

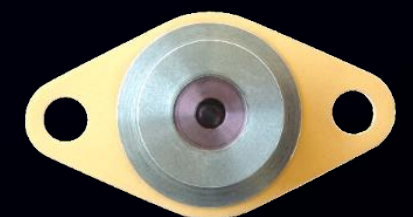
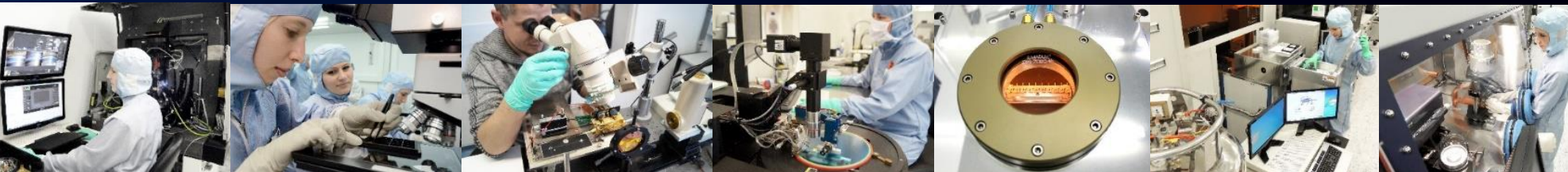
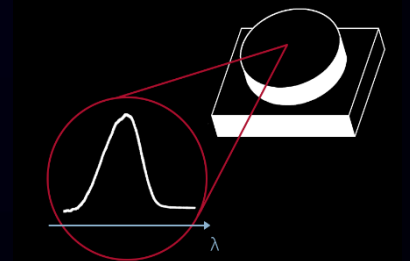
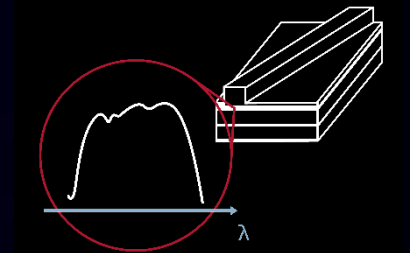
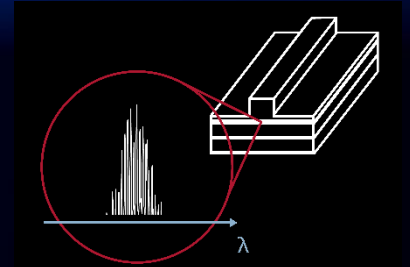
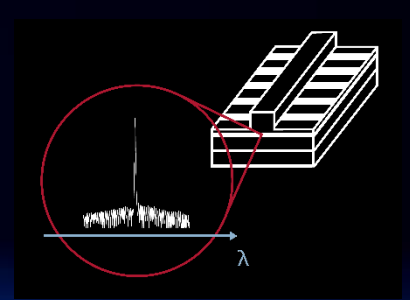
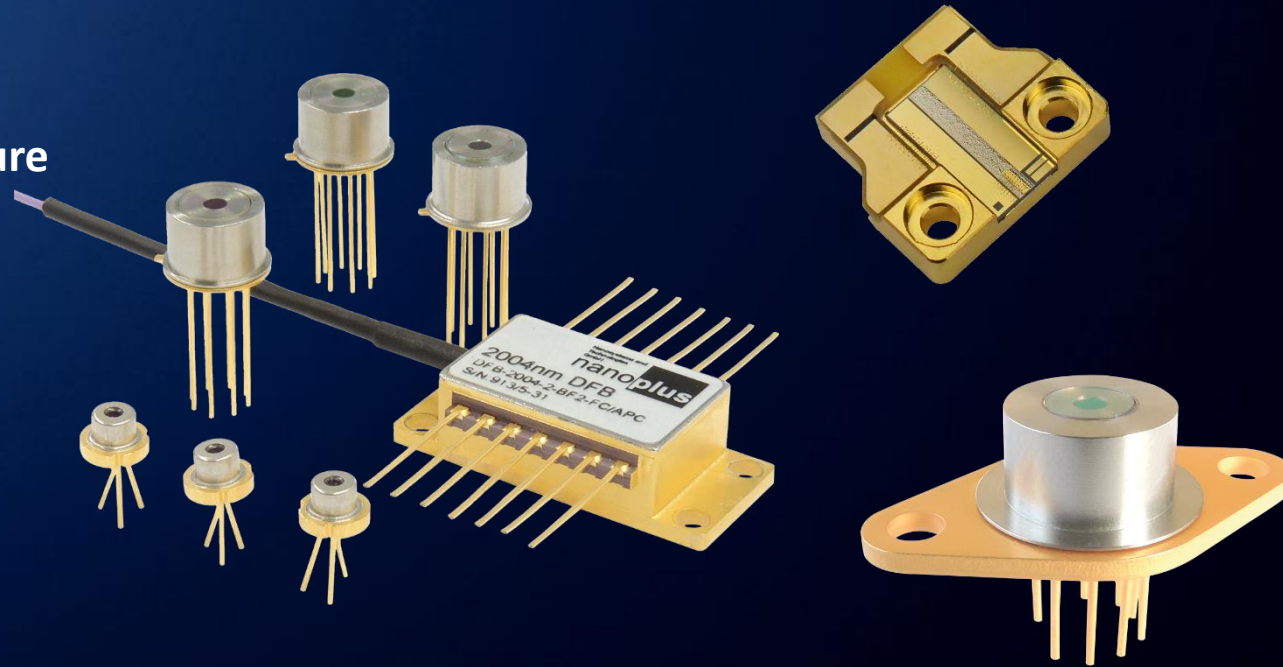
Nanosystems and  
Technologies  
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**nanoplus**

## EPIC Online Technology Meeting on Mid-Infrared Alliance Present and Future

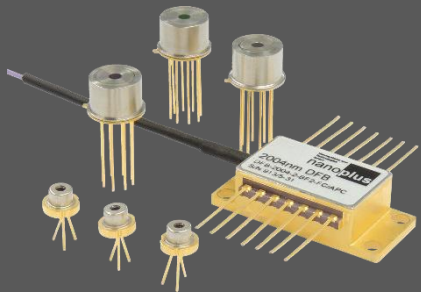
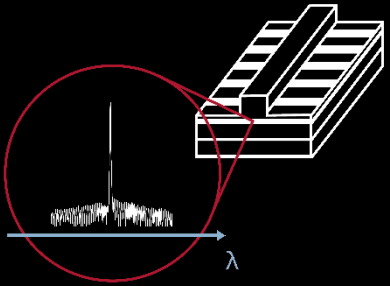
**2022**

