



University of Pavia

Ph.D. School of Electronics, Computer Science and Biomedical Engineering
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SEMINAR

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

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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.*

Bio: Dr. Ghanshyam Singh, recipient of the Distinguished Lecturer award from IEEE Photonics Society for term 2017-18, joined the academic staff of MNIT Jaipur in early 1999, where he is an Associate Professor with the Department of EC Engineering. Dr. Singh has worked as visiting research scholar/visiting professor in the area of Photonic Switching and Networks for various periods at the Herriot Watt University (Edinburgh, UK), the University of Eastern Finland (Joensuu, Finland) and Keio University (Yokohama, Japan). He is also a senior member of OSA, IEEE and Fellow of OSI and IETE. Dr. Singh has extensive teaching, research and sponsored R&D experience 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 in different countries (including Germany, Finland, Japan, Ukraine, Belarus, China, Poland, Italy etc.). Presently, Dr. Singh is engaged in joint research projects with partner researchers from Keio University (Japan), University of Vienna (Austria), Lviv National Polytechnic University (Ukraine) and Cairo University (Egypt). His current research interest includes Micro and Nano-structured photonic devices for integrated photonics.

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