



# Photonics & Organic Electronics Newsletter

February 2010

European Commission  
Information Society and Media



[http://cordis.europa.eu/fp7/ict/photonics/home\\_en.html](http://cordis.europa.eu/fp7/ict/photonics/home_en.html)

[http://cordis.europa.eu/fp7/ict/organic-elec-visual-display/home\\_en.html](http://cordis.europa.eu/fp7/ict/organic-elec-visual-display/home_en.html)

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## Photonics21 Annual meeting, 14-15/01/10

This year's annual meeting was a particularly successful event with a record attendance of over 300.

The meeting was opened by Mr Rudolf Strohmeier, Head of Cabinet of former Commissioner for Information Society and Media, Viviane Reding. He emphasised that photonics is today one of the principal motors for innovation and growth and recognised as a [Key Enabling Technology](#) in Europe. The Photonics21 community is to be praised for such an achievement.



Mr Martin Goetzler presented the new Strategic Research Agenda (SRA) of Photonics21 "Lighting the way ahead" followed by Mr Thomas Geelhaar who presented the Organic and Large Area Electronics (OLAE) SRA "Towards green Electronics in Europe". Both SRA's were handed over to Mr Strohmeier as representative of the European Commission. These SRAs will be a key input into Europe's research work programme for these areas for the years to come.

Another outstanding result of this year's event was the decision by Photonics21 to welcome the OLAE community to jointly tap



the full potential of these dynamic and complementary fields and further build on the synergies which already exist.

For further information on the event please see <http://www.photonics21.com/>.

### OLED100.eu project co-winner of the top prize in ICT4EE



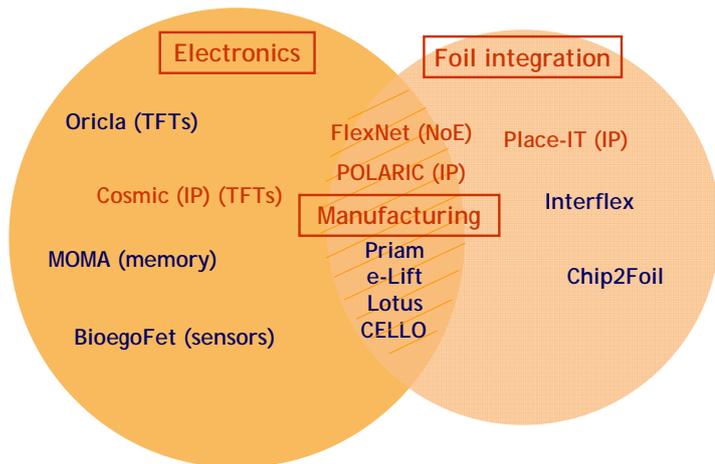
OLED100 (<http://oled100.eu/homepage.asp>) and Beywatch projects jointly won the Best ICT for Energy Efficiency Project award 2010 and received the Grand Prize of 10.000€ each.

The Award Ceremony took place on Tuesday 23<sup>rd</sup> February 2010. More details of the award process and the event itself can be found [here](#).

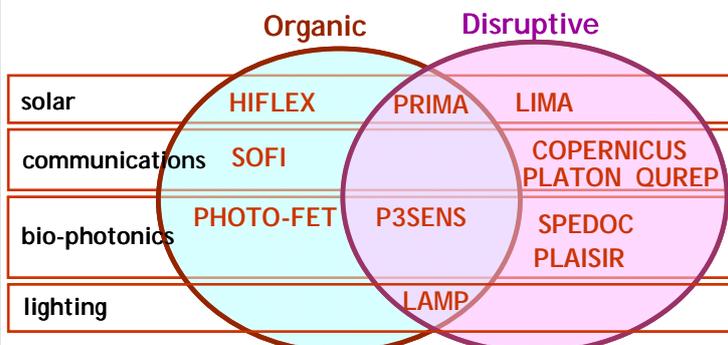
### 27 new R&D projects are launched following ICT Call 4

Following the ICT Call 4 of last April, 27 new projects in Organic and Large Area Electronics and Photonics have been selected and signed a contract with the EC, for a total amount of about 100 M€ of EC funding. More precisely:

(1) Under the ICT Call 4 Objective on "Flexible, Organic and Large Area Electronics", 13 new projects were selected, for 59.5 M€ of EC funding, see Figure. The new projects address R&D on flexible, organic and large area electronic devices and building blocks (in the figure, see area marked "Electronics"); OLAE-related manufacturing models like sheet to sheet, roll to roll, and organic/inorganic process combination (in the figure, see area marked "Manufacturing");



and flexible or foil-based systems (in the figure, see area marked "Foil integration"). There are in total 3 Integrated Projects (IPs) – COSMIC, Place-IT and POLARIC, one Network of Excellence (NoE) – FlexNet and 9 STREPs – Oricla, MOMA, BioegoFET, Prim, e-Lift, Lotus, CELLO, Interflex and Chip2Foil.



(2) Under the ICT Call 4 Objective on "Organic Photonics and other Disruptive Photonics Technologies", another set of 13 new projects were selected, one NoE and 12 STREPs, for 33.5 M€ of EC funding, see Figure. The NoE Nanophotonics4energy focuses on the creation of a virtual centre of excellence on green nano-photonics. Three of the 12 STREP projects address organic

photovoltaics (Hiflex, PRIMA, and LIMA), four are dealing with optical communication networks (SOFI, Copernicus, Platon and Qurep), another four are proposing advances in the area of biophotonics (Photo-FET, P3sens, Spedoc and Plaisir) and finally one is about new light emitting devices (LAMP).

(3) In addition to the above projects, under ICT Call4 an **ERA-NET Plus project was also selected**, called **Piano+**. The project brings together five countries, Germany, UK, Poland, Israel and Austria, and will be calling for **project proposals in the area of next generation broadband access through a competitive call**. The call is anticipated for mid March and up to 22 M€ funding will be available. The next info day takes place on 15<sup>th</sup> March in Berlin. Further information on this call, the rules of participation and the information days can be found [here](#).

Most of these 27 R&D projects are now underway with a start date of January 1st, 2010. Full details of the projects will be made available on the EU's OLAE and Photonics web pages at <http://cordis.europa.eu/olae> and at <http://cordis.europa.eu/photonics>.

### Evaluation of ICT Call 5

Under the ICT Call 5 objective on "Photonics" (closed 27<sup>th</sup> October 2009), 151 proposals were received with a total requested funding of more than 420M€, against 50 M€ available. All topics called for were very well covered with strong focus on communications and biophotonics. Among an exceptionally large number of high quality proposals, finally 15 proposals have been retained for contract negotiations with the EC (3 IPs, 3 CSAs, and 9 STREPs).

Under the ICT Call on "Factories of the Future" (closed 3rd November), 34 proposals were received of which 8 were retained for contract negotiations, including one proposal on laser manufacturing.

It is expected that all these projects will start in summer 2010. More information will be provided in our next Newsletter.

### ICT2010 conference comes to Brussels

The [ICT 2010](#) event (Brussels, 27-29<sup>th</sup> September 2010) will again be Europe's most visible forum for ICT research and innovation. ICT 2010 will focus on policy priorities such as Europe's Digital Agenda and the next financial programme of the European Union for funding research and innovation in ICT.

The main conference will be accompanied by the [ICT 2010 exhibition](#) where researchers from Europe and beyond will present their latest work in upstream ICT innovation. Do not miss the opportunity to present your latest project results. See how to apply for your exhibition stand [here](#). Submission deadline is 30<sup>th</sup> March 2010.

ICT2010 will also host dozens of [networking sessions](#) designed to facilitate contacts between researchers and innovators, engineers and investors from all fields of digital innovation. See all the details on how to apply for a networking session [here](#).

Subscribe [here](#) for all the ICT2010 latest news.



## Photonics Europe 2010

Photonics Europe (Brussels, 12-16 April 2010) is the photonics landmark event that bridges the gap



12 - 16 April 2010  
The Square Conference Ctr.  
Brussels, Belgium

between academia and industry. Participation in Photonics Europe permits you to network with the leaders in this area. Registration is open for the exhibition. More info [here](#).