**Dr. Johannes Koeth**  
nanoplus GmbH  
Nanosystems and Technologies  
Oberer Kirschberg 4  
D-97218 Gerbrunn



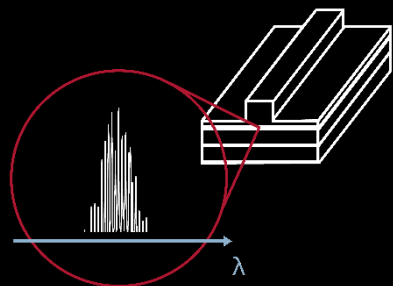
## DFB Laser

- wavelengths:  
760 nm – 14.000 nm  
(DL, ICL, QCL)
- custom specific solutions



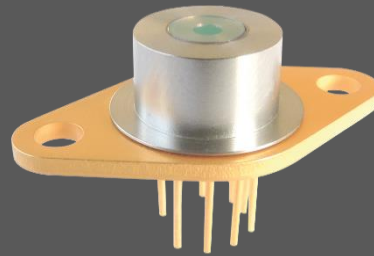
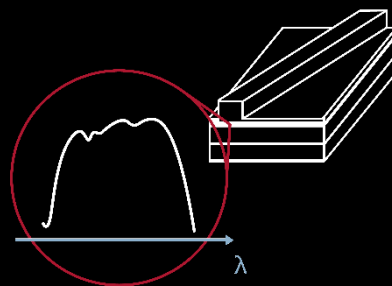
## Fabry-Pérot LD

- wavelengths:  
760 nm – 14.000 nm
- up to 1 W cw



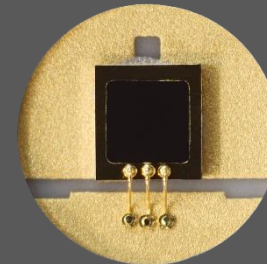
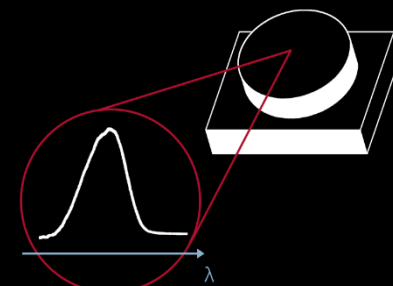
## SLD

- wavelengths:  
760 nm – 2900 nm
- cw & RT



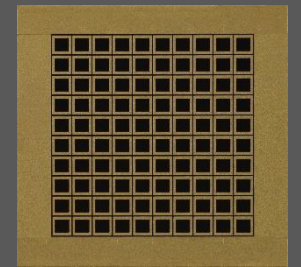
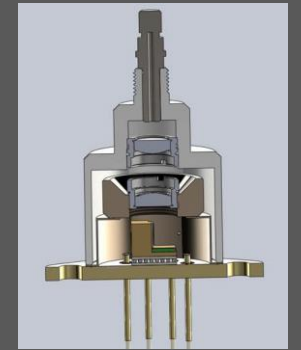
## MIR-LED

- wavelengths:  
2800 nm – 6500 nm
- cw & RT



## more...

- Custom Packaging
- Collimation
- Technology Development
- Lithography Service



# DFB Semiconductor Laser

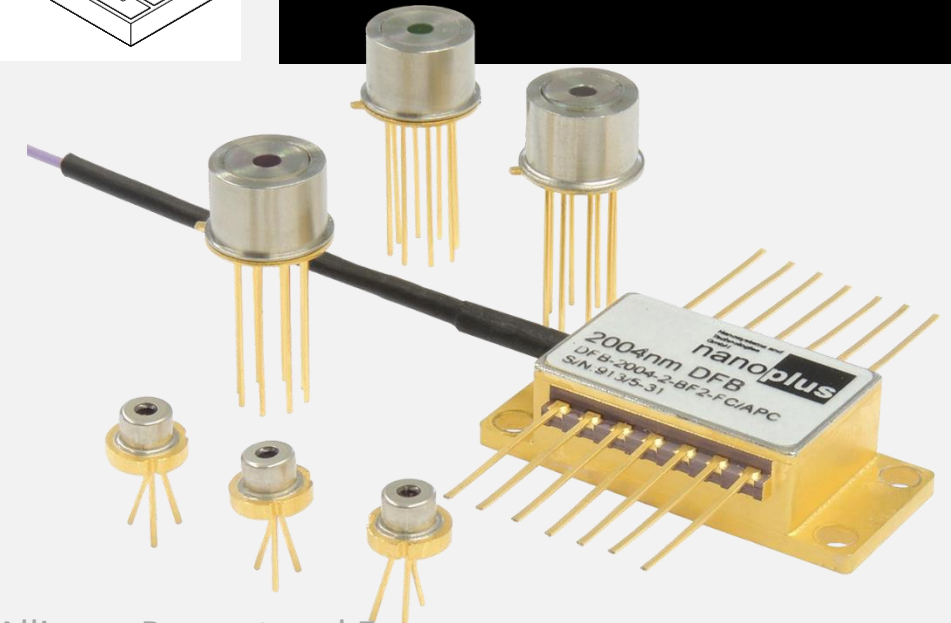
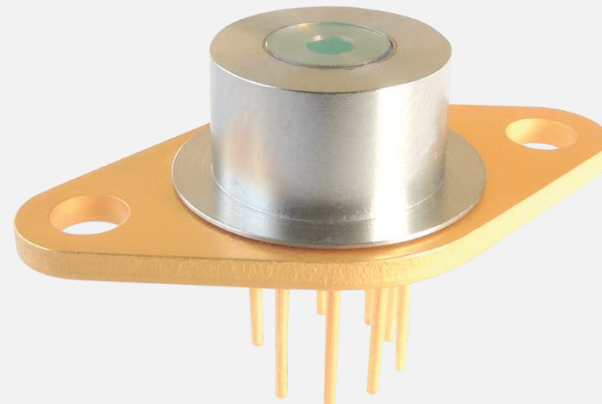
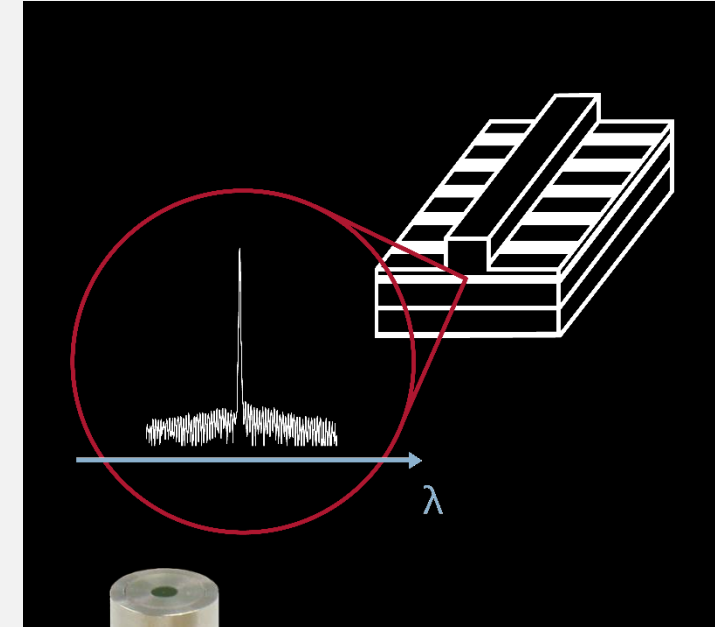
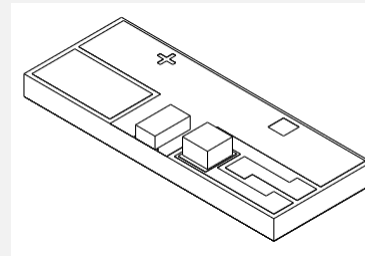
- Diode-Laser (DL): 760 nm ... 2900 nm
- Interband Cascade Laser (ICL): 2800 nm ... 6500 nm
- Quantum Cascade Laser (QCL): 6  $\mu\text{m}$  ... 14  $\mu\text{m}$

