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Quadriga Newsletter

Contents

Presentation of the Strategic Research Agenda in Brussels 18 September 2009

Welcome to the fourth issue of the Quadriga Newsletter.

With this issue of the newsletter we welcome Dr Thomas Skordas of the European Commission as Head of the Photonics unit which now encompasses Organic and Large Area Electronics. All FP7 projects, related activities and responsibilities were transferred in the summer. We wish him good luck with his new position as Head of the unit.

We also detail in this issue the latest news from the Commission, the Quadriga Partners project news, news about the latest develpoments in the large area electronics (OLAE) in Europe, upcoming events and also related appointments in the new positions available section.

The Quadriga Project is a joint initiative of the European Commission, the Directorate General of Information Technology & Media and 3 Coordination Action Projects and one Network of Excellence within the seventh framework programme: OPERA, Polynet, Polymap and Prodi. The main and common objectives of all four collaborative projects are to foster the position of Europe as the gravitation point in the research of organic & large area electronics, and to strengthen the position of Europe as a main hub in this area. Ultimately the objective is to contribute to the creation of new start-ups and to the creation of a knowledge based European economy with strong comparative advantages.

We hope you find it informative and interesting and we welcome feedback and contributions.

The Quadriga Partners

The Quadriga Partners
(For more information and project links go to http://www.quadriga-org.eu/).

2. From the European Commission

At the beginning of September 2009, Thierry Van der Pyl, Director of DG INFSO G "Components and Systems" announced that the Organic and Large Area Electronics (OLAE) area of the ICT FP7 Theme will be moving from the Micro and Nano Systems Unit to the Photonics Unit. The Photonics Unit, headed by Thomas Skordas, will thus provide a single contact in serving the closely related R&D communities of Photonics and OLAE, which have already been sharing common topics and have many synergies. This move is aimed at maximising effectiveness with minimal disruption to the OLAE community.

The practicalities of this move are :

• The further development of the OLAE related R&D activities within the FP7 ICT Theme will now be under the responsibility of the Photonics Unit. In particular, this concerns: (a) the negotiation of most of the new RTD OLAE projects that were successful under the ICT Call 4 Objective 3.3 on "Flexible, Organic and Large Area Electronics"; and, (b) the preparation of the OLAE research activities in the FP7 ICT work programme for 2011-2013 as well as the further development of the OLAE area in the context of FP8.

• OLAE-related FP6 and FP7 RTD projects that are already running will continue to be monitored by the Micro and Nano Systems Unit.
The transfer of most of the above activities from the Micro and Nano Systems Unit to the Photonics Unit took place over the summer period. However this transition phase may expand over several more months. The two responsible INFSO units will continue to closely work together in order to make the transition as smooth as possible for the OLAE constituency.

Within the Photonics Unit, OLAE activities will be mainly handled as follows: John Magan (John.Magan@ec.europa.eu), Deputy Head of the Photonics Unit, will be responsible for the further development of the OLAE RTD activities within FP7 and for preparing FP8. Anna Katrami (Anna.Katrami-Bezirtzoglou@ec.europa.eu) will be responsible for the wide promotion and dissemination of OLAE related RTD activities on the EC side.

Preparation of the ICT work programme 2011-12 and the OLAE SRA: On September 18th, the OLAE research constituency held a meeting in Brussels to present the main findings of their first strategic research agenda (SRA) to the European Commission and to the wider OLAE research community. Feedback given at the meeting was to encourage the OLAE constituency to address the following two major issues:

(i) further streamline the RTD priorities that were identified so far for inclusion in the ICT work programme for 2011 -12. In particular, it was stressed that it is now important for the OLAE community to consolidate the SRA and to have it supported by the Member States and by the European industry at large, so that it can become the reference document for the years to come.

(ii) draft an implementation plan that would focus on concrete activities that the OLAE community should undertake in the next few months for an efficient implementation of the SRA. Such activities are related in fact to the so-called "knowledge triangle" involving research, innovation and educational activities needed for the further emergence of OLAE applications and markets in Europe.

The meeting presentations and the draft SRA can be found at: http://cordis.europa.eu/fp7/ict/organic-elec-visual-display/home_en.html. A consolidated version of this SRA will soon be made available and its final version will be presented to the European Commission at the annual meeting of the Photonics21 Technology Platform that will be held in Brussels on 14-15 January 2010 . More information on this event can be found on http://www.photonics21.org/.

