

## Institute of Microelectronics (IME)

### Electronics / Solid State Devices

Name	Project	Degree By
Dr. Patrick Lo Guo-Qiang logq@ime.a-star.edu.sg	Si-Based Light-Emitting Devices and white solid-state lighting 3D Optical-Interconnects Low-Loss Passive Waveguide -- Process and Modeling Ultra-High Speed Si-based Modulator Ultra-High Speed Si-based Photodetector GaN Power Devices and Technology 3D IC - for High Bandwidth Electrical and Optical Interconnect 3D IC with Thermal management Solution	NUS/NTU
Wang Xinpeng wangxin@ime.a-star.edu.sg	Advanced architectures and materials for nanoscaled CMOS technology; Emerging NVMs and their application, including metal-oxide based ReRAMs, chalcogenide phase-change memories etc	NUS/NTU

### Miniaturized medical device and Biosensors

Name	Project	Degree By
Chung Jaehoon chungjh@ime.a-star.edu.sg	Development of Biosensors. Development of microfluidic platform for highly-efficient and cost-effective sample purification.	NUS/NTU
Gu Yuandong (Alex) Adj A/Prof at FOE/EEE, NUS guyd@ime.a-star.edu.sg	Miniaturized medical device and Biosensors ; Micro-Electro-Mechanical Systems technology, sensors and detectors.	NUS/NTU

### Microfluidics and Lab on Chip Technology

Name	Project	Degree By
<a href="mailto:keejs@ime.a-star.edu.sg">Kee Jack Sheng</a> <a href="mailto:keejs@ime.a-star.edu.sg">keejs@ime.a-star.edu.sg</a>	Biophotonics, Nanoplasmonic, Lab-on-chip.	NUS/NTU

<a href="#">Wong Chee Chung</a> <a href="mailto:wongcc@ime.a-star.edu.sg">wongcc@ime.a-star.edu.sg</a>	<p>Research Area:          CMOS based biosensors for in-vitro diagnostics.          Microfluidics devices for rare cell isolation.          Integrated electronic and microfluidic packaging.</p> <p>Current Projects:          Standardized electronic assay for enumeration of circulating tumor cells using CMOS technology. (BEP POC 2010).          Non invasive prenatal Diagnosis of Fetal Cells in Maternal Blood. (BEP 2011 Diagnostics Grant).</p>	NUS/NTU
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### **Integrated circuits and system for biomedical and MEMS devices**

Name	Project	Degree By
<a href="#">Chai Tshun Chuan, Kevin</a> <a href="mailto:chaitc@ime.a-star.edu.sg">chaitc@ime.a-star.edu.sg</a>	Analog mixed signal design; Readout interface for sensors applications in biomedical areas such as cellomics, genomics and proteomics; Interface readout for MEMS sensors using capacitive, piezoelectric, piezoresistive, resonance etc.	NUS/NTU
<a href="#">Cheong Jia Hao</a> <a href="mailto:cheongjh@ime.a-star.edu.sg">cheongjh@ime.a-star.edu.sg</a>	Low power ASIC design for implantable wirelessly powered blood flow monitoring system.	NUS/NTU
<a href="#">Gao Yuan</a> <a href="mailto:gaoy@ime.a-star.edu.sg">gaoy@ime.a-star.edu.sg</a>	RF/analog integrated circuit design.	NUS/NTU
<a href="#">Yao Lei</a> <a href="mailto:yaol@ime.a-star.edu.sg">yaol@ime.a-star.edu.sg</a>	Mixed signal VLSI design, biomedical circuit and system, neural stimulation and recording circuits, data conversion circuits.	NUS/NTU

### **Semiconductor process technology and advance packaging**

Name	Project	Degree By
Chen Bangtao <a href="mailto:chenb@ime.a-star.edu.sg">chenb@ime.a-star.edu.sg</a>	MEMS integration and packaging, vacuum packaging.	NUS/NTU
Li Hong Yu <a href="mailto:lihy@ime.a-star.edu.sg">lihy@ime.a-star.edu.sg</a>	3D IC and 3D packaging process integration by TSV technology. Fine pitch Cu to Cu bonding. 3D interconnect reliability.	NUS/NTU

