We are going to investigate the fundamental properties (optical and electrical) of semiconductor (quantum cascade lasers) and nanophotonic devices (such as graphene optoelectronic devices) in the infrared frequency regimes (including mid-IR (~3-30 μm) and terahertz (~60-300 μm)) to improve their performance. Exploration of their broad potential applications is also one of the key focuses.

**Research Interests**

- **Mid-IR and Terahertz Science and Technologies**
  - **High Power Mid-IR QCLs and Broadly Tunable Mid-IR QCLs**
  - **Localized Multimode Random QCLs**
  - **Dynamically Tunable Polarization THz QCLs and Integrated THz Graphene Modulator**
  - **Quantum Cascade Lasers**

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**Acknowledgment:**
NRF competitive research programme (CRP), SERC from the Agency for Science, Technology and Research, Singapore National Research Foundation, Competitive Research Program, Singapore Ministry of Education Tier 2 Program