large tuning coefficient

high power

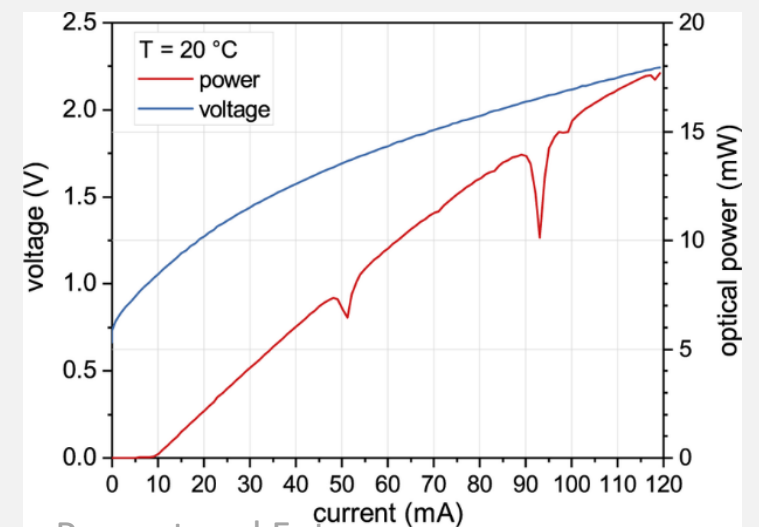
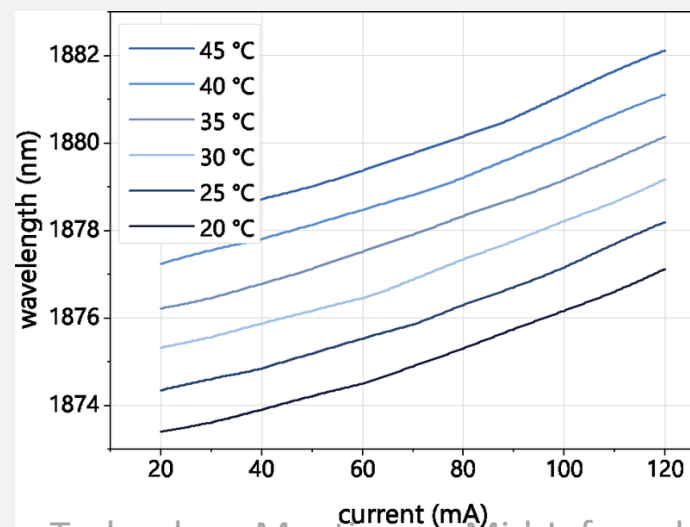
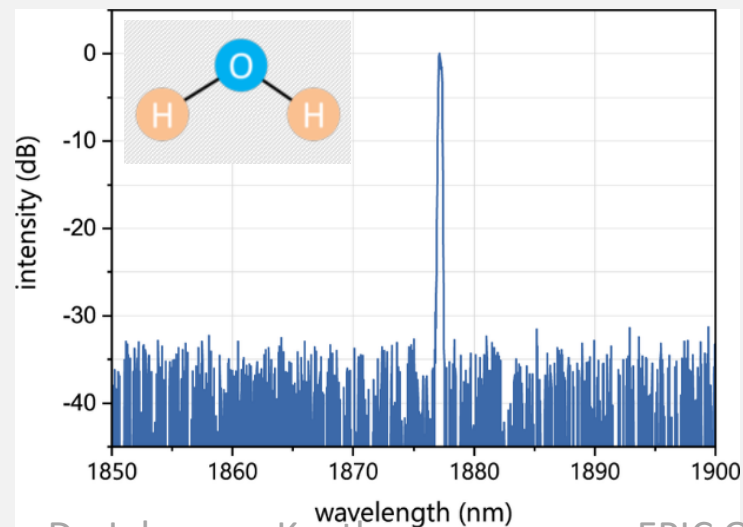
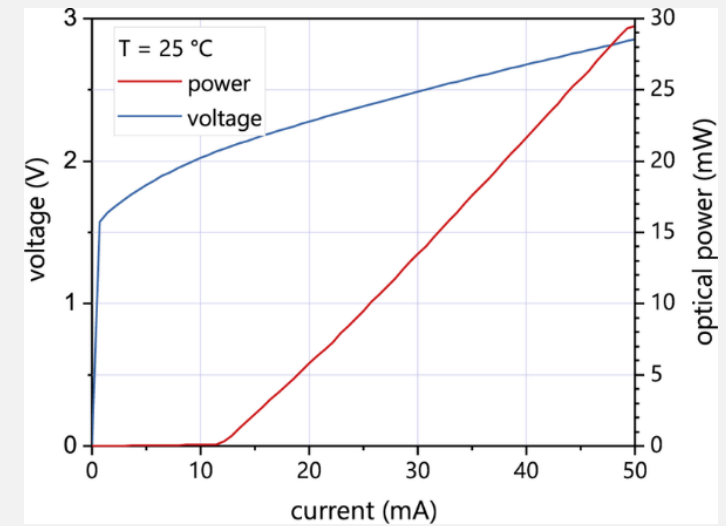
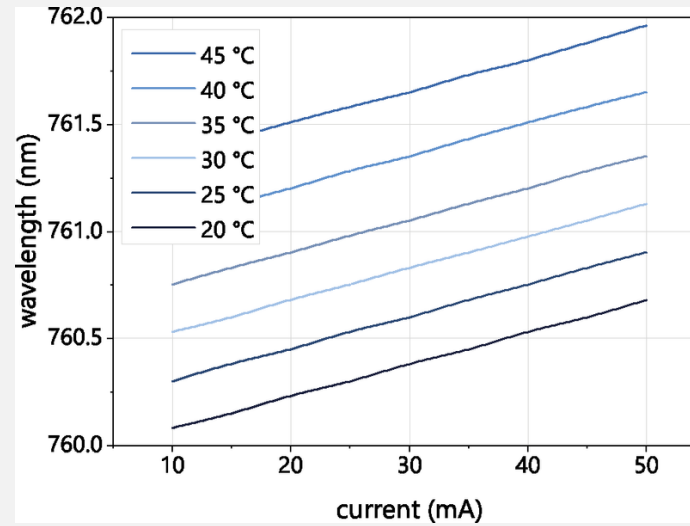
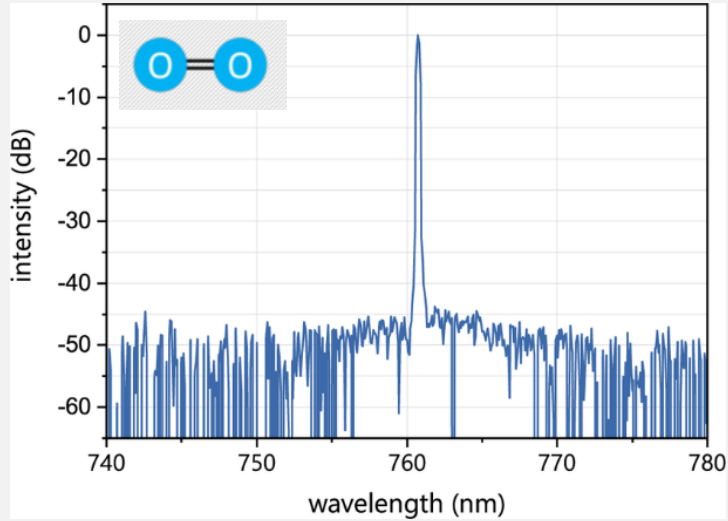
custom specific solutions for every wavelength