Patrick Lo Guo-Qiang logq@ime.a-star.edu.sg	Si-Based Light-Emitting Devices and white solid-state lighting. 3D Optical-Interconnects. Low-Loss Passive Waveguide -- Process and Modeling. Ultra-High Speed Si-based Modulator. Ultra-High Speed Si-based Photodetector. GaN Power Devices and Technology. 3D IC - for High Bandwidth Electrical and Optical Interconnect. 3D IC with Thermal management Solution.	NUS/NTU
Zhang Xiaowu xiaowu@ime.a-star.edu.sg	3D IC integration with TSV technology. TSV interposer technology. Micro-stress sensor design, fabrication and testing.	NUS/NTU

### Wireless Communication

Name	Project	Degree By
Liu Xin liux@ime.a-star.edu.sg	Digital signal processing; VLSI circuit design; Wireless communication.	NUS/NTU
Ravinder Pal Singh ravinderps@ime.a-star.edu.sg	Power Management IC design	NUS/NTU
Zhou Jun zhouj@ime.a-star.edu.sg	Energy-efficient digital signal processor design. Low voltage circuit and system design. Variation-tolerant circuit and system design. 3DIC design.	NUS/NTU

### Micro-Electro-Mechanical Systems technology, sensors and detectors

Name	Project	Degree By
Cai Hong caih@ime.a-star.edu.sg	Nano-opto-mechanical-systems (NOMS) development, which is based on the core technologies of nanomechanics and nanophotonics. It can be exploited for actuating optomechanical devices, including sensors, accelerometers, gyro, nano-optical switches and array, and nano-actuators etc. It will be technological impact for revolutions traditional micro-silicon devices through the light-and-motion connection.  Nano-Photonics research area, focusing on silicon photonics devices development. Including CMOS platform-based silicon micro- and nanofabrication process development, photonic devices with applications in highspeed optical interconnects development.	NUS/NTU
Cheam Daw Don cheamdd@ime.a-star.edu.sg	MEMS / MEMSEN.	NUS/NTU

Chen Bangtao chenb@ime.a-star.edu.sg	MEMS integration and packaging, vacuum packaging.	NUS/NTU
Gu Yuandong (Alex) Adj A/Prof at FOE/EEE, NUS guyd@ime.a-star.edu.sg	Miniaturized medical device and Biosensors ; Micro-Electro-Mechanical Systems technology, sensors and detectors.	NUS/NTU
Navab Singh navab@ime.a-star.edu.sg	MEMS/NEMS devices and technology.	NUS/NTU
Sun Cheng Liang sunc@ime.a-star.edu.sg	Research area: Piezoelectric MEMS sensors and actuators  Project: 1) RF-MEMS Resonator core project 2) MEMS Consortium Phase II energy harvester project	NUS/NTU
Zhang Qingxin qingxin@ime.a-star.edu.sg	Si based MEMS device design and fabrication, Intergation of MEMS and CMOS technology, Wafer transfer technology and its application on RF/Bio technology.	NUS/NTU

### Electronics & Photonics

Name	Project	Degree By
Cai Hong caih@ime.a-star.edu.sg	Nano-opto-mechanical-systems (NOMS) development, which is based on the core technologies of nanomechanics and nanophotonics. It can be exploited for actuating optomechanical devices, including sensors, accelerometers, gyro, nano-optical switches and array, and nano-actuators etc. It will be technological impact for revolutions traditional micro-silicon devices through the light-and-motion connection.  Nano-Photonics research area, focusing on silicon photonics devices development. Including CMOS platform-based silicon micro- and nanofabrication process development, photonic devices with applications in highspeed optical interconnects development.	NUS/NTU
Liow Tsung-Yang Jason liowty@ime.a-star.edu.sg	Silicon Photonics.	NUS/NTU
Luo Xianshu luox@ime.a-star.edu.sg	Silicon Photonics Microwave photonics. III/V-to-Si bonding technology for optical light source.	NUS/NTU

Patrick Lo Guo-Qiang logq@ime.a-star.edu.sg	Si-Based Light-Emitting Devices and white solid-state lighting. 3D Optical-Interconnects. Low-Loss Passive Waveguide -- Process and Modeling. Ultra-High Speed Si-based Modulator. Ultra-High Speed Si-based Photodetector. GaN Power Devices and Technology. 3D IC - for High Bandwidth Electrical and Optical Interconnect. 3D IC with Thermal management Solution.	NUS/NTU
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### **Material Sciences**

Name	Project	Degree By
Wang Xinpeng wangxin@ime.a-star.edu.sg	Advanced architectures and materials for nanoscaled CMOS technology; Emerging NV	NUS/NTU