

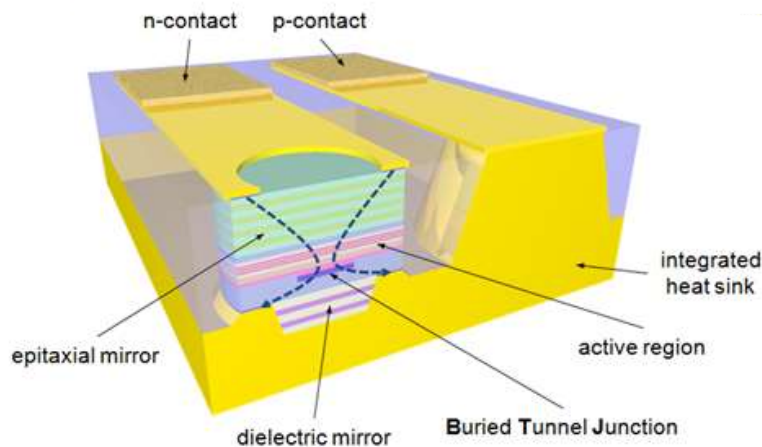
# Single Mode and Multi Mode Long Wavelength InP VCSELs for Optical Communications and Sensing

Christian Neumeyr,  
CEO, Vertilas GmbH



# VERTILAS InP Buried Tunnel Junction (BTJ)-VCSEL

Addressing applications with  
wavelengths from 1.3  $\mu\text{m}$  to  $> 2.0 \mu\text{m}$



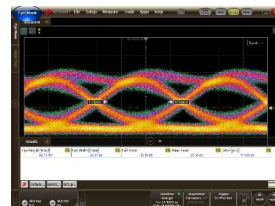
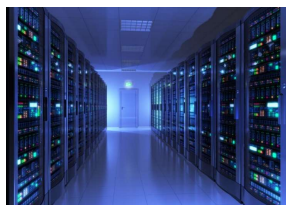
Cross section: InP BTJ VCSEL



# Key Markets for VCSELs - Sensing and Communications

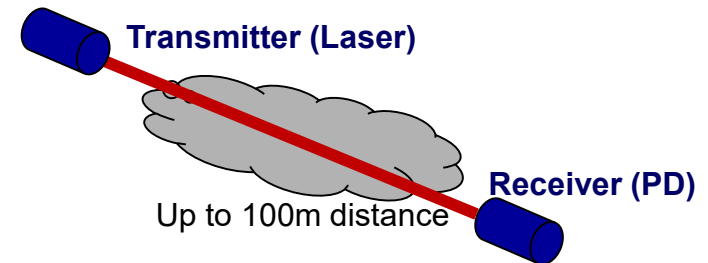


## Optical Communications



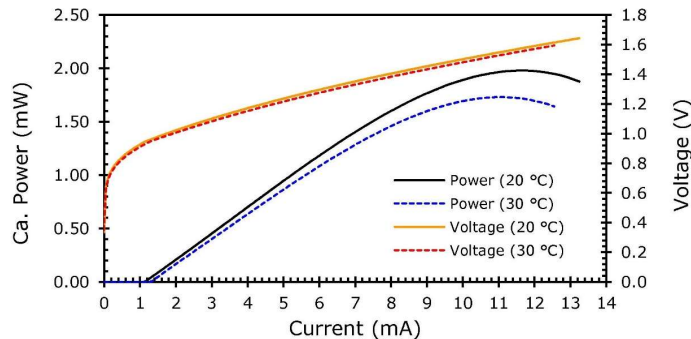
- Intra and inter data center interconnects
- Metro networks