OLAE project concertation meeting: The annual OLAE ICT FP7 project concertation meeting is planned for February 2010 in Brussels. The exact dates will soon be announced. As before, the intention is to provide a forum for all OLAE-related project participants from the various programmes to present their results and discuss with their peers. Further information on this meeting will soon become available at http://cordis.europa.eu/fp7/ict/organic-elec-visual-display/home_en.html

For further news from the EC on OLAE related activities, please refer to the Photonics and Organic Electronics Newsletter issue of September 2009, available at http://cordis.europa.eu/fp7/ict/photonics/newsletters_en.html

OPEN calls

The call on the three **Public Private Partnerships (PPPs)** has also been published. The deadline for submission is 3/11/09. The PPP on **Factories of the Future** has particular relevance for the photonics community.

An Information day for the Public Private Partnerships took place on the 13th July 2009 in Brussels. You can see the details of this event and the presentations here (see also press release).

• For more info on the 3 PPPs see: http://ec.europa.eu/research/industrial_technologies/lists/list_114_en.html.
• For submitting a proposal on 'Green Car' see: http://cordis.europa.eu/fp7/dc/index.cfm?fuseaction=UserSite.CooperationDetailsCallPage&call_id=273
• For submitting a proposal on 'Factories of the Future' see: http://cordis.europa.eu/fp7/dc/index.cfm?fuseaction=UserSite.CooperationDetailsCallPage&call_id=281
• For submitting a proposal on 'Energy-efficient Buildings' see: http://cordis.europa.eu/fp7/dc/index.cfm?fuseaction=UserSite.CooperationDetailsCallPage&call_id=290

In addition, the NMP Programme has launched calls for proposals with various deadlines (**NMP calls**). Some aspects are relevant to the photonics communities (deadline 08/12/2009): i.e. "organic-inorganic hybrids for electronics and photonics" or the "development of nanotech-based multi-parameter sensors". They also participate in the PPPs with some topics being potentially relevant to photonics. For more info please refer to the website.

Evaluation of ICT Call 4 – Objectives 3.3, 3.7(part c) and 3.8

Under the ICT Call 4 (closed 1st April 2009), the Photonics and Large area electronics areas were represented by three objectives:

1. Objective 3.8 'Organic Photonics and Other Disruptive Photonic Technologies' where 63 STREP and NoE proposals were received, requesting a total EC funding of 169 M€ (against 30 M€ EC funding available).

The response to the 'disruptive' part of the call appears to have been enthusiastic with a good representation of the different disruptive technologies in the received proposals: Plasmonics, photonic crystals and quantum technologies were well represented, while there was limited response on metamaterials and biological systems. The response to the 'organic photonics' part was dominated by photovoltaics and sensing for life-sciences, whilst lighting was playing only a marginal role. A few proposals integrated a disruptive photonic concept with an organic material.

2. Objective 3.7 'Photonics' (only Part C on ERA-NET plus). This ERA-NET plus action was aiming at the implementation of a joint call for proposals on a photonic topic of strategic interest for the participating member states, to be funded between national and regional programs and the EC. One ERA-NET plus proposal was received focussing on photonic technology and system architectures for access networks (aiming at providing photonic components enabling access speeds up to 10Gbps).

3. Objective 3.3 'Flexible, organic and large area electronics' where 44 proposals were received, requesting a total EC funding of 172 M€ (against 60 M€ EC funding available).

Proposals received focusing on the first target outcome (flexible, organic and large area electronic devices and building blocks) were addressing device architecture and performance and device passivation/stability. Other topics covered were: highly productive in-line compatible processes capable of very small feature size and multi-layer registration as well as manufacturing models like sheet to sheet, roll to roll, and organic/inorganic process combination.

As for the second target outcome (flexible or foil-based systems), the majority of proposals received were on: foil lamination/interconnect, vias, foil passivation, multi-foils system design and integration, standardisation of foils functionalities and lay-outs, reliability and low energy consumption.

Overall, 26 proposals were retained and are now under negotiation for an EC contract. They are most likely expected to be launched beginning of 2010. More information on the new projects will be provided in our January 2010 newsletter issue.