## PHOREMOST project launches the Nanophotonics Europe Association



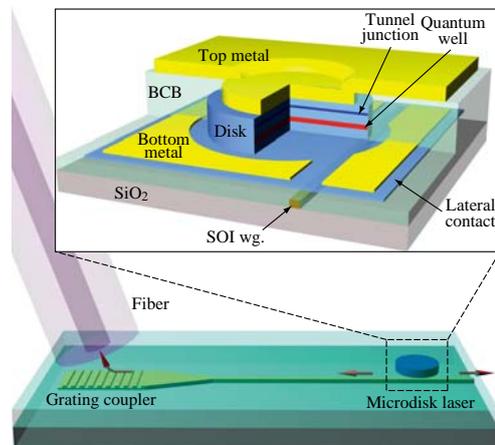
**Nanophotonics Europe** is a new association established to promote research, technology transfer and innovation in the emerging field of nanophotonics. The association was established in October 2009 and will continue the activities of the FP6 ICT-funded NoE 'PhOREMOST' – *Nanophotonics to realize molecular scale technologies*.

“One of the main challenges that will be addressed by the association is to bridge the gap between the academic and industrial worlds. To that extent, we plan to involve the main stakeholders in nanophotonics from both academia and industry”  
*G. Badenes, President of the Nanophotonics Europe Association.* More information can be found [here](#).

## Major step towards low-power all-optical random memories

The January 2010 issue of Nature Photonics published an article on an ultra-small and fast all-optical memory on silicon chip with record low power consumption. This result has been achieved by Imec in collaboration with project partners TU Eindhoven and the Institute for Nanotechnology of Lyon, in the framework of the FP7-ICT projects HISTORIC and WADIMOS. It is a major breakthrough for optical packet switching and paves the way to a drastic reduction of the power consumption in optical telecommunications.

For more information see [here](#).



## OLAE Cluster/Concertation meeting

The next Organic and Large Area Electronics (OLAE) Cluster/Concertation Meeting will take place in Brussels on 14 and 15 June 2010. OLAE Project Co-ordinators, please note the dates for your diary. Invitations and more details, including the agenda, will follow soon.

## Project news



The objective of the IST-FP6 project **GIBON** (Opto-electronic integration for 100 Gigabit Ethernet Optical Networks) started in May 2006 was to demonstrate that compact opto-electronic transmitters and receivers could be designed and be able to transmit data streams at 100 Gbit/s on a single wavelength (1.5  $\mu\text{m}$  window), based on a simple on-off keying modulation.

The 4-partner team developed an Electro-absorption Modulated Laser as a simple Photonic Integrated Circuit (PIC), and a pin photodiode - Travelling Wave Amplifier Opto-Electronic Integrated Circuit suitable for handling 100 Gbit/s modulation rates. The Travelling Wave Amplifier used InP-based High Electron Mobility Transistors (HEMTs). Moreover additional electronic circuits allowing multiplexing and demultiplexing from 50 Gbit/s tributaries and 100 Gbit/s were also developed in the InP Heterojunction Bipolar Transistor process, as well as a driver amplifier for the Electro-absorption modulator. More information on the project can be found [here](#).

The FP7-ICT **AEVIOM** project ([www.aeviom.eu](http://www.aeviom.eu)) aims to develop and apply an experimentally validated organic light emitting diode (OLED) device model which properly includes the entire chain of electrical and optical effects inside the disordered organic semiconductor material. This should result in breakthroughs in device efficiency and lifetime of white light sources. The project started in January 2008, with 9 partners from 4 countries.



The disordered, (almost) amorphous structure of the organic semiconducting materials used in OLEDs gives rise to quite a non-uniform filamentary current density. This was demonstrated and quantified in a recent publication by the participating group at the Eindhoven University and Philips Research ([Physical Review B79, 085203 \(2009\)](#)). Within the project, these supercomputer results are "translated" to easy-to-use PC models, developed by the Swiss company [Fluxim](#) (Software SETFOS) and the German company [Sim4tec](#) (Software SimOLED). A recent highlight was the incorporation of the effects of disorder in the [3.0](#) release of Fluxims SETFOS device software, based on the progress made in the project. The results obtained within AEVIOM were furthermore disseminated by giving lectures at the OLED100 [Summerschool](#) in Krutyn (June 2009).



