|  |  |  |
| --- | --- | --- |
|  |  |  |

**Company Overview |** Pendar Technologies is a privately held product development company focused on bringing to market breakthrough portable analysis and monitoring systems that include proprietary data science driven analysis modules. With experts in innovative spectroscopy and data science, the company has a pipeline of products in development. The company was formed by a merger of successful technology companies in 2015. Both formed in 2011, Pendar Medical brought medical device expertise, proven breakthrough spectroscopic handheld tools, and successful commercialization while Eos Photonics developed cutting-edge Quantum Cascade Lasers for field spectroscopy applications.

**Mission |** Through fusion of innovations in spectroscopy, miniaturized optomechanics, and data science, Pendar will become the leading provider of innovative commercial products for growing mobile chemical analysis markets.

**Core Specialties |** Pendar is achieving its mission through the use of the following platform technologies:

* Quantum Cascade Lasers (QCLs) and QCL Spectroscopy
* Raman and Resonance Raman Spectroscopy (RRS)
* Fourier Transform Infrared (FTIR) Spectroscopy
* Ultraviolet/Visible (UV/VIS) Sources and Spectroscopy
* Laser Induced Fluorescence (LIF) Spectroscopy

**Collaboration |** We are interested in development and research partners in a variety of industries. If you are interested in collaboration or joint projects, we’d love to hear from you. Contact Mark Witinski at witinski@pendar.tech.

**Leadership |** Our leadership team includes seasoned founders, executives, and experienced scientists with diverse training and experiences. The team includes many of the core founders and developers at portable spectroscopy success story Ahura Scientific (Acquired by Thermo in 2010) as well as postdocs from Federico Capasso’ s Harvard Research Group.

* Daryoosh Vakhshoori, PhD - *President and CEO*
* Federico Capasso, PhD - *Scientific Advisor, Board Member*
* Masud Azimi, PhD - *Vice President of Opto-Mechanical Engineering*
* Peili Chen, PhD - *Senior Scientist*
* Laurent Diehl, PhD - *Vice President of High Powered QCLs*
* Seamus Fogarty - *Chief Financial Officer*
* Christian Pfluegl, PhD - *Vice President of Engineering, Infrared Systems*
* Padraic Romfh - *Director of Clinical and Business Development*
* Gokhan Ulu, PhD - *Director of Operations and Quality*
* Greg Vander Rhodes, PhD - *Director of Software Development*
* Mark Witinski, PhD - *Vice President of Chemical Analysis and Security*

*Daryoosh Vakhshoori*



*Prof. Federico Capasso*

Prof. of Engineering and Applied Sciences at Harvard. Former director of Physical Research at Bell Labs. Inventor of the QCL.

Co-Founder Core-Tek and Ahura Scientific, both venture backed technology companies with successful exits by acquisition.

**We are continuing to grow our team which includes experts in engineering, scientific research, fabrication, and other technical disciplines.**

**Selected product prototypes are presented on the following pages.**

****

**Product Pipeline**

**1. Eyesafe Chemical Analyzer**

|  |  |
| --- | --- |
| Main Market(s) | Security (DoD, TSA, Special Forces) and Contamination Avoidance |
| Optical Technology | Quantum Cascade Laser Arrays |
| Key Enablers | Efficient Chemometrics, On Board Analysis, Miniaturization, Chemistry |

|  |  |
| --- | --- |
|  |  |
| 🢥 The Matchbox series of monolithic QCL arrays (left) achieves broad tuning in the mid-IR “fingerprint” region without the use of moving parts. In addition to the inherent ruggedness and portability of QCL arrays, monolithic tuning allows for scanning that is rapid and reproducible when instrumented into a full standoff detection system (right). | |

**2. High Power QCL Arrays**

|  |  |
| --- | --- |
| Main Market(s) | Defense, Countermeasures, Illumination |
| Optical Technology | Quantum Cascade Laser Arrays, Advanced Coatings |
| Key Enablers | Laser Efficiency, Customized Thermal Packaging |

|  |  |
| --- | --- |
| Z:\Missaggia\EOS Photonics STTR Phase II\QCL Module Pics\DSCN4884.JPG |  |
| 🢥 High power infrared lasers needed for important military applications. Infrared countermeasures are used by some military aircraft to defend against increasingly sophisticated ground-launched missiles that are targeting the thermal signature of the engines. Arrays of high power QCLs can be packaged and beam combined to replace legacy countermeasures systems, which are typically based on inefficient nonlinear optical conversion. | |

**Product Pipeline Continued**

**3. Robot Based Chemical Sensing and Imaging**

|  |  |
| --- | --- |
| Main Market(s) | Security (DoD, TSA, Special Forces), Industrial Monitoring, Agriculture |
| Optical Technology | Quantum Cascade Laser Arrays, Raman Spectroscopy |
| Key Enablers | Emerging UAV Technologies, Rugged Miniaturization of Spectrometers |

|  |  |
| --- | --- |
|  |  |
| 🢥 Pendar is tailoring its standoff chemical analysis platforms to the specific needs of military and commercial users who need to a) examine the chemical environment over vast areas or b) examine suspicious chemical activity without the risk of human reconnaissance. Miniaturization and efficiency are at a premium as UAV load capacity is limited and most do not extend power to the spectrometer. | |

**4. Portable Tissue Oximeter**

|  |  |
| --- | --- |
| Main Market(s) | Battlefield Medicine, Post-Delivery Infant Monitoring |
| Optical Technology | Resonance Raman Spectroscopy |
| Key Enablers | Resonance Enhancement, Fiber Optics, Medical Grade Packaging |

|  |  |
| --- | --- |
| http://www.army.mil/-images/2011/05/01/106517/size0-army.mil-106517-2011-04-26-080437.jpg |  |
| 🢥 Resonance Raman Spectroscopy allows for the noninvasive monitoring of oxygen saturation in peripheral microvasculature. Unlike pulse oximeters, microvascular oximetry reflects the adequacy of oxygen delivery at the tissue level in patients at risk for hemorrhage, infection (sepsis), and cardiac failure. Clinical studies are underway at University of Michigan Health Sciences Center, Boston Children’s Hospital, and Tufts Medical Center. | |