Photonics for 6G Communications

Topic: Photonics for 6G Communications

Speaker: Dr. Ranjan Singh (NTU, Singapore)

Venue: Room No. 218, SES, IIT Bhubaneswar

Date: 6th Jan. 2019 (Monday)

Time: 4.45 P.M. to 5.45 P.M.

Abstract:

For centuries people have looked for ways to feel closer over great distances. From the postal service to the telegraph to the telephone to video chatting, our expectations for remote communication and interaction continue to evolve. Smartphones have become an indispensable part of our lives as they have connected people, technologies, and societies. Rapid advances in new display technologies, sensing and imaging devices, and low-power specialized processors are ushering in a new era in which our devices will become seamlessly integrated with our senses and motoric control. Virtual (VR), augmented (AR), and mixed reality (MR) technologies are merging into XR (extended reality), which encompasses wearable displays and interaction mechanisms that create and maintain perceptual illusions. Users will accept an alternative version of reality that enhances their

ability to consume media, search the internet, explore real and virtual worlds, collaborate on work projects, connect with family and friends, and engage in restorative activities. For all this to be a possibility, one needs to transmit data at unprecedented rates of terabits per second which is even beyond the realms of 5G communications. In this talk, I will share with you the vision for photonics to be a route towards 6G communications that has the potential to transmit data at rates larger than 1 Tb/s enabled by terahertz wireless communication technologies.

The seminar began with welcome by PIC, Institute Seminar followed by brief introduction of the speaker. Dr. Ranjan talked about the technical challenges and possible solutions to transmit data at unprecedented rates of terabits per second which is route towards 6G communications. Students and faculty members interacted with Dr. Ranjan with great enthusiasm. Director, Prof. R. V. Raja Kumar thrown light on many aspects and answered the queries raised by audience, particularly on the communications. The seminar concluded with the Director, Prof. R. V. Raja Kumar felicitating Dr. Ranjan with a memento of appreciation.

Biography of the Speaker:

Dr. Ranjan Singh is an Associate Professor at the School of Physical and Mathematical Sciences, Division of Physics and Applied Physics, Nanyang Technological University (NTU) Singapore. He received his Ph. D. in Photonics from Oklahoma State University in 2009. Before joining NTU, he was a postdoctoral research associate at the Los Alamos National Laboratory from 2009 to 2013. His current research interest includes 6G terahertz communications, ultrafast dynamics in novel material systems, active metamaterials, superconductor terahertz photonics, singular nanophotonics, and biosensing. He has published more than 160 peer reviewed journal papers including Nature, Science Advances, Physics Review Letters, Advanced Materials, and Applied Physics Letters that has attracted close to 10,000 citations. Recently, he has been elected as the Fellow of Optical Society of America (OSA).