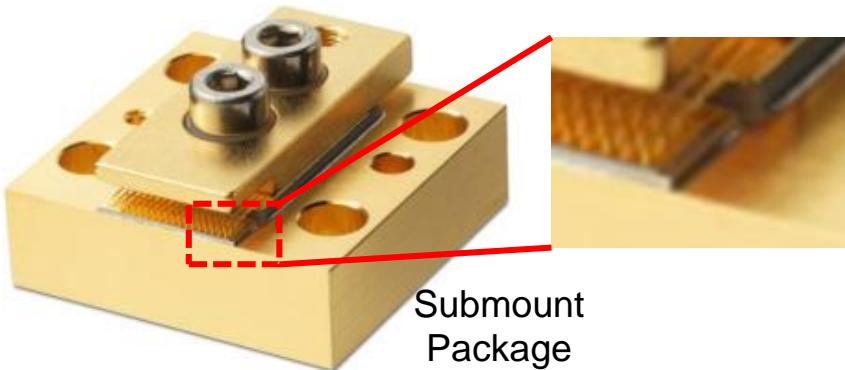


# 2023 Workshop

Jung-Tack Yang

High-Speed Circuits & Systems Lab.  
Department of Electrical and Electronic Engineering  
Yonsei University

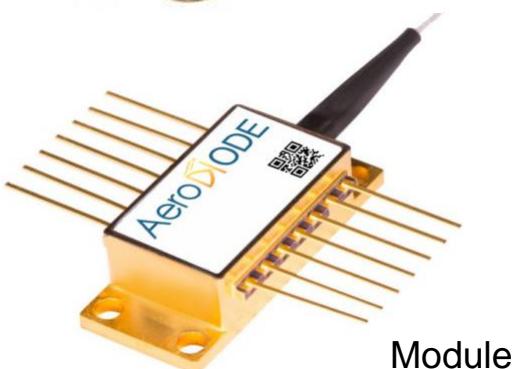
# Edge Emitting Laser Diodes



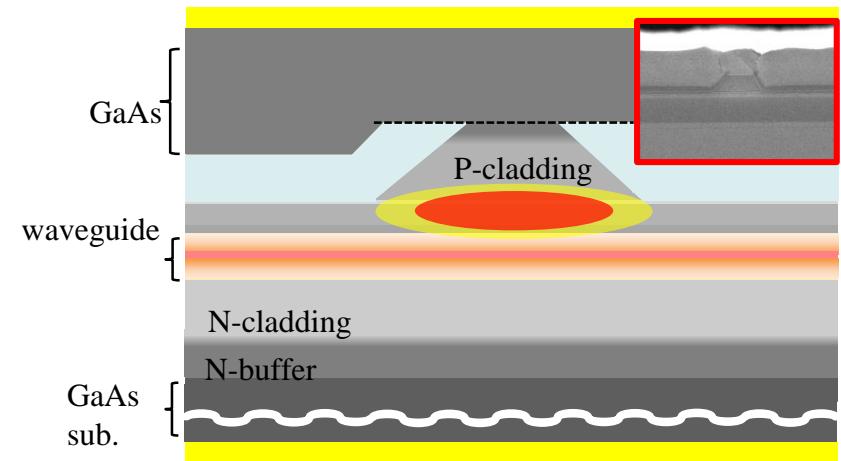
Submount  
Package



TO Can  
Package

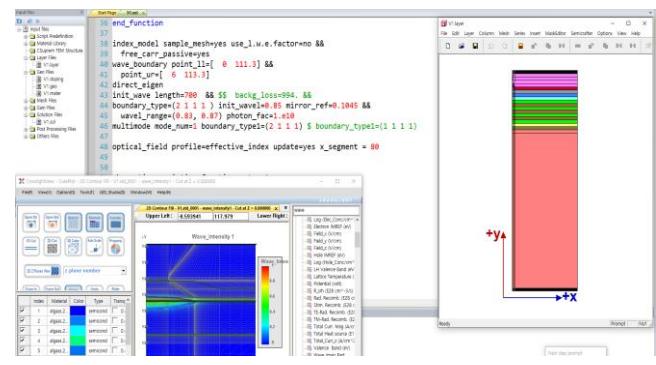


Module

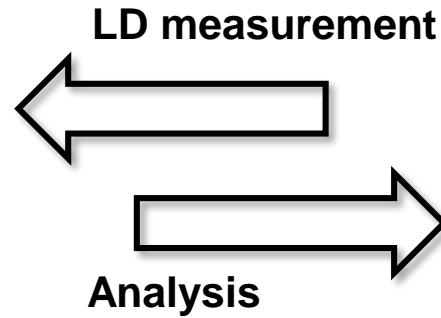


- III – V compound semiconductor
- Small size
- Mass production
- Power convergence efficiency
- **Low beam quality**