## NIR Sensing TDLS Tunable Diode Laser Spectroscopy

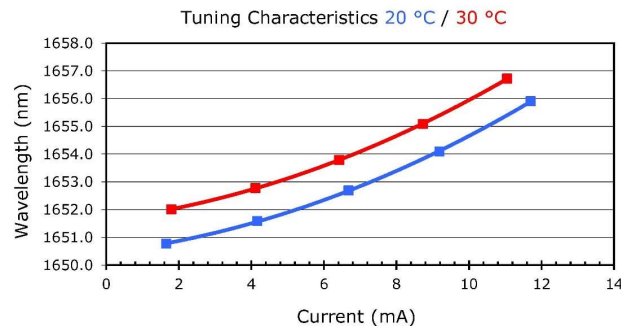


# Vertilas LW VCSEL – Excellent Performance

## NIR Gas Analysis



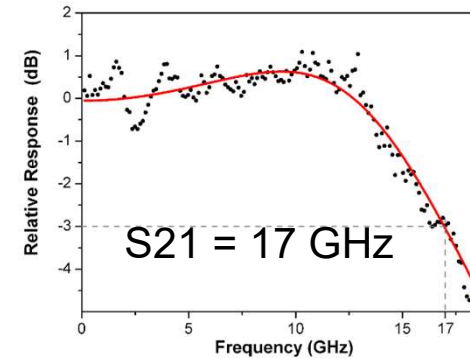
LI and VI performance



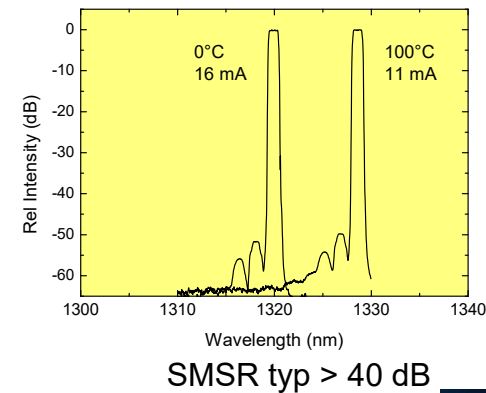
Ibias tuning range: 4-5 nm



## Communications



3dB bandwidth = 17 GHz, 25 Gb/s to 40 Gb/s

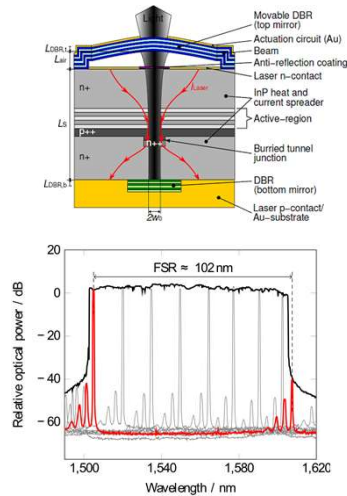


SMSR typ > 40 dB

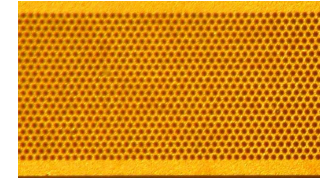


# Outlook and Roadmap

100 nm Tunable  
Single Mode  
VCSEL

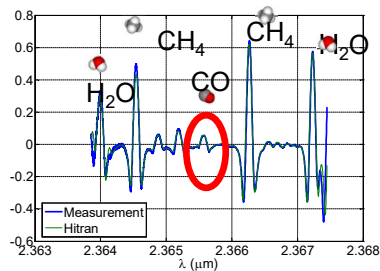


High Power  
2D VCSEL Arrays

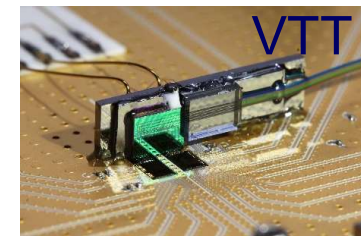


NIR VCSEL

Wavelengths  
> 2.3  $\mu\text{m}$  (GaSb)



Integration with  
Silicon Photonics



# Thank You for Your Attention

***Long Wavelength VCSELS - design your system for optimised performance and lower cost***



Christian Neumeyr, CEO  
VERTILAS GmbH  
Daimlerstr. 11d  
85748 Garching, Germany

e-mail: [neumeyr@vertilas.com](mailto:neumeyr@vertilas.com)  
[www.vertilas.com](http://www.vertilas.com)