

## Results of competition:

### Technology-inspired innovation - August 2013 - Collaborative R&D - Electronics, sensors and photonics

Total available funding for this competition was £8m from the Technology Strategy Board.

Note: These proposals have succeeded in the assessment stage of this competition. All are subject to grant offer and conditions being met.

Participant organisation names	Project title	Proposed project costs	Proposed project grant
Cascade Technologies Limited (lead) Fraunhofer UK Research Limited	Mid Infrared Gas Sensing and Imaging System (MIG-SIS)	£415,756	£299,274
<b>Project description (provided by applicants)</b>			
<p>The MIG-SIS project will develop and demonstrate 2µm pump laser sources optimised for the optical parametric amplification (OPA) of chirped Quantum Cascade (QC) Lasers for sensing and imaging applications. QC Laser stand-off trace gas detection is currently limited by the watt level peak power they emit. As a consequence (and dependant upon the particular detection scheme) range is restricted to ~1's – 10's metres.</p> <p>The primary technical motivator of this project is therefore to extend the range of QC Laser based active stand-off gas detection system through a significant increase in its illumination and range capabilities via the use of an OPA. This project will focus on combining 2 different photon generation mechanisms: non-linear optics (Q-switched solid state-laser pumped OPAs) and direct generation (QC Lasers).</p>			

## Results of competition:

### Technology-inspired innovation - August 2013 - Collaborative R&D - Electronics, sensors and photonics

**Note: These proposals have succeeded in the assessment stage of this competition. All are subject to grant offer and conditions being met.**

Participant organisation names	Project title	Proposed project costs	Proposed project grant
<b>Kromek (lead)</b> CPI Innovation Services Limited Centre for Process Innovation Limited	Conformable Plastic Electronic X and Gamma Radiation Detector	£499,589	£349,641
<b>Project description (provided by applicants)</b>			
<p>This project will see the development of a conformable radiation detector. using Kromek's expertise in radiation detectors and CPI's knowledge of plastic electronics. The primary application is for breast cancer screening, where the technology will have a number of advantages over current technology, including making the experience a lot more comfortable for the woman. This technology should make the process more appealing for women, cutting the estimated 400 women a year whose lives are not saved by attending the screenings.</p> <p>Other applications for this technology include the industrial inspection, homeland security and other medical markets.</p>			

## Results of competition:

### Technology-inspired innovation - August 2013 - Collaborative R&D - Electronics, sensors and photonics

**Note: These proposals have succeeded in the assessment stage of this competition. All are subject to grant offer and conditions being met.**

Participant organisation names	Project title	Proposed project costs	Proposed project grant
<b>M Squared Lasers Limited (lead)</b> Fraunhofer UK Research Limited	MIRANDA: Mid-InfraRed contraband Applications	£499,160	£359,233
<b>Project description (provided by applicants)</b>			
<p>A compact continuous wave (CW) optical parametric oscillator (OPO) capable of tuning over key absorption features in the infrared (IR) is a highly desirable tool for spectroscopy of key atmospheric pollutants, narcotics and explosives. A system that can combine very broad coarse tuneability with smoothly tunable, narrow-linewidth radiation enables the detection and identification of a diverse range of substances with exceptional precision. Fitting the OPO into a single, adjustment-free and highly compact box makes it very attractive for applications both inside and, crucially outside of laboratory conditions.</p> <p>M Squared Lasers already manufacture a pulsed (broad linewidth) OPO, which is a compact broadly tunable source, and have combined this with their scanning system in order to produce hyperspectral images. The challenge is to produce significantly narrower linewidth by making a CW OPO. The project presents a disruptive change in this field, credible market potential and will address the needs of a wide range of important and timely applications.</p>			

## Results of competition:

### Technology-inspired innovation - August 2013 - Collaborative R&D - Electronics, sensors and photonics

**Note: These proposals have succeeded in the assessment stage of this competition. All are subject to grant offer and conditions being met.**

Participant organisation names	Project title	Proposed project costs	Proposed project grant
<b>M Squared Lasers Limited (lead)</b> Rutherford Appleton Laboratory	Development of a highly sensitive stand-off chemical imager	£498,703	£358,862
<b>Project description (provided by applicants)</b>			
<p>Several markets are seeking solutions for an effective way of remotely detecting, identifying, quantifying and monitoring chemical emissions at ultra-low concentration levels. The overall objective of this project is to address these needs through the provision of a versatile, sensitive, standoff chemical imager.</p> <p>The project will focus on the development of a demonstrator based on the very recent development of the active heterodyne hyperspectral chemical detection method. The demonstrator development will allow the optimization of the active heterodyne detection technique and demonstrate chemical imaging capability for the first time. The development of the instrument will be accompanied by spectral modelling, processing algorithms integration, and a validation of low concentration chemical imaging methods in an application example of relevance to one of the target high-priority markets.</p>			

## Results of competition:

### Technology-inspired innovation - August 2013 - Collaborative R&D - Electronics, sensors and photonics

**Note:** These proposals have succeeded in the assessment stage of this competition. All are subject to grant offer and conditions being met.

Participant organisation names	Project title	Proposed project costs	Proposed project grant
<b>Microsemi Semiconductor Limited (lead)</b> Cambridge Microelectronics Limited University of Cambridge	Hafren - High Voltage Lateral Bulk CMOS FETs	£500,000	£325,299
<b>Project description (provided by applicants)</b>			
<p>Hafren will develop novel lateral MOS-based high voltage (HV) devices (<math>V_{br} &gt; 1kV</math>) to replace oversized and inefficient vertical MOSFETs in a range of applications including medical, consumer electronics (AC/DC converters) and LED drivers where high blocking voltage and low current drive is required. When compared to vertical MOSFETs, these lateral devices will be six times smaller with up to 10 times lower capacitance and extremely low leakage currents (<math>&lt; 100nA</math> @ <math>125C</math>). This will significantly reduce power losses in the system, reduce cost and system footprint resulting in a compelling product.</p> <p>Lateral devices will be based on CMOS technology permitting monolithic integration with other external components (diodes, gate drivers, protection circuits), enabling realisation of more compact lower cost solutions with improved efficiency. The lateral design with all terminals on one side of the die will enable simpler product assembly process, leading to cheaper and more reliable end products.</p> <p>Novel flip-chip solutions for Chip-on-Board assembly of lateral HV devices will also be developed, which will, coupled with six times smaller MOSFETs enable further product miniaturisation.</p>			