Grant agreement no: 317803

MId- to NEaR infrared spectroscopy for improVed medical diAgnostics

MINERVA

Deliverable D10.4
Project fact sheet

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Leader in charge of deliverable: Bruce Napier
Vivid Components

Project co-funded by the European Commission within the Seventh Framework Programme		
Dissemination level		
PU	***Public***	***X***
PP	***Restricted to other programme participants (including the Commission Services)***	
RE	***Restricted to a group specified by the consortium (including the Commission Services)***	
CO	***Confidential, only for members of the consortium (including the Commission Services)***	

Contents

Change register

Version	Date	Author	Organisation	Changes
A	25-Jan-2013	Bruce Napier	Vivid	Initial

1. Statement of independence

The work described in this document is genuinely a result of efforts pertaining to the MINERVA project: any external source is properly referenced.

Confirmation by Authors: Bruce Napier; Vivid Components.

2. Executive summary

The fact sheet on the following page provides basic information about the project. This data may be used by the EC for publication.

The information contained on the following page, plus the project presentation (D10.3) was sent to the EC by the author on 25-Jan-2013.

3. MINERVA fact sheet

MId- to NEaR infrared spectroscopy for improVed medical diAgnostics

Duration 2012-11-01 to 2016-10-31

Website www.minerva-project.eu

Summary
The MINERVA project will take advantage of several new breakthroughs in photonic technology to develop a new mid-IR technology platform and processes for early detection of cancer

Objective
In recent years it has become clear that mid-IR imaging spectroscopy has the potential to open a new chapter in bio-medical imaging and offers an effective tool for early cancer diagnosis and improved survival rates. Rather than a search for "cancer marker" absorption peaks, great progress has been made by analysing the entire bio-molecular mid-IR spectral signature using automated algorithms. However, the lack of suitable sources, detectors and components has restricted the technology to one of academic interest, based on weak thermal sources, low power lasers or synchrotron research tools.

For the first time the photonic technology is in place to develop a new mid-IR technology platform on which entirely novel supercontinuum sources (c. 1000x brighter than thermal sources) covering the whole range from 1.5 to 12 µm may be built:

- Low loss robust chalcogenide fibres for fibre lasers, supercontinuum generation and delivery;
- Fibre end caps, splicing and fusion technology for soft glass fibres;
- Crystal technology and novel designs for mid-IR AO modulators based on calomel;
- Flexible fast AO driver technology to enable high speed HSI acquisition -Low cost T2SL FPA detectors with performance matching state-of-the-art MSL devices -2.9 µm Er:ZBLAN and 4.5 µm Pr-doped chalcogenide fibre laser pumps;
- Robust designs for a range of mid-IR SCG sources:
  - 1.5-4.5 µm from ZBLAN fibre
  - 1.5-5.5 µm from InF3 fibre
  - 3-9 µm from 2.9 µm pumped PCF chalcogenide fibre
  - 4-12 µm from 4.5 µm pumped step-index chalcogenide fibre.

Two specific high impact applications will be addressed: high volume pathology screening (i.e. automated microscope-based examination of samples) and in vivo, remote, real-time skin surface examination (i.e. non-invasive investigation of suspected skin cancer).

This project will open the mid-IR to further exploitation, and the technology developed will be transferable to a huge range of applications both in bio-photonics and in wider industry.

Project details

Project reference:	317803
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EU contribution:	EUR 7 299 988
Programme acronym:	FP7-ICT
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Contract type:	Collaborative project (generic).