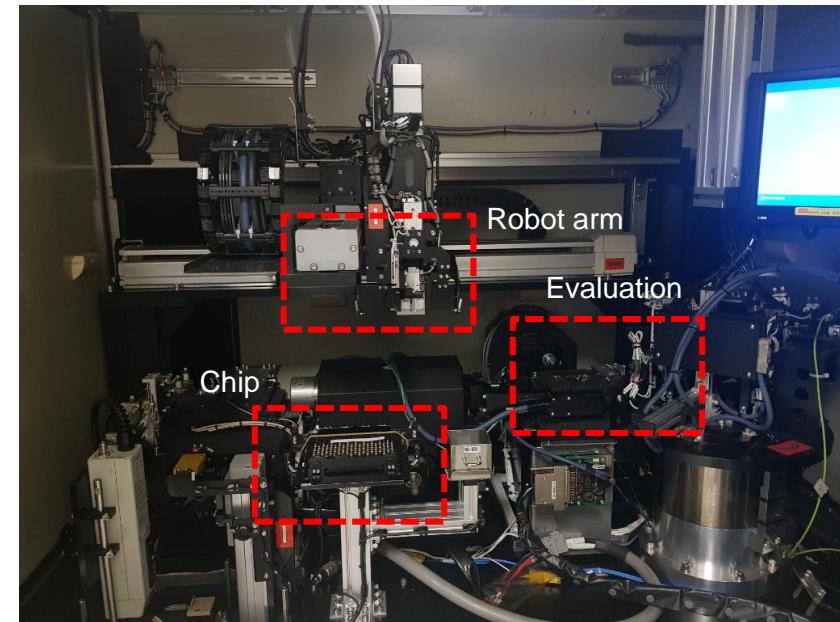
# Previous Work



**Yonsei University**

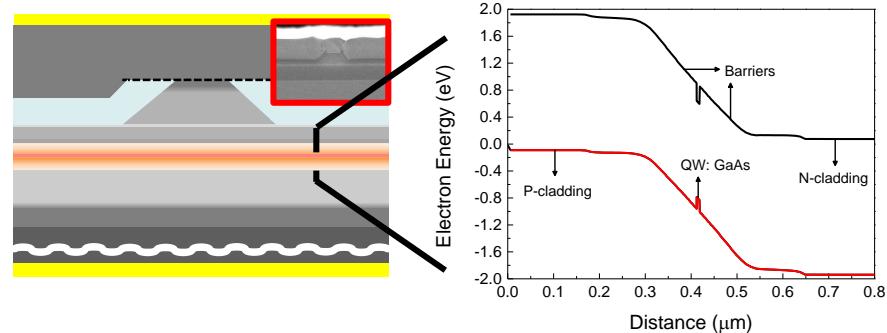


**QSI**

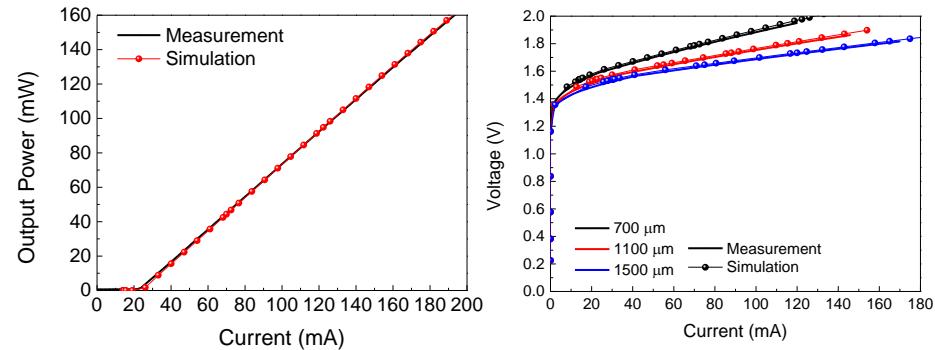


- Material: InGaAsP, AlGaAs
- Wavelength: 970, 850 nm
- Characteristic Analysis
  - L-I & I-V
