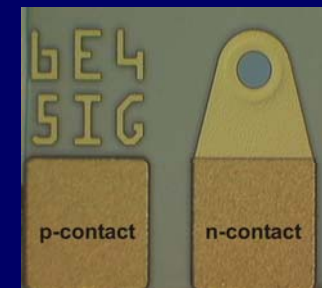
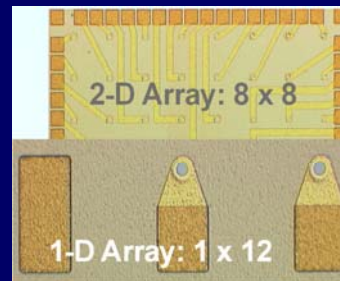




## First Demonstration of 2.3 $\mu\text{m}$ InP BTJ-VCSEL





## VCSEL diodes for near-IR Gas Analysis

- Wide tunability and precision for ppm or ppb sensitivity
- Low power dissipation enables cost effective handheld applications

- Applications for Industrial and Safety, Medical, Environmental and Agriculture, Automotive
- H<sub>2</sub>O, H<sub>2</sub>S, HCl, CO, CO<sub>2</sub>, NH<sub>3</sub>, CH<sub>4</sub>, Hydrocarbons and many more

More information: [www.vertilas.com](http://www.vertilas.com)

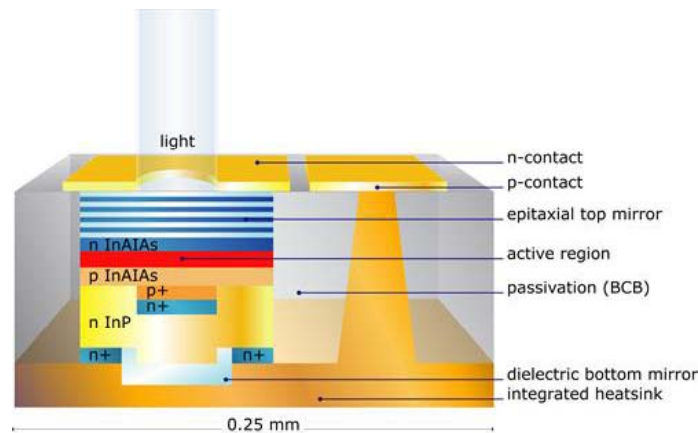


# VERTILAS' Unique Technology Offers Major Advantages

*VERTILAS' Advantages – VCSELS from 1.3 $\mu$ m to > 2 $\mu$ m*

**Cost effective**

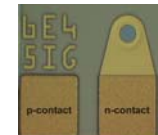
**Very low  
power dissipation**



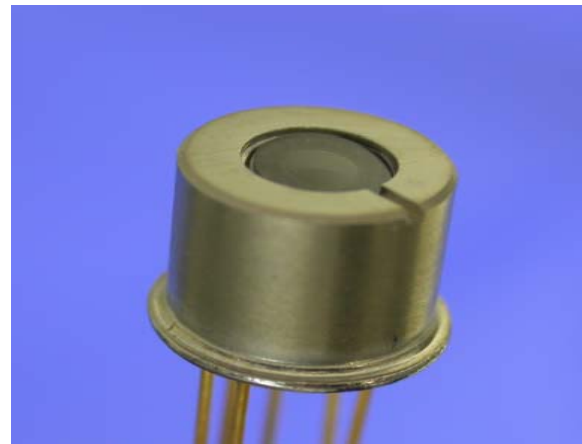
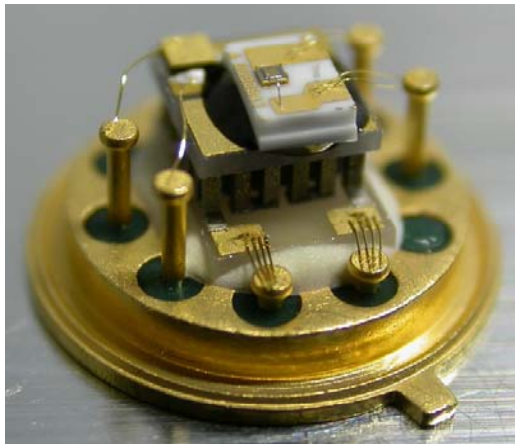
**Very high  
performance**

