Project Title
Silicon Photonic Integrated Circuits for Sensing and Optical Interconnects

Person-in-charge
Professor Hon-ki TSANG
(Department of Electronic Engineering)
Dean of Engineering, Wei Lun Professor of Electronic Engineering

Members
Dr. Dan YI
PhD (Electronic Engineering), 2022
Dr. David W.U CHAN
PhD (Electronic Engineering), 2023
Dr. ZHOU Xuetong
PhD (Electronic Engineering), 2023

Project Description
This project aims to develop the next generation technology of silicon photonic integrated circuits which can advance the performance of systems beyond what can be achieved using purely microelectronic integrated circuits. The team's core expertise, developed by over 20 years of research in CUHK is in silicon photonics. As one of the first groups in Asia to develop silicon photonics, the team has some of the most advanced silicon photonic designs that can be used to advance the performance of communications equipment, 3D imaging and quantum information systems. Following the successful paradigm of the fabless design business model in the microelectronics industry, our focus will be on the design while we will use existing foundries for the manufacture of the photonic integrated circuits (PIC). The team will build the subsystems which are used as core components in products manufactured by other companies. Their products will include silicon photonics based 1.6 and 3.2 TbE optical engines for datacentre interconnects and miniaturized hand-held optical coherence tomography (OCT) imaging systems for healthcare equipment and industrial metrology.

The founding members include Prof. Hon Ki Tsang, Dr. Dan Yi, Dr. David W.U Chan and Dr. Xuetong Zhou all from the Department of Electronic Engineering. Prof. Hon Ki Tsang is the Dean of Engineering and Wei Lun Professor of Electronic Engineering and has >23 years' R&D experience in silicon photonics, including bringing new products successfully to market. Dr. Dan Yi obtained her PhD from CUHK in 2022, and won the Faculty of Engineering's best thesis award. Dr. David W.U Chan obtained his PhD in 2023 and has devloped state-of-the-art silicon modulators operating beyond 400Gb/s. Dr. Xuetong Zhou obtained his PhD in 2023, and has developed state-of-the-art advanced fiber to chip interfaces, that offer the best in the class performance for high coupling efficiency (less than 0.9dB coupling loss) and wide operating bandwidth.