  - Field pattern
  - Thermal analysis
- Issue
  - Thermal blooming
  - Catastrophic optical damage (COD)
  - Single & Multi mode analysis
  - Kink, etc

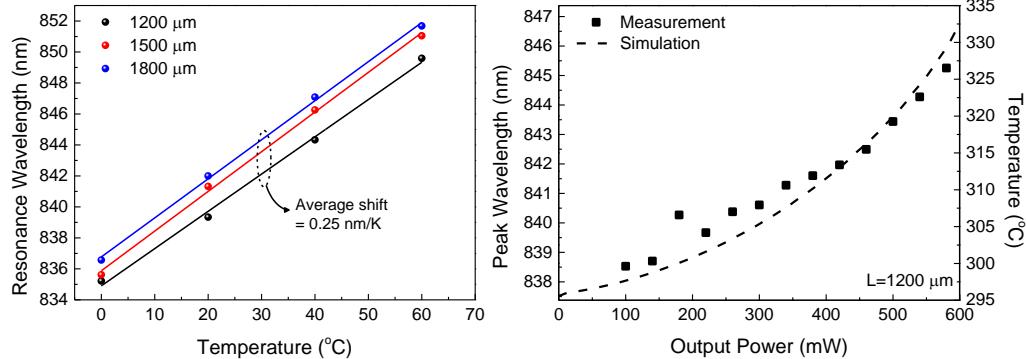
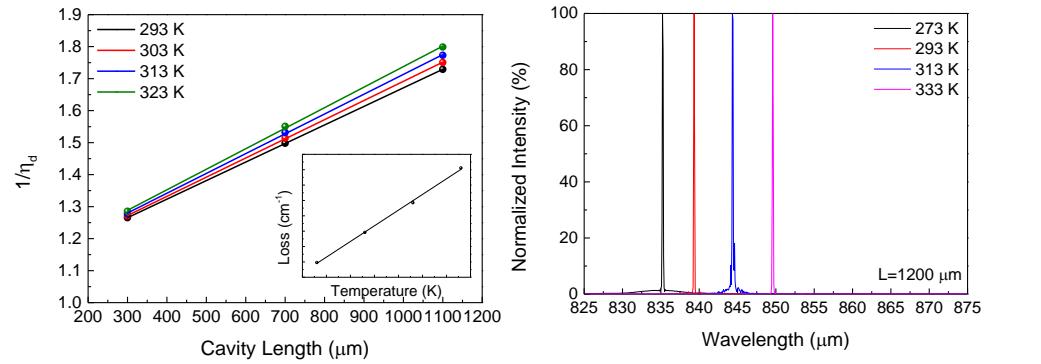
# Characteristic Analysis