various packaging options w/wo TEC and NTC

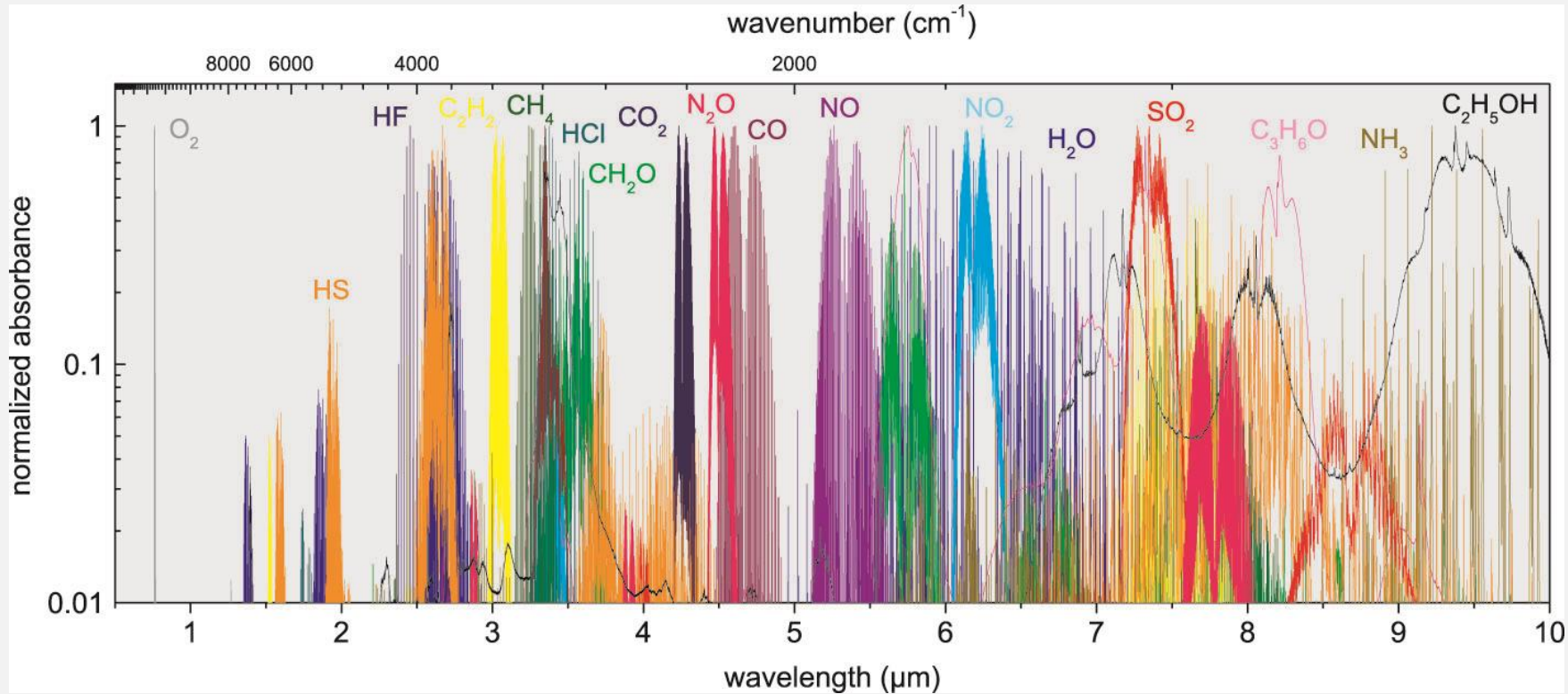


# DFB Semiconductor Laser

→ large side mode suppression, tuning and power



# nanoplus portfolio – NIR/MIR sensing-laser for any wavelength and application in the spectral range from 0,7 $\mu\text{m}$ to 10 $\mu\text{m}$

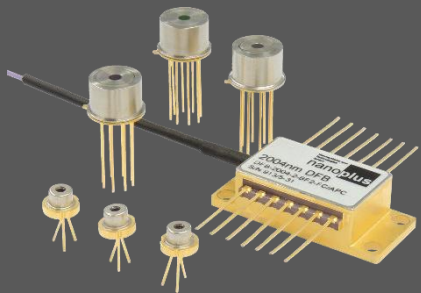
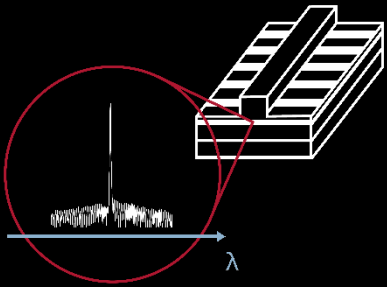


CH<sub>2</sub>O, CO, CO<sub>2</sub>, H<sub>2</sub>O, NO<sub>x</sub>, CH<sub>4</sub>, C<sub>2</sub>H<sub>6</sub>, CH<sub>3</sub>H<sub>8</sub>, ...

