



# Optical Communication: A Front-runner for Future Wireless Networks

16<sup>th</sup> Aug. 2017 to 26<sup>th</sup> Aug. 2017

Keywords: Optical wireless communication, visible light communication, optical camera communication, cooperative and multi-user optical communication

## Overview

Optical wireless communication (OWC) is one of the most promising alternative communication scheme to address the limitations such as congested spectrum, a low data rate, expensive licensing, security issues, and a high cost of installation of radio frequency (RF) communication system. OWC technologies provide a flexible networking solution that delivers true broadband services. Specifically, visible light communication (VLC), a form of OWC exclusively uses visible light as a transmission medium and focuses on indoor and outdoor applications. VLC offers high efficiency because it employs existing lighting infrastructure that uses light emitting diodes (LEDs) as the transmitter, while a photodetector is used as the receiver. Moreover, VLC also offers 10,000 times wider bandwidth compared with broadband RF, since visible light spectrum is vast and license free.

In addition to VLC, today's generation of smartphone equipped with cameras can also be used for optical camera communication (OCC), which is a form of OWC using camera as the receiver. Even though the data rate of OCC is relatively low at the current developments, the OCC offers an affordable data rate and versatility with its 2-dimension data capture.

## Objectives of the course include

- To provide an overview of next generation high-speed wireless communication.
- To exposes the participants about current research and developments of OWC and its derivatives.
- To outline major OWC technologies that are being developed and investigated.
- To highlight the advantages and disadvantages of OWC that is considered disseminative in high speed, high-rate wireless access networks.

<b>Modules and Duration</b>	<b>16<sup>th</sup> Aug 2017 to 26<sup>th</sup> Aug 2017</b> <b>Number of participants for the course will be limited to fifty.</b>
<b>You Should Attend If...</b>	<ul style="list-style-type: none"> <li>▪ you are a communication engineer or research scientist interested in optical wireless communication design and development.</li> <li>▪ you are a student or faculty from academic institution interested in learning/ take up research in optical wireless communication for next generation.</li> </ul>
<b>Fees</b>	<p>The participation fees for taking the course is as follows:</p> <p><b>Participants from abroad : US \$200</b></p> <p><b>Industry/ Research Organizations: Rs.5000</b></p> <p><b>Academic Institutions: Rs.2000</b></p> <p><b>Students: Rs.1000</b></p> <p>The above fee include all instructional materials, computer use for tutorials and assignments, laboratory equipment usage charges, 24 hr free internet facility. The participants will be provided with accommodation on payment basis.</p>

## The Faculty



Yeon Ho Chung is a Professor of the Department of Information and Communications Engineering, Pukyong National University, Busan, Korea. He obtained an MSc. from Imperial College London, U.K., in 1992 and a Ph.D. from the University of Liverpool, U.K. in 1996. He was a visiting research fellow at Plymouth University under the sponsorship with British Council and Korea Science Foundation in 2005. He was also a visiting professor of the Department of Electrical Engineering, University Park, Pennsylvania State University, USA. He served as Executive Director of the Office of International Relations, Pukyong National University, Korea. In 2015, he was a visiting professor of Chiba University, Japan. He was a member of organizing committee for numerous international conferences, such as ISPACS 2015, Networking 2015, ICUFN 2015, ICC 2016, etc. He is a member of Editorial Board of Wireless Personal Communications, Springer and an associate editor of International Journal on Smart Sensing and Intelligent Systems. He serves as a member of advisory board for the International institute of Technology and Business, India. He is also a frequent reviewer for Optics Express, IEEE Communications Letters, Electronics, Applied Optics, Sensors, Optics Letters, IEEE Photonics Journal, etc. He is recipient of Top 2014 Paper Award from Transactions on Emerging Telecommunication Technologies (ETT), John Wiley Sons Ltd. His research interests are visible light communications, optical camera communications, optical MIMO, and advanced mobile transmission schemes.



Dr. Siddharth Deshmukh, is a Asst. Professor at National institute of Technology, Rourkela since 2014. He obtained his PhD degree from Kansas State University, USA in 2013. His research interest includes communication system design, networked control systems, optimization theory and statistical signal processing.



Prof Sarat Kumar Patra, is a Professor at National institute of Technology, Rourkela since 2006. He obtained his PhD degree from University of Edinburgh, UK in 1998. His research interest includes wireless and mobile communication, optical communication, cognitive radio, fuzzy systems.

## Course Coordinator

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