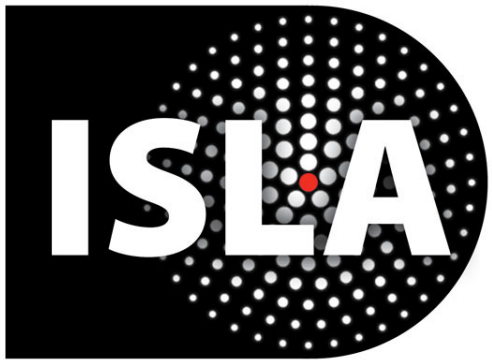


Integrated disruptive componentS for 2 µm fibre LAsers

ISLA Project Presentation

ISLA is supported by the European Commission through the Seventh Framework Programme (FP7)
Project number 287732
www.isla-project.eu

Project details

- ISLA is funded under the European Commission's Seventh Framework Programme

- Programme acronym FP7-ICT (http://cordis.europa.eu/fp7/ict/home_en.html)
- Programme type Seventh Framework Programme
- Sub-programme area Core and disruptive photonic technologies (b), (e)

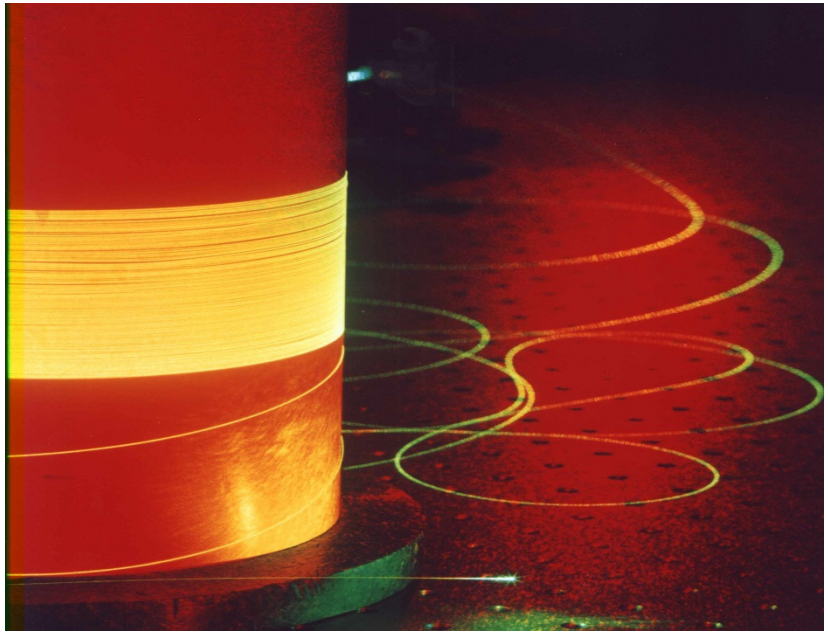
- Project Reference 287732

- Project cost 4,538,870€
- Project funding 2,839,995€

- Start date 01-Oct-2011
- End date 30-Sep-2014 – extended to 30-June 2015
- Duration 45 months

Overview: why 2 µm?

- 2µm fibre laser technology has the potential to open whole new areas of ICT & industrial applications
- Power scaling
  - Increased core size
  - Higher non-linear thresholds
  - Tenfold increase in “raw power” compared with current technology
- Wavelength-specific advantages
  - Eye-safe
  - Rapidly growing interest in this spectral region
- Many potential applications
  - Industrial processing
  - Free-space communications
  - Medical procedures
  - Spectroscopy



Overview: ISLA objectives

- Develop a set of “building block” components
  - Define an integrated modular common platform for 2 μm Ho-doped fibre lasers
  - Compatible and self-consistent fibre, components and laser diodes
- Laser types under development
  - CW
  - Pulsed
  - Short pulse lasers
- Industrial demonstration applications
  - Transparent plastic cutting
  - PV cell scribing
- Industrial user group
  - Identify new applications
  - Aid exploitation routes
  - Results promoted within recognised standards bodies.

Consortium

- **Seven partners from four nations**

- Gooch and Housego (Torquay) [Coordinator]
  - UK component and sub-system manufacturer
  - Fused fibre couplers, photonic packaging, isolators, modulators
- ORC Southampton
  - UK university group
  - Active and passive fibre development
- Trinity College Dublin
  - Irish university group
  - Nano-carbon-based materials development
- II-VI Laser Enterprise (Oclaro Switzerland AG)
  - Swiss laser diode manufacturer
  - 79x pump diode development
- ROFIN
  - German industrial laser system manufacturer
  - CW and pulsed laser development
- JDSU (Time-Bandwidth Products)
  - Swiss industrial laser system manufacturer
  - Oscillator and modelocker development
- Vivid Components
  - German SME project managers
  - Project administration & dissemination

Overview: ISLA highlights

- Fibres
  - Thulium fibres with 70% slope efficiency at >100 W output
  - Strategy for further increasing efficiency towards quantum limit
  - Holmium fibres with 75% slope efficiency

- Portfolio of active and passive components
  - Amplitude modulators and tunable filters
  - Fibre-coupled isolators, pump combiners and low loss taps
  - Wavelength-flattened couplers
  - Fibre-coupled silicon pulse pickers
  - Graphene-based mode lockers

- Diodes
  - >38 W in 105 µm fibre with 0.15 NA demonstrated
  - Wavelength stabilised devices with 60% power conversion efficiency

Workshop Agenda

Time	Slot	Topic	Led by
08:30	00:30	Arrival and coffee	
09:00	00:05	Welcome and introduction	Gary Stevens; Gooch and Housego (Torquay)
09:05	00:15	Fibres for 2 µm	Prof. Andy Clarkson; ORC Southampton
09:20	00:15	Passive components for 2 µm fibre laser	Gary Stevens; Gooch and Housego (Torquay)
09:35	00:10	Active components for 2 µm fibre lasers	Jon Ward; Gooch and Housego (UK)
09:45	00:10	Modelockers based on graphene	Prof. Werner Blau; Trinity College Dublin
09:55	00:15	Pump lasers at 79x nm	Dr. Susanne Pawlik; II-VI Laser Enterprise
10:10	00:10	2 µm ps-lasers	Dr. Peter Hofmann; JDSU Ultrafast
10:20	00:10	CW and pulsed lasers at 2 µm for material processing applications	Dr. Sina Riecke; ROFIN-SINAR Laser GmbH
10:30	00:30	Coffee and discussion	
11:00	00:20	2 µm laser development and applications	Dr. Samir Lamrini; LISA Laser
11:20	00:20	Medical applications of 2 µm lasers	Dr. Ronald Sroka; Hospital of University Munich
11:40	00:20	OCT for cultural heritage using 2 µm broadband lasers	Dr. Haida Liang; Nottingham Trent University
12:00	00:20	Plastics processing with 2 µm lasers	Stephan Fazeny; Trotec Laser
12:20	00:20	2 µm lasers for MIR frequency conversion	Dr. Eric Lallier; Thales Research and Technology
12:40	01:00	Lunch	
13:40	00:20	Telecoms applications for 2 µm lasers	Prof. David Richardson; ORC Southampton (MODEGAP project)
14:00	00:20	2 µm lasers as pump sources to the mid-IR	Dr. Lasse Leick; NKT Photonics
14:20	00:20	Free space communications using 2 µm lasers	Florian Moll; Institute of Communications and Navigation
14:40	00:20	Discussion: roadmap for 2 µm fibre lasers	Gary Stevens; Gooch and Housego (Torquay)
15:00		Meeting close	