

# Quantum-dash nanostructure based tunable semiconductor lasers for green optical communications

**Date:** Tue. 27<sup>th</sup> Nov.

**Time:** 1:10 pm

**Location:** Building 59, Room 2016

## Speaker:

**Dr. Mohammed Zahed Mustafa Khan**

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## Abstract:

The striking surge in wireless services such as video streaming, 3D-gaming, social media services, etc., to name a few, over recently years, to meet the requirements of end-users, is pushing the existing optical communications, and access networks in particular, to work at their capacity limits. This trend has put forth standardization of 100G networks, and underline the need to explore potential novel network architectures and photonic device technologies that will enable sustainability with the exploding data traffic needs. Moreover, achieving higher data rate with minimum cost upgrade and mass deployment in the communication systems, are the key requirements, that necessitates considering novel transmitters and receivers, which forms the backbone of the optical networks. In this regard, very recently, a new-class of transmitter source based on quantum-dash nanostructures has shown great promise as a viable solution. In this talk, we will present our group's recent results on this nanostructure based semiconductor tunable lasers, where we demonstrated a potential lasing wavelength tunability of up to 50 nm near ~1610 nm, and successfully transmitted 128 Gb/s data on fiber as well as free-space channels.

## Bio:

Dr. Mohammed Zahed Mustafa Khan received PhD degree in Electrical Engineering from King Abdullah University of Science and Technology (KAUST), Saudi Arabia, in 2013, and was SABIC postdoctoral research fellow in the Photonics Laboratory, KAUST, from 2014-2015. He is currently an Assistant Professor in Electrical Engineering Department at KFUPM. He has contributed significantly towards the development of novel broadband quantum-dash semiconductor lasers and superluminescent diodes. Presently, his research focus targets two optical wavelength windows; one is the near infrared region where his group is investigating the potential applications of this new-class of lasers in optical access networks; and other is the visible spectrum where his group is working on improving the visible semiconductor laser performance for high bit-rate visible light communications. Dr. Khan has over 70 international publications and is a senior member of IEEE.