The FP6-IST **VERTIGO** project ([www.2micron-laser.eu](http://www.2micron-laser.eu)), which ended on 30/11/2009, established a world-leading new class of group III-Sb material system based high-brightness optically pumped semiconductor disk lasers (OPSDLs or VECSELs), extending the wavelength coverage to the 1.9 – 2.8  $\mu\text{m}$  range.

Highly-efficient, tunable and narrow-linewidth laser sources were realized that operate at room-temperature in continuous wave mode and can be packed in a small footprint format (see figure). In contrast to classical solid-state lasers that also cover this wavelength range, the semiconductor disk lasers have the advantage of wavelength flexibility provided by the gain medium, allowing any desired emission wavelength to be realized and significant tunability around the central emission wavelength. Furthermore the beam quality at high output powers is far superior to that of diode lasers. As a result these flexible laser sources in the 1.9 - 2.8  $\mu\text{m}$  wavelength range can be used both for seeding solid state or fiber lasers and for direct high-brightness applications, opening up new opportunities for compact sources in the area of sensing, communication, medical treatment and materials processing.

The FP6-IST **NEMIS** project ([www.nemis.eu](http://www.nemis.eu)), which ended on 31<sup>st</sup> December 2009, has achieved outstanding results in the field of long-wavelength vertical-cavity and surface-emitting semiconductor laser diodes (VCSELs).



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## Project news (continues)

This makes a new generation of optical sensors to be integrated in novel robust possible, long-lasting, lighting-fast trace gas detectors for use in a wide range of industrial, security and domestic applications. More information is available on [CORDIS ICT Results](#).



The objective of the recently completed FP6-IST **VILLAGE** project ([www.neo.no/village](http://www.neo.no/village)) was to develop a cost-effective, widely tuneable mid-infrared (MIR) laser source

of high spectral purity to analyze gas emissions. The MIR laser source will form the basis for a new generation of multi-gas analyzers based on spectroscopic techniques for measuring polluting gases generated by and emitted from industrial processes, especially gases believed to contribute to global warming. Based on a novel Orientation-Patterned Gallium-Arsenide (OP-GaAs) crystal produced in the project properties, has been possible to implement a setup based on Difference Frequency Generation (DFG) from a commercial Erbium-doped fiber laser and a custom Thulium-doped fiber laser developed by another partner. It yielded milliwatt-level radiation from 7.6 to 8.2 micrometers (see Vasilyev *et al.*, Opt. Lett, 33, p. 1413-15, 2008). It has been turned by the SME partner in charge of validation into a prototype spectrometer unit fitting in a 19"-rack format (photo) and has successfully demonstrated continuous monitoring of nitrous oxide (N<sub>2</sub>O).

The **ACCORD** project ([www.ist-accord.org](http://www.ist-accord.org)) aims to purchase at marginal cost pre-competitive photonic devices from innovative European companies and put them in the hands of European researchers and students; and to facilitate transfer of device evaluation results to potential end-users, assisting companies to access new markets and new applications. ACCORD will end at Photonics Europe 2010 with a workshop highlighting the results of the project, testimonials and prospects towards the future



## Diary of Events

[Photonics Europe](#) 12-16 April 2010 – Brussels, BE

[Silicon Photonics Forum](#) 30 April 2010 – IMEC Leuven, BE

[LOPE-C](#) 31 May -2 June 2009 – Frankfurt, DE

[OLAE Cluster/Concertation meeting](#) 14-15 June 2010 – Brussels, BE

[OLED100.EU summer school](#), 22-28 June 2010 – Krutyn, Poland

[ICT 2010](#), 27-29 September 2010 – Brussels, BE

[6<sup>th</sup> Global Plastic Electronics Conference & Exhibition Messe](#), 19-21 October 2010 - Dresden, DE

[EOS Annual Meeting 2010](#), 26-29 October - Paris, FR