EUROSTARS programme: funding opportunities for SMEs

EUROSTARS programme is specifically dedicated to R&D performing SMEs (overall programme funding in FP7 is 400 MĐ„). EUROSTARS supports market oriented R&D projects and operates in a "bottom-up" manner without thematic restrictions. Photonics related projects can benefit. The consortium leader must be an R&D-performing SME and the project must include at least 2 participants from EUROSTARS Member countries.

The next cut-off date for the submission of Eurostars project applications is Thursday 24th September 2009. Photonics SMEs are strongly encouraged to visit the EUROSTARS website at http://www.eurostars-eureka.eu/ for all information regarding this programme. They are also strongly advised to contact the relevant EUREKA National Project Coordinator (NPC details http://www.eurostars-eureka.eu/where.do) for getting more comprehensive information on the EUROSTARS Programme, the national funding rules and for assistance in preparing an application.

Project news

PhotonFAB project, which supports access to European silicon photonics centres of expertise and foundries, has announced its next 2 **ePIXfab** multi-project wafer (MPW) fabrications runs at CEA-LETI and IMEC for Q4/2009 and Q1-2/2010, respectively. The project will organise a first 3-day training course on the ePIXfab silicon photonics MPW fabrication service on 12-14 October 2009.

This course targets European users interested in using the service with the two-fold aim to reduce the barriers for access to these technologies and to shorten the fabrication cycles.

All parties interested in the ePIXfab silicon photonics service are also invited to sign up for the ePIXfab Interest Group. Those interested to contribute to a roadmap on access to silicon photonics technologies can additionally sign in as member of the Expert Group. To find out more please visit the PhotonFAB website.

Some highlights from the work done by PhotonFAB have been published recently in Nature Photonics:
• The Institute of Photonics and Quantum Electronics at University of Karlsruhe published their results on all-optical high-speed signal processing with silicon-organic hybrid slot waveguides (Nature Photonics of April 2009, volume 3, issue 4);
• The Photonics Research Group at Ghent University published their results on tunable optical forces between nanophotonic waveguides (Nature Photonics of August 2009, volume 4, issue 8);

Intopsens project aims to develop a highly integrated optical sensor for point-of-care label-free identification of sepsis (blood poisoning) bacteria strains and their antibiotic resistance. Currently diagnostics tools are too slow to make an impact on the all important first hours of patient treatment. By providing a
diagnosis within an hour, the project is trying to solve this problem and enable targeted antibiotics treatment to both benefit patient recovery rates and prevent an increase in bacterial antibody resistance (more info on project Intopsens website).

NEMIS project aims was to develop compact and packaged vertical-cavity surface-emitting laser diodes (VCSELs) for the 2 – 3.5 µm wavelength range and pilot photonic sensing systems for trace gas analysis (more on
the project website). A demonstrator for optical CO measurement at 2.33 µm has recently been developed.
The basis for this sensor was the successful development of GaSb-based VCSELs operating continuous-wave and single-mode up to 90°C. By (electro-)thermal tuning, their emission wavelength can be adjusted continuously over more than 10 nm. This allows for the realization of a calibration free sensor, as several absorption lines of different gases (here CO and CH4) can be scanned simultaneously.

Consequently, the lines of one of the gases may serve as wavelength calibration of the laser. The innovative sensor concept and laser sources were awarded the German “Kaiser Friedrich Forschungspreis” (www.kaiser-friedrich-forschungspreis.de) in May 2009.

On the way towards longer wavelength emission, the project consortium successfully developed a mesa-constricted device emitting at 2.63 µm and a buried tunnel junction VCSEL at 2.60 µm. These promising results pave the way for the development of application suited tunable electrically pumped devices emitting in the full 2 – 3.5 µm wavelength range.

Biophotonics is an emerging multidisciplinary research area, embracing all light-based technologies applied to the life sciences and medicine; it drives the trend towards personalized medicine and plays a crucial role in limiting health-care costs. Its economic importance is reflected in double-digit annual growth rates of the turnover.

