi networks. Next we report recent key achievements of the UP-VLC project with respect to component and demonstrator developments underpinning LiFi attocellular networks. We provide modelling results of such networks and address numerous misconceptions such as "LiFi is a line-of-sight technology". The talk also addresses the issue of energy efficiency of optical attocell networks and showcases how off-the-shelf solar panels can fulfil two functions at the same time, i) energy harvesting and ii) LiFi data detection. The talk closes by summarising commercialisation challenges

*The event is organized in collaboration with **IEEE Young Professional Affinity Group – Qatar Section.***



Professor Haas received the PhD degree from the University of Edinburgh in 2001. He currently holds the Chair of Mobile Communications at the University of Edinburgh, and is co-founder and Chief Scientific Officer of pureLiFi Ltd as well as the Director of the LiFi Research and Development Center at the University of Edinburgh. His main research interests are in optical wireless communications, hybrid optical wireless and RF communications, spatial modulation, and interference coordination in wireless networks. He first introduced and coined spatial modulation and LiFi. LiFi was listed among the 50 best inventions in TIME Magazine 2011.

Prof. Haas was an invited speaker at TED Global 2011, and his talk: "Wireless Data from Every Light Bulb" has been watched online more than 2.2 million times. He gave a second TED Global lecture in 2015 on the use of solar cells as LiFi data detectors and energy harvesters. This has been viewed online more than 1 million times. Professor Haas holds 31 patents and has more than 30 pending patent applications. He has published 300 conference and journal papers including a paper in Science. He co-authors a book entitled: "Principles of LED Light Communications Towards Networked Li-Fi" published with Cambridge University Press in 2015. Prof. Haas is editor of IEEE Transactions on Communications and IEEE Journal of Lightwave Technologies. He was co-recipient of recent best paper awards at the IEEE Vehicular Technology Conference (VTC-Fall) in Las Vegas in 2013, and VTC-Spring in Glasgow in 2015. He was co-recipient of the EURASIP Best Paper Award for the Journal on Wireless Communications and Networking in 2015, and co-recipient of the Jack Neubauer Memorial Award of the IEEE Vehicular Technology Society. In 2012, he was the recipient of the prestigious Established Career Fellowship from the EPSRC (Engineering and Physical Sciences Research Council) within Information and Communications Technology in the UK. Prof. Haas is recipient of the Tam Dalyell Prize 2013 awarded by the University of Edinburgh for excellence in engaging the public with science. In 2014, he was selected by EPSRC as one of ten RISE (Recognising Inspirational Scientists and Engineers) Leaders in the UK.

### **FOR MORE INFORMATION:**

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