- Laser with optimized properties for sensing throughout the entire wavelength range – not available from any of our competitors
- result of 20 years R&D for laser based NIR/MIR sensing

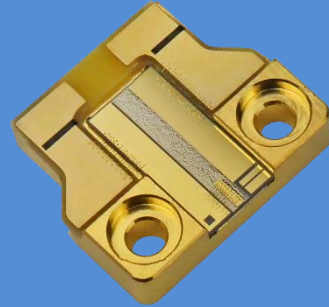
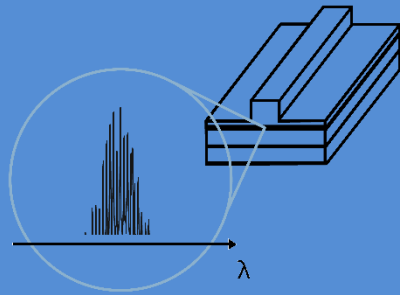
## DFB Laser

- wavelengths:  
760 nm – 14.000 nm  
(DL, ICL, QCL)
- custom specific solutions



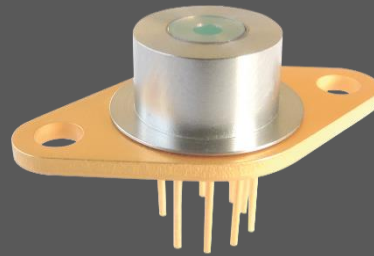
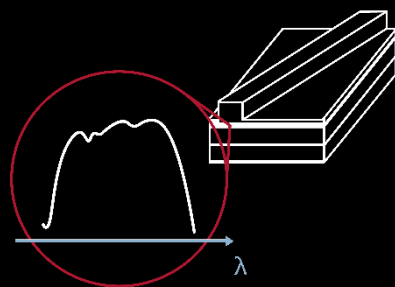
## Fabry-Pérot LD

- wavelengths:  
760 nm – 14.000 nm
- up to 1 W cw



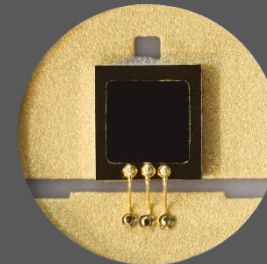
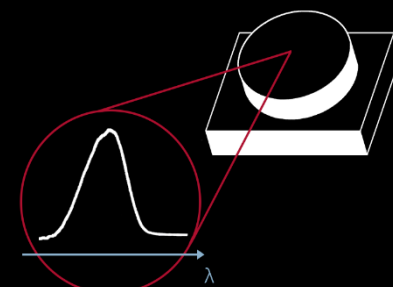
## SLD

- wavelengths:  
760 nm – 2900 nm
- cw & RT



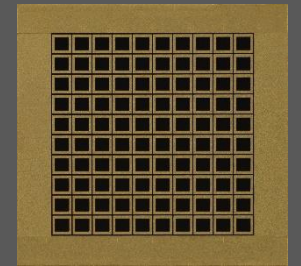
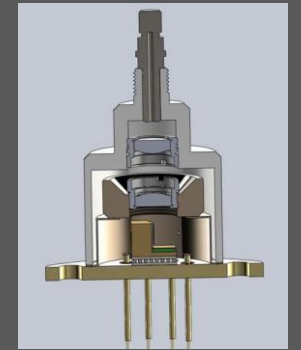
## MIR-LED

- wavelengths:  
2800 nm – 6500 nm
- cw & RT



## more...

- Custom Packaging
- Collimation
- Technology Development
- Lithography Service

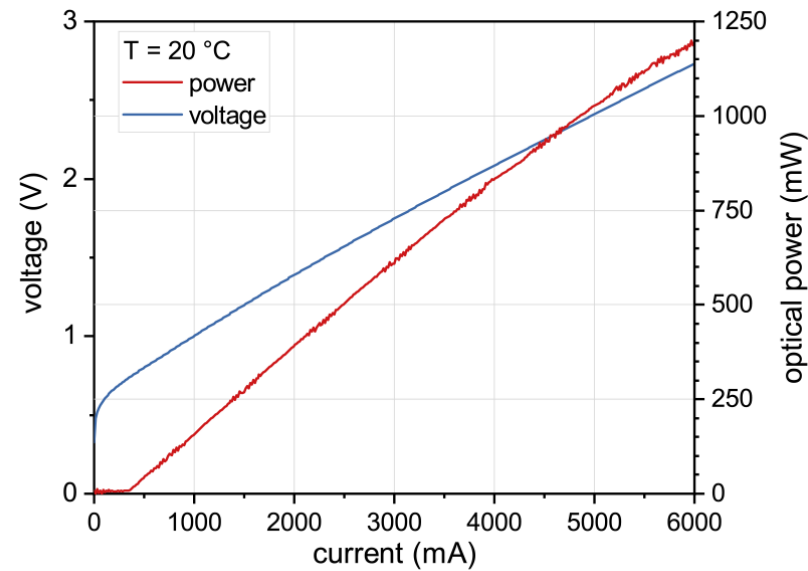
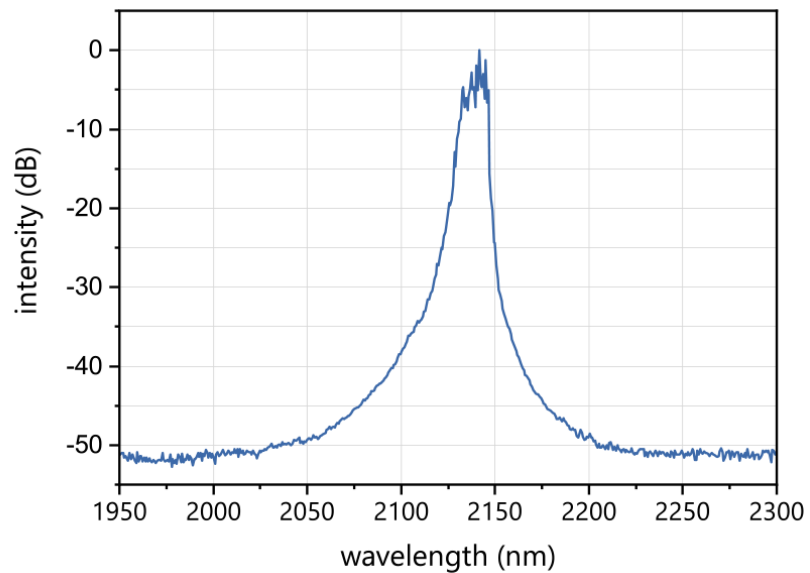
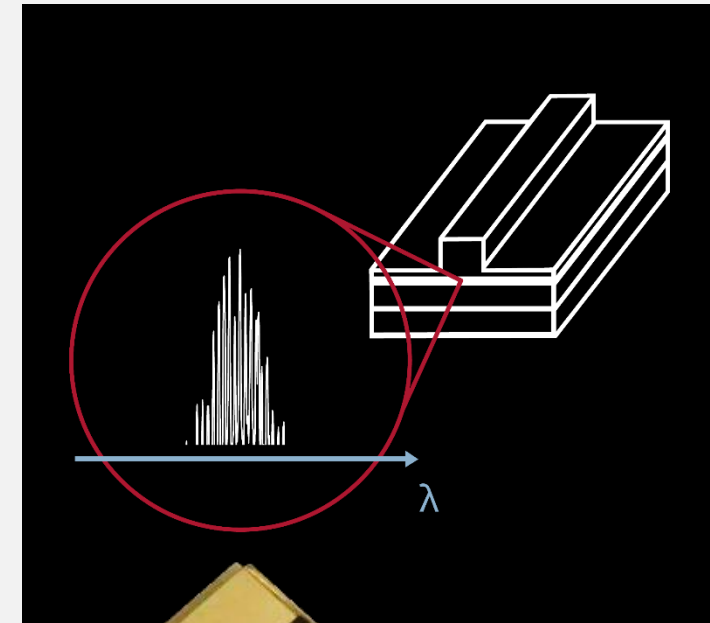


