



IDCOM Lunchtime Seminar

Friday 5 June 1.00pm

Seminar Room

AGB Building, King's Buildings, EH9 3JL

Dr Steve Hranilovic

McMaster University

From indoor to outer space - an overview of optical wireless research at McMaster University

Abstract: Due to the increasing scarcity of RF spectrum and growing interference due to multiple users, deploying next generation high-speed wireless networks is becoming increasingly difficult. The use of unlicensed optical bands for wireless communications has been heralded as an exciting development for future broadband access. This talk presents a brief overview of work of the *Free-space Optical Communication Algorithms Laboratory* (FOCAL) at McMaster University in Hamilton, Canada in developing novel optical wireless systems. The main thrusts of the group will be highlighted by emphasizing several recent contributions. Some details of a 2 km free-space optical test bench facility will be presented along with experimental results in radio-over-FSO transmission of DVB-T signals. Secondly, fundamental results on capacity-achieving distributions for discrete-time Poisson channels, which model long range inter-satellite laser links, will be presented. Developments in signalling design for VLC systems will be presented along with several prototype VLC communication links. Some approaches to indoor positioning using illumination devices and results using simple smartphone-based receivers will also be presented. Finally, a vision for VLC and VLP technologies will be presented along with our ongoing research directions.

Biography: Steve Hranilovic received the B.A.Sc. degree with honours in electrical engineering from the University of Waterloo, Canada in 1997 and M.A.Sc. and Ph.D. degrees in electrical engineering from the University of Toronto, Canada in 1999 and 2003 respectively. He is currently an Associate Professor in the Department of Electrical and Computer Engineering, McMaster University (Hamilton, Ontario, Canada) where he also serves as the Associate Chair for Undergraduate Studies. During 2010-2011 he spent his research leave as Senior Member, Technical Staff in Advanced Technology for Research in Motion, Waterloo, Canada. His research interests are in the areas of free-space and optical wireless communications, digital communication algorithms, and electronic and photonic implementation of coding and communication algorithms. He is the author of the book *Wireless Optical Communication Systems* (New York:Springer, 2004). Dr. Hranilovic is a Senior Member of the IEEE and OSA and was awarded the Government of Ontario Early Researcher Award. He currently serves as an Editor for the *IEEE Transactions on Communications* in the area of Optical Wireless Communications.

Pizza from 12.30pm – 2nd floor foyer