Recent advances for InAs/GaAs quantum dot lasers for Si photonics

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Despite significant investments in advanced nanofabrication techniques for next-generation microprocessors, the development of electronic data transmission speeds is approaching a bottleneck due to limitations in bandwidth and power density. In response, silicon (Si) photonics has emerged as a promising solution, offering high bandwidth, faster speeds, and greater power efficiency—not only for intra-data-center communication but also for optical computing. To enable efficient inter-chip communication on Si platforms, a compact, ultra-low-power Si-based light source is essential. In this talk, I will present recent advances in InAs/GaAs quantum dot lasers monolithically integrated on Si, featuring various optical cavity designs. These developments pave the way for practical Si-based optoelectronic integrated circuits.

Short Bio:

Dr Tang is a Lecturer in the Department of Electronic and Electrical Engineering at University College London (UCL). He finished his PhD in Semiconductor Photonics from the Department of Electronic and Electrical Engineering, UCL in 2016. He started his research associate job immediately after the PhD in the same research institute and was promoted to senior research fellow In September 2019. To date, he has published more than 90 peer-review journal articles, with a total citation over 4000 and h-index of 33. The highlight of publication profile of high impact journals as first or corresponding author includes *Nature Communications, Light: Science & Applications, Optica, Advanced Optical Materials, Progress in Quantum Electronics*, etc..