The European Network of Excellence **PHOTONICS4LIFE** (P4L) started in May 08 and provides a coherent framework for the strongly fragmented field of Biophotonics in Europe. P4L's 13 partners will structure and integrate the research and technological developments throughout the various subdisciplines of Biophotonics and act as a nucleus for integrated fundamental and applied Biophotonics research across Europe. P4L targets to break down barriers between different disciplines ranging from physics and chemistry via engineering to biology and medicine. P4L does not only focus on individual technological developments but also puts emphasis on the needs of the physician and patient.

More information on P4L is available under http://www.photonics4life.eu/ or through P4L's newsletters which can be received by sending your registration be e-mail to tguldemo@vub.ac.be . Special information on P4L's Industrial User Club (IUC) is further accessible at: http://industry.photonics4life.eu.

3. Quadriga Partner Project News

Strategic Research Agenda Proposal for the Organic and Large Area Electronics Submitted

(left to right) Mr. Ed van den Kieboom, Dr. Thomas Geelhaar, Mr. Thierry van der Pyl, Dr. Thomas Skordas

The Strategic Research Agenda [SRA] for the Organic & Large Area Electronics [OLAE] is now available and downloadable at the link below. The SRA is a joint effort of a large number of European stakeholders, from industry, research and the academia. The title "Towards a Green Electronics in Europe" indicates that the OLAE technology, is expected to contribute to a lower CO2 footprint of electronics in general, and to a new class of applications and products with integrated enhanced functionalities. It will take however continued efforts of research, development and engineering to make this a reality and continued public funding to reach the indicated objectives.

Organic and Large Area Electronics (OLAE) has a huge potential to give answers to many questions in our society on the future of energy, environment, information and communication, mobility, health and others. OLAE covers 5 important topics which have all a similar disruptive technology in common:
- Lighting
- Organic Photovoltaics
- Displays
- Electronics
- Integrated Smart Systems

For these 5 topics so far several technology platforms and organisations are involved:
- Photonics 21
- OE-A (Organic Electronics Association)
- EPoSS (European Technology Platform on Smart System Integration)
- OPERA (Organic/Plastic Electronics Research Alliance)

Organic and Large Area Electronics has a large market potential of $ 300 Bio. in 2027 according to market research institutes. As we address 4 important application areas and industries (lighting, photovoltaics, displays and electronics) we have to coordinate and focus on a European as well as national level the resources in industry and academia. In addition OLAE will have significant impact on additional large markets such as printing and packaging, health care and chemical industry. The diversity of the applications requires a clustered approach with one roadmap. Therefore, as an industry-led initiative, around 70 companies and institutes from 15 European countries contributed in the 5 topic areas to the preparation of the first OLAE Strategic Research Agenda to wards a green electronics in Europe , which was prepared from February to September 2009.

In view of the complexity of the area, the synergies between the topics and the economic and the societal impact a coordinated European funding is suggested with an R&D budget of more than EUR 500 Mio. for 2011 to 2015. With this increased funding Europe has a good chance to keep leading positions in the value chain.

We would very much like to receive your comments on the Strategic Research Agenda. If you would like to give feedback or if you have any questions, please email Dr Thomas Geelhaar on Thomas.Geelhaar@merck.de or Mr Ed van den Kieboom on ed.vandenkieboom@plastic-electronics.org or on info@opera-project.eu

Download SRA Pdf: peportal.org/site/uploads/OLAE SRA FINAL VS 4 91509.pdf

Further downloadable pdf's and information can be found on the Opera website at http://opera-project.eu/index.php?id=23&lang=EN

ISOS -3
International Summit of OPV Stability - Roskilde, Denmark
19 - 23 April 2010

Scientific summary and abstract
The aim of the ISOS international summit on OPV stability is to create global standards for measuring OPV stability, performance and lifetime. The last 2 years the ISOS have been arranged in Denver, Colorado and in Amsterdam, Netherlands respectively and have conducted introductory talks and breakout sessions, e.g. stability, round robin and testing protocols (at ISOS-2).
This year the annual summit on OPV stability ISOS-3 will be held in Denmark and will comprise a 2 day experimental roll-to-roll manufacturing OPV workshop (limited number of attendants), 1 day scientific conference with poster session and the 2 day summit with scientific discussions and scientific talks of the latest developments within OPV stability (see program and list of invited speakers below).
The organizing committee for ISOS-3 is: Dr. Dave Ginley, Dr. Darin Laird, Dr. Jens Hauch, Dr. Jan Kroon, Dr. Albert Van Breemen and Dr. Eva Bundgaard. A curriculum vitæ for each member can be found below