**Very high  
integration**

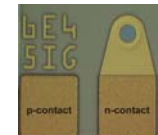
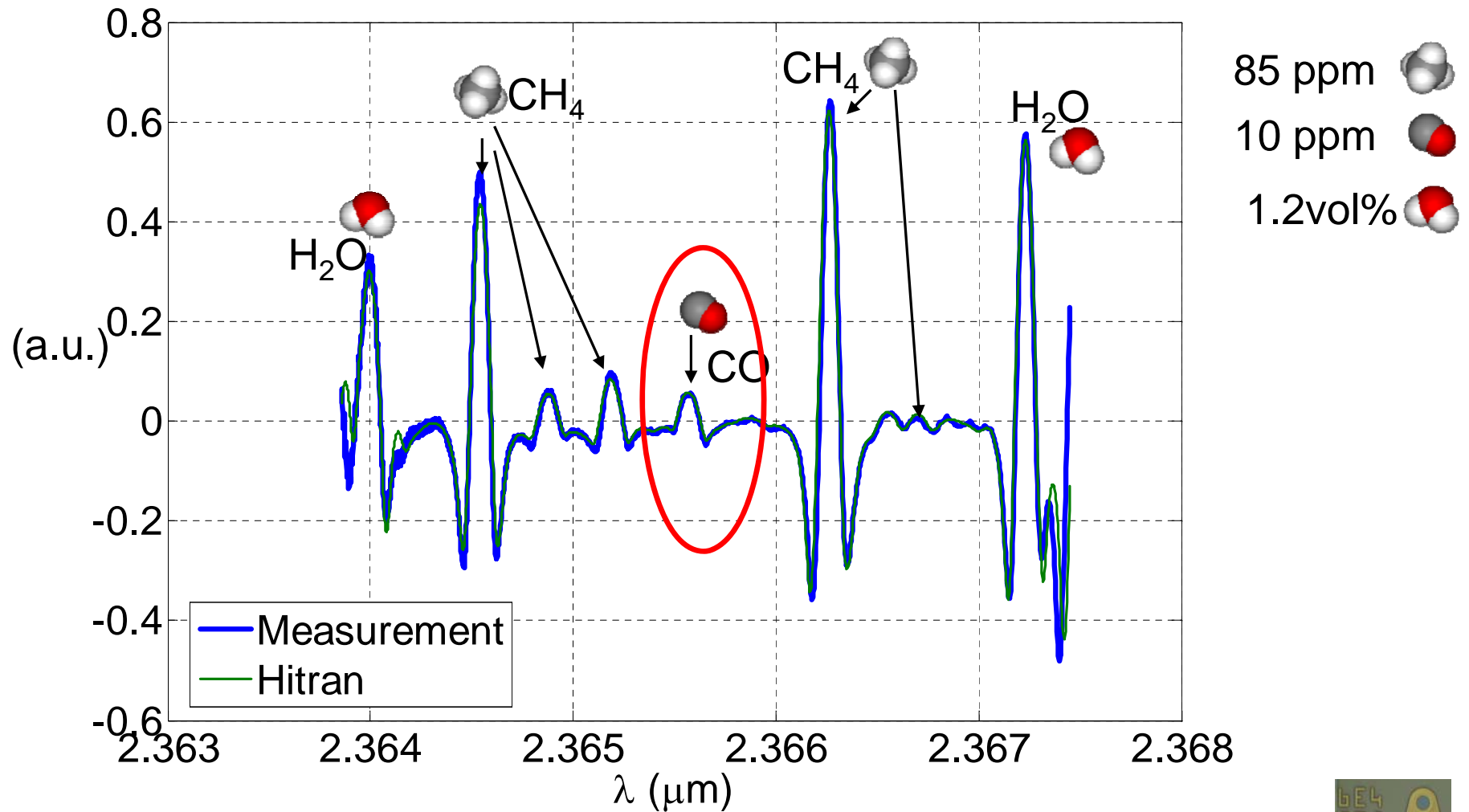
***BTJ – Buried Tunnel Junction – made by VERTILAS***

