

IEEE Photonics Society Distinguished Lecture



A short professional bio: Dr. Ghanshyam Singh, a recipient of Distinguished Lecturer award from IEEE Photonics Society for term 2017-18, received B. Tech. degree in Electronics and Communication Engineering from NIT Silchar (then REC Silchar), M. Tech. and PhD degrees in Electronics and Communication Engineering from Malaviya National Institute of Technology (MNIT) Jaipur. In early 1999, he joined the academic staff of MNIT Jaipur, where he is an Associate Professor with the Department of EC Engineering. He has worked as visiting research scholar/visiting professor in the area of Photonic Switching and Networks for various periods at the Department of Physics, Herriot Watt University, Edinburgh, UK (March 2009), the Institute of Photonics, University of Eastern Finland, Joensuu, Finland (January – June 2010) under the CIMO Fellowship (Govt. of Finland) and Department of EEE, Keio University, Hiyoshi Campus, Yokohama, Japan (October 2013). Dr. Singh has extensive teaching, research and sponsored R&D experience (for various funding agencies from India and abroad) on many aspects of Optical Communication and Photonics Engineering and has published and reported over 100 research papers/review articles in peer reviewed International journals/conferences. He has delivered expert talks on related research topics during various events held in India and abroad (including the Germany, Finland, Japan, Ukraine, Belarus, China, Poland, Italy etc.). Dr. Singh is a senior member of OSA, IEEE and Fellow of OSI and IETE. He is also a life member of other professional societies including the SPIE, ISTE, IE (India), etc. Presently, Dr. Singh is engaged with joint research projects with partner researchers from Keio University (Japan), University of Vienna (Austria), Lviv National Polytechnic University, Lviv (Ukraine) and Cairo University (Egypt). His current research interest includes Micro and Nano-structured photonic devices for Integrated photonics

Talk details:

Photonic Integrated Devices and Systems: Technology for next Generation Telecom Networks

Abstract: Telecommunications networks and systems are seeing extreme increase in network traffic which is growing at the tremendous rate of 30% per year (*ref: report released by CISCO Inc.*). It is estimated that the energy and cost requirements will increase tenfold in coming ten years. But this progress is not sustainable from ecological and economic point of view. However, this information explosion can be dealt with, using integration of very small photonic components on very high density Photonic Integrated Circuits (PICs). The technological advancements in PICs have made them a popular choice for components of next generation networks. Silicon being the evident choice due to its high availability, mature fabrication technology, and low cost has attracted the researchers to explore the possibilities of integrating the fast photonics components on a chip. At the same time, the unique material properties and direct bandgap, group III-V materials have huge potential in applications like laser, amplifiers, modulators and detectors. Due to robustness, flexibility, reliability and performance of PICs, many commercial solutions are now available for a variety of applications. In coming years, it is expected that the field will continue to advance and communication networks may see a shift from electronic to all-optical/electro-optic network infrastructure.

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