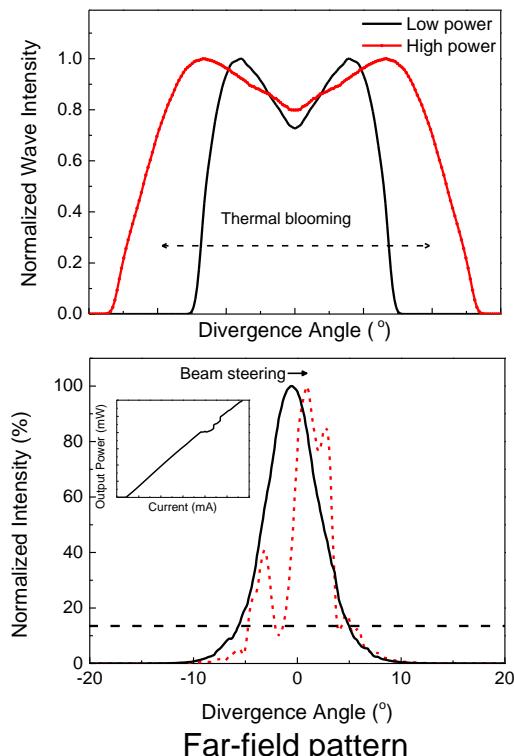
Structure



L-I & I-V characteristics



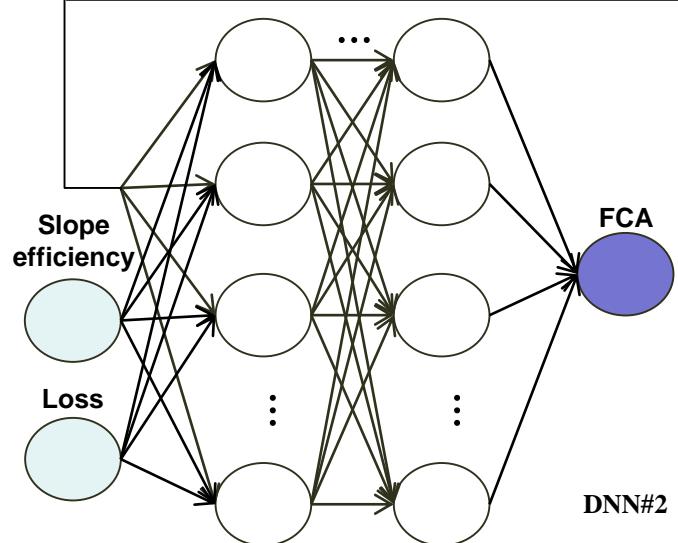
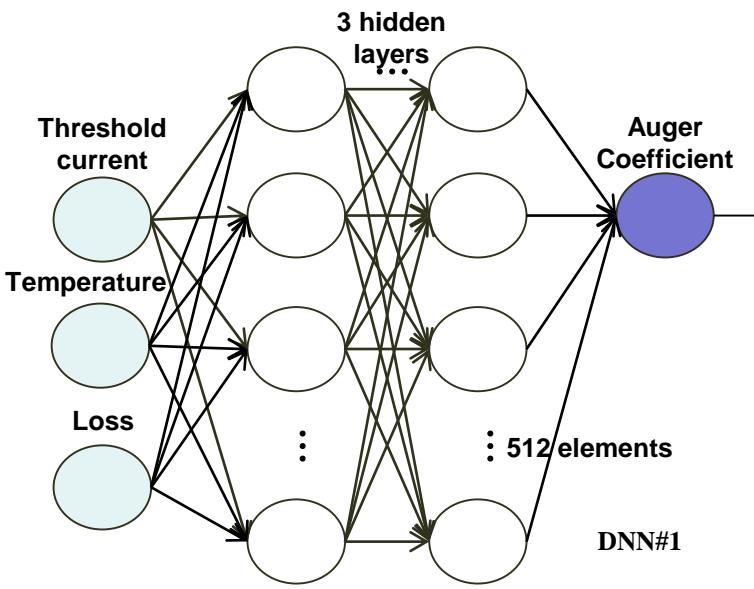
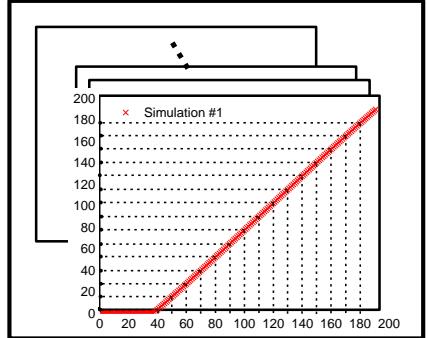
Loss and thermal characteristics



Far-field pattern

# Design Parameter Extraction with Deep Learning

Training & Testing data



Results

