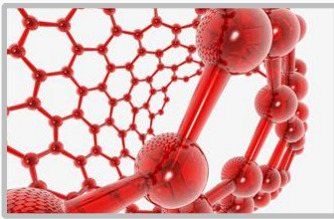


APRIL 2019 NEWSLETTER

REDFINCH Introduction

Welcome to the April 2019 Newsletter of the REDFINCH project. REDFINCH is an EU H2020 research project aimed at developing Photonic Integrated Circuits (PICs) at mid-infrared wavelengths, in order to realise compact chemical sensors for both gas and liquid. Specific targeted applications within the project include; **process gas analysis** in refineries, **gas leak detection** in petrochemical plants, and **milk protein analysis** for the dairy industry. Visit www.redfinch.eu for more information.

REDFINCH / CEA-Leti Announce Prototype of Next-Generation, Low-Cost Photo-Acoustic Sensor



Ekaterina Shilova - Adobe Stock

REDFINCH researchers have announced the development of prototype highly miniaturised portable optical sensors for chemical detection of gas. The next-generation, centimetre-size photo-acoustic sensors are based on mid-infrared photonic integrated circuits (MIR PICs). These silicon PICs, created by integrating optical circuits onto millimetre-size silicon chips, make extremely robust miniature systems. They are easier to use, and cost is reduced dramatically, expected by at least a factor of 10. In demonstrations, the sensors match the performance of bulky commercial gas-sensing systems commonly available today.

"The big picture is that miniaturisation of photo-acoustic spectroscopy based on quantum cascade lasers (QCLs) is entering the stage of mass production," said Jean-Guillaume Coutard, REDFINCH coordinator. The achievement of the prototype represents an important milestone for the REDFINCH project - the consortium aims to miniaturise the sensor even further in the next steps. For more, see: www.leti-cea.com/cea-tech/leti/english/Pages/What's-On/Press%20release/Next-Generation,-Low-Cost-Photo-Acoustic-Sensors-For-Gas-Detection-And-Analysis.aspx

REDFINCH Wins Best Paper Award @ SPIE Photonics West 2019

Several REDFINCH researchers attended the SPIE Photonics West 2019 Conference in the Moscone Center in San Francisco, USA from 2-7 February. Particular congratulations to REDFINCH coordinator, Jean-Guillaume Coutard, whose presentation on "Photoacoustic cell on silicon for mid-infrared QCL-based spectroscopic analysis" won the **Best Paper Award** in the MOEMS & Miniaturised Systems XVIII session on Sunday 3rd Feb. The paper included co-authors from REDFINCH partners CEA-Leti, mirSense and Fraunhofer-IPM. Other REDFINCH-related invited talks included:



- "Antimonide-based optoelectronic devices grown on Si substrates"
E. Tournié (U. Montpellier), et al., Session 3: Amplified Silicon Photonics, Mon 4th Feb
- "Miniaturization of mid-IR sensors on Si: challenges and perspectives"
S. Nicoletti (CEA-Leti), et al., Session 4: Silicon Photonic Sensors, Tues 5th Feb
- "InAs/AlSb quantum cascade lasers grown on silicon substrates"
E. Tournié (U. Montpellier), et al., Session 9: Advances in Lasers II, Tues 5th Feb

REDFINCH Successfully Completes First Project Review Meeting



The first Project Review meeting for REDFINCH was held in Brussels on 7th March 2019, with the EU Project Officer and two External Reviewers. The reviewers were satisfied with the progress of the project overall, confirming that REDFINCH has fully achieved its objectives and milestones for the period; recommendations focussed on constructive suggestions for addressing upcoming scientific challenges. The consortium would like to express its sincere thanks to the Project Officer and Reviewers for their time and useful feedback.