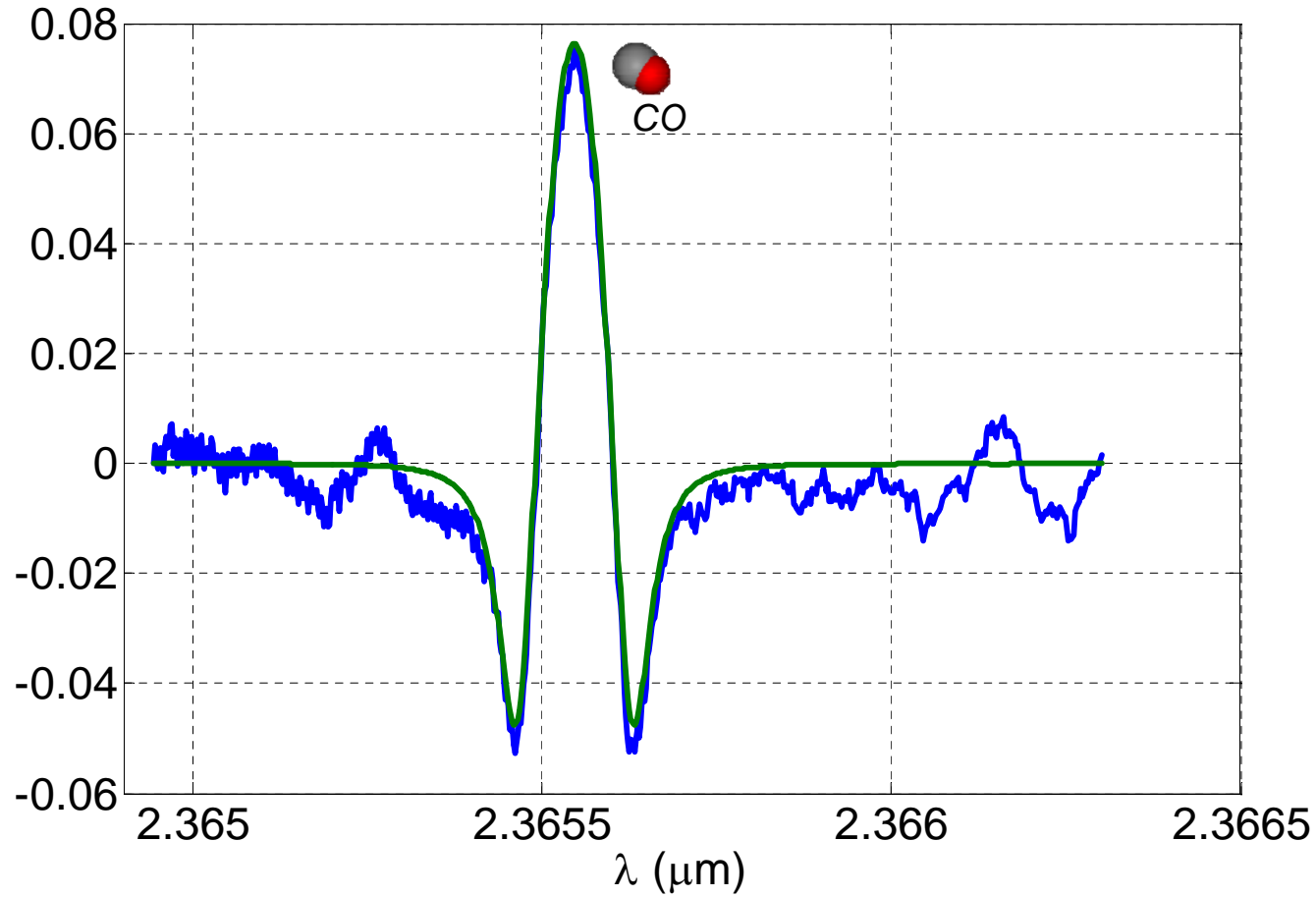



## 2.3 $\mu\text{m}$ InP VCSEL in TO-5 with integrated TEC and Thermistor



# Measurement with 2.3 $\mu\text{m}$ InP laser





12.5 ppm   
(  $a=1.8 \cdot 10^{-4}$  )