Program:
19 - 20 April 2010 Experimental workshop
21 April 2010 Conference and Standing dinner
22 April Summit

Organisers:
Dr. David S. Ginley received his PhD in inorganic chemistry from MIT in 1976. He then joined Sandia National Laboratories where he was the Department manager until 1992 where he joined National Renewable Energy Laboratory. Dr. Ginley is currently leading activities in the applications of nanotechnology, organic electronics, transition metal oxides and ink jet printing for solar cells. Current work focuses on the development and basic science of very high quality materials and the development of next generation process technology for materials and device development. Dr. Ginley is an adjunct Professor of Physics at CU Boulder and a Research Professor of physics at the Colorado School of Mines. Dr. Ginley has published more than 360 papers and received 27 patents.

Dr. Darin W. Laird received his PhD in Chemistry from University of Texas at Austin in 2001. Dr. Laird is a founder and the Director of the Power and Circuitry Teams at Plextronics, Inc. Prior to joining the company, he was a postdoctoral associate in the research group of Richard D. McCullough at Carnegie Mellon University. Dr. Laird leads the Power and Circuitry Teams for product development in Organic Photovoltaic Cells (OPV) and Organic Thin Film Transistors (OTFT) and oversees the Materials Development Group for designing electroactive polymer donors and acceptors with controllable electronic, optical, and morphological properties for OPV and OTFT application tracks. Furthermore, Dr. Laird has overseen the creation of the team and approach to increase stability of OPV modules. Dr. Laird is an inventor on 82 issued and pending patent applications for OLED, OPV, and OTFT application technologies.

Dr. Jens A. Hauch is the Director of R&D Operations and the manager of the German R&D site of Konarka Technologies. Dr. Hauch is responsible for stability and packaging development of Konarka's innovative Power Plastic®, a new type of solar module based on semiconducting organic polymers. Dr. Hauch received his PhD in Physics from the Center for Nonlinear Dynamics at the University of Texas at Austin in 1998. Before joining Konarka in 2004, he was active in the development of thin-film magnetic sensors, electrochromic displays, and organic photodetectors at Siemens Corporate Technology from 1999-2004. Dr. Hauch is author and co-author of numerous patents, patent applications and scientific papers in organic photovoltaics, thin film magnetics and dynamic fracture.

Dr. Jan Kroon is a Senior Research Scientist and Program coordinator of Organic based PV technologies, addressing both polymer PV and dye-sensitized solar cells. He has been project coordinator of several national and international projects, amongst which a number of EU projects.

Dr. Albert van Breemen received his Ph. D. degree in Organic and Polymer Chemistry from the University Hasselt, Belgium, in 1999. In that same year Dr. van Breemen joined TNO Science and Industry as Project Member in the Functional Polymers & Coatings department up to 2000, as Project Leader in the same department since 2001. In 2008, he became senior research scientist at TNO/Holst Centre working on organic transistors, memories and electro-optical sensors. Furthermore, Dr. van Breemen is currently involved in standardisation activities in organic and large area electronics in the FP7-project OPERA.

Dr. Frederik C. Krebs received his PhD in Chemistry from the Technical University of Denmark in 2000 and has since then worked as group leader in the field of polymer solar cells at Risø DTU, National Laboratory for Sustainable Energy. The areas of research include new materials with low band gap and novel processing capability, large area processing and manufacture of polymer solar cells, stability and lifetime testing, degradation mechanism studies, outside testing and demonstration. Dr. Krebs has published more than 120 papers and holds 17 filed patents.

Dr. Eva Bundgaard received her PhD in Chemistry from Risø DTU/RUC in 2007. She is currently working at Risø DTU, National Laboratory for Sustainable Energy as a post.doc. with main research activities in synthesis of new low band gap polymer materials for organic solar cells. She has published 9 peer-reviewed journal papers within the field of organic synthesis, organic photovoltaics and low band-gap polymers.

List of invited speakers

Dr. Kion Norrman Risø DTU	Dr. Tommi Vourinen VTT	Dr. Frank Louwert Agfa
Dr. David S. Germack NIST	Dr. Andreas Elsner H. C. Starck	