

WHO WE ARE

Omega Optics Inc. is a research and development company founded in 2001.

We develop science-based solution to the most challenging problem through private and government-sponsored research.

We are led by distinguished Dr. Ray Chen who is:

- Award-winning keys and Joan Curry/Cullen Trust Endowed Chair at The University of Texas at Austin
- Director of the Nanophotonics and Optical Interconnects Research Lab at UT-Austin
- Director of the multiple AFRL MURI-Centers for Silicon Nanomembrane Photonic Technology

OUR TECHNOLOGY

With nearly 20 U.S. patents/applications in hand, our expertise broadly covers:

- Lab-on-chip nanophotonic chemical and biological sensors;
- Silicon and polymer based photonic and optoelectronic devices;
- Flexible/printed electronics and photonics;
- Photonic and microwave phase array antennas; and
- Photonic EM-Wave sensor

Contact us

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OMEGA
OPTICS

We Deliver Innovation

Vertical Photonic Crystal Waveguide Absorption Spectroscopy Gas Sensor

Omega Optics Inc. introduces a novel photonic integrated on-chip absorption spectroscopy gas sensor comprising: an array of vertical photonic crystal waveguides (VPCWs) designed to slow and guide the light, and a detector array configured to measure the intensity of the light passing through each VPCW of the array of VPCWs. Our new technology of VPCW-based sensor generates and guides "slow-light" to enhance the effective optical path lengths and increase the interaction time with target gas analytes. This chip-scale device provides miniaturization and higher sensitivity and identifies the presence of the one or more gas species. This platform of ultra-sensitive, compact, portable, multiplexed and cost-effective on-chip solution will soon make a great potential in gas sensing market.

Potential Applications

Our patented technologies can enable **multiplex gas detection with high sensitivity and specificity** for environmental and biochemical sensing applications including:

- Detection of atmospheric greenhouse gases, and environmental VOCs
- Detection of gas species in planetary atmospheres
- Detection of toxic chemicals and VOCs in human breath for early cancer diagnosis.
- Detection of real-time, fast response toxic gas monitoring in battlefield

Technical Advantages

- Our proprietary VPCW slow light assisted gas sensor design allows for up to 25 different gas analytes on the same chip and sensors units can be extendable.
- Our on-chip absorption spectroscopy design detects any gas analytes via its characteristics near-IR/Mid-IR absorption signature. Highly miniaturized on-chip components make it suitable for in-situ monitoring
- which can be mounted on a portable platform and operated from a remote
- location for continuous and real-time monitoring
- Data analysis empowered with AI/ML functionality will further enhance system's capability

Partnership with us

Omega Optics Inc. seeks partnerships to help bring our patented technologies to market. Please contact us to discuss ways we can work together.