# Fabry-Pérot Laser Diode

- Diode Laser: 760 nm ... 2900 nm
- Interband Cascade Laser (ICL): 2800 nm ... 6500 nm
- Quantum Cascade Laser (QCL): 6  $\mu\text{m}$  ... 14  $\mu\text{m}$

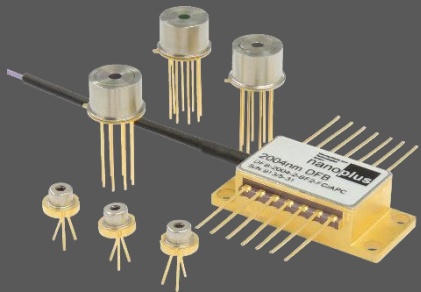
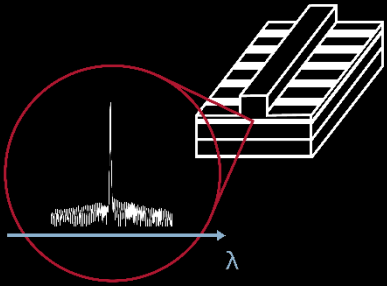
high-power option up to **1 W**

broadband; customer-specific solutions for every wavelength  
various packaging options w/wo TEC and NTC



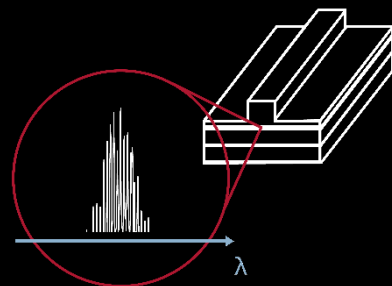
## DFB Laser

- wavelengths:  
760 nm – 14.000 nm  
(DL, ICL, QCL)
- custom specific solutions



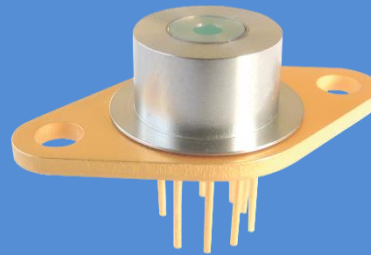
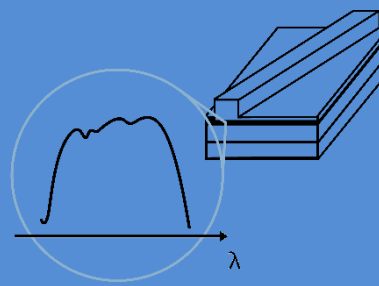
## Fabry-Pérot LD

- wavelengths:  
760 nm – 14.000 nm
- up to 1 W cw



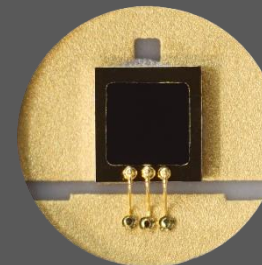
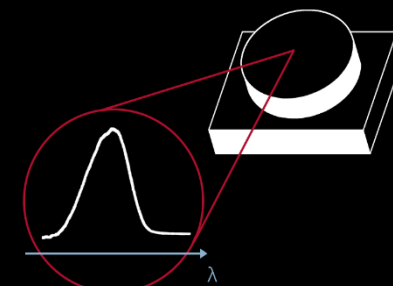
## SLD

- wavelengths:  
760 nm – 2900 nm
- cw & RT



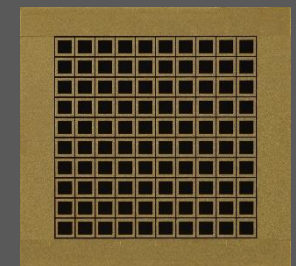
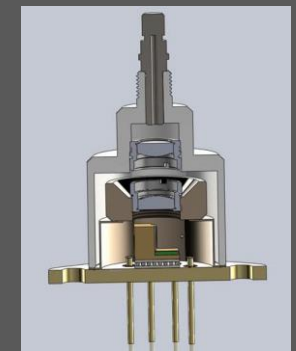
## MIR-LED

- wavelengths:  
2800 nm – 6500 nm
- cw & RT



## more...

- Custom Packaging
- Collimation
- Technology Development
- Lithography Service

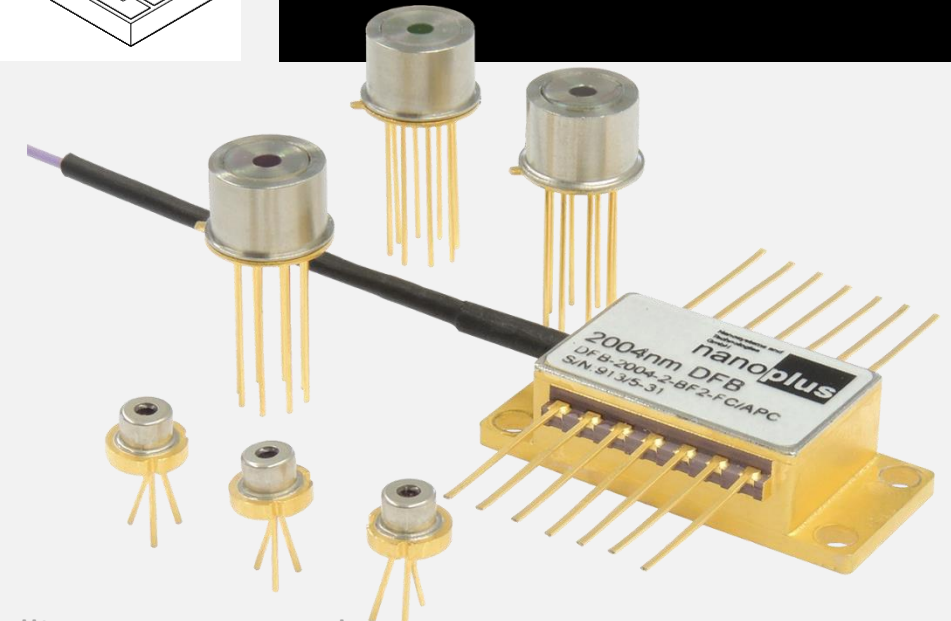
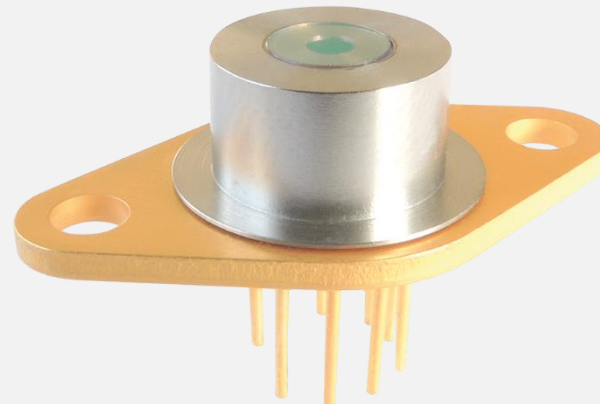
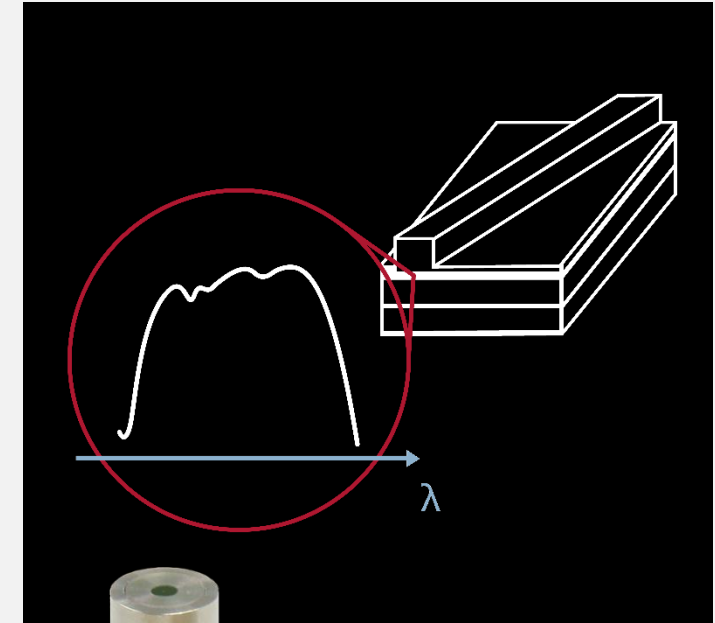
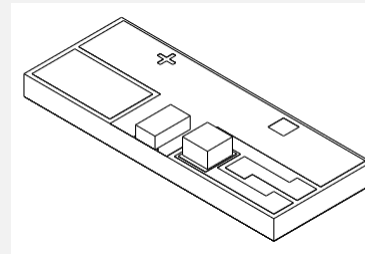




# Superluminescent Diode

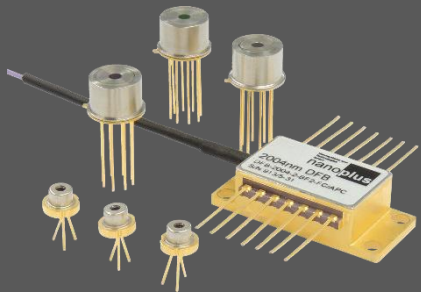
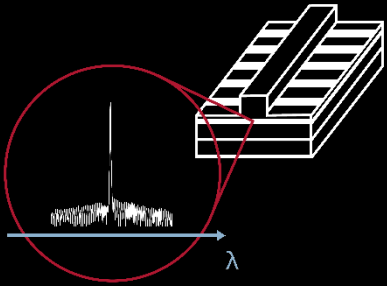
→ SLD: 760 nm ... 2900 nm

high power  
broadband  
custom specific solutions for every wavelength  
small footprint  
various packaging options w/wo TEC and NTC



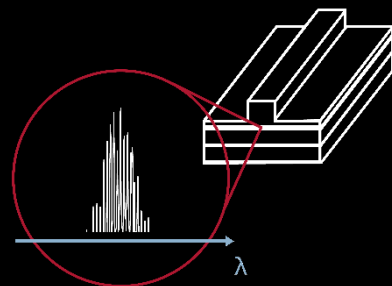
## DFB Laser

- wavelengths:  
760 nm – 14.000 nm  
(DL, ICL, QCL)
- custom specific solutions



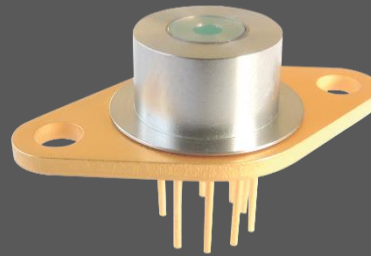
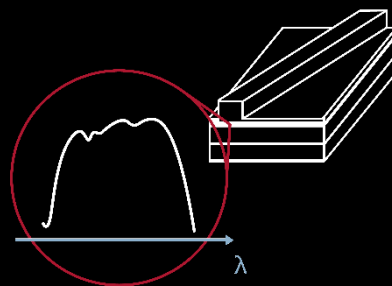
## Fabry-Pérot LD

- wavelengths:  
760 nm – 14.000 nm
- up to 1 W cw



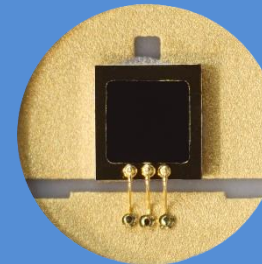
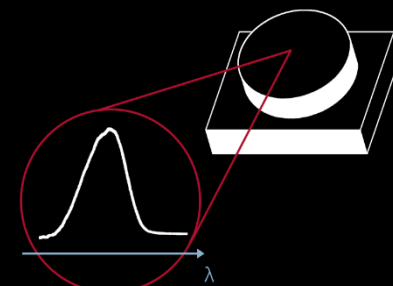
## SLD

- wavelengths:  
760 nm – 2900 nm
- cw & RT



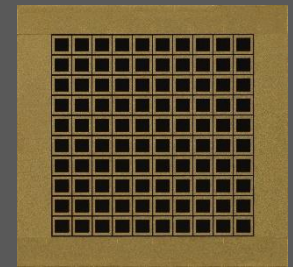
## MIR-LED

- wavelengths:  
2800 nm – 6500 nm
- cw & RT



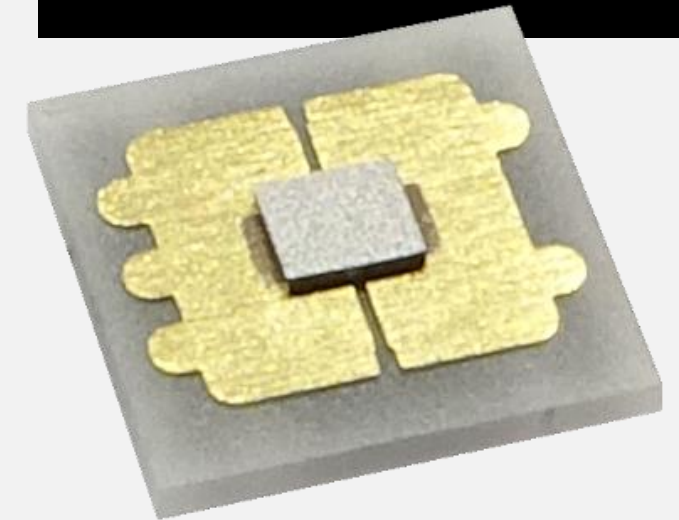
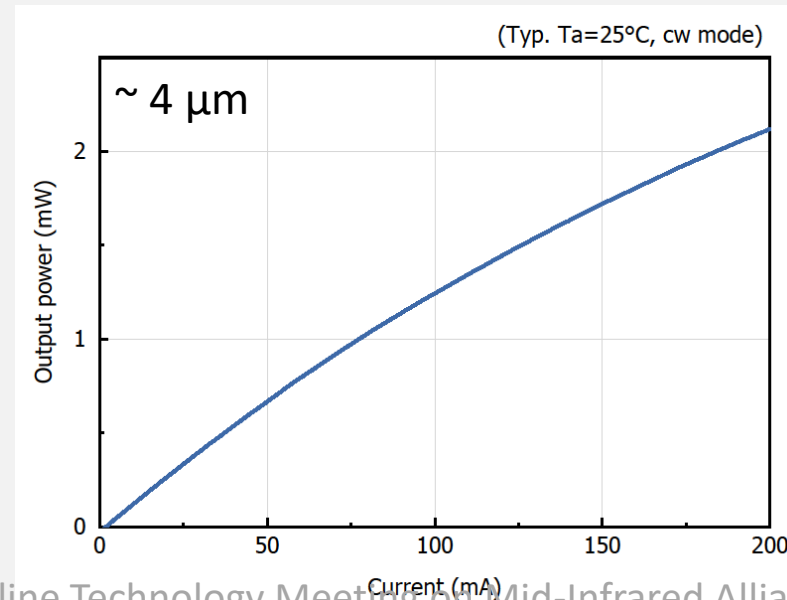
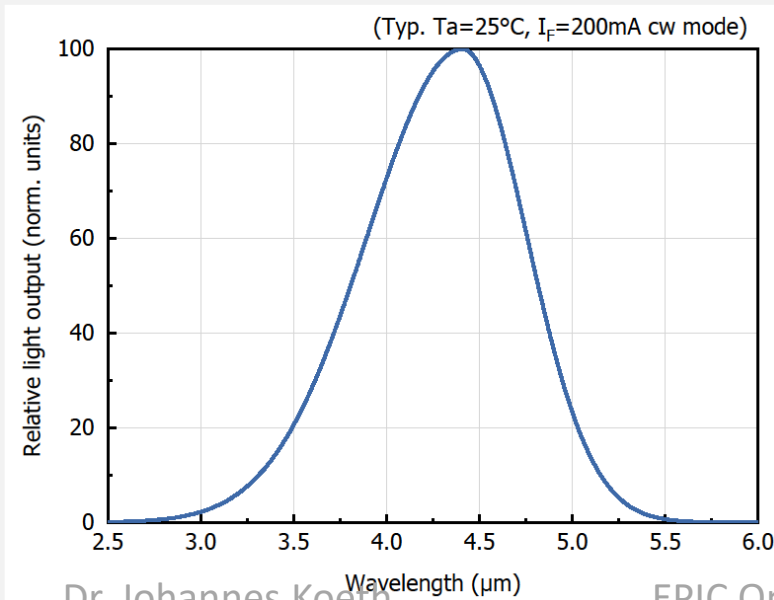
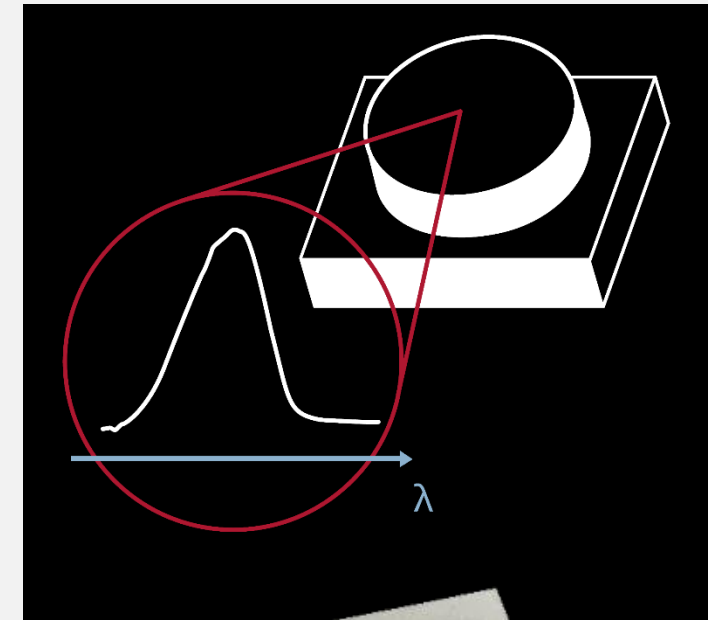
## more...

- Custom Packaging
- Collimation
- Technology Development
- Lithography Service



→ Mid InfraRed (Interband Cascade) LED: 2800 nm ... 6500 nm

true cw operation at RT  
high-power > 1mW @ low power consumption  
customer-specific solutions for every wavelength  
various packaging options w/wo TEC and NTC



Nanosystems and  
Technologies  
GmbH

**nanoplus**

**2022**

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D-97218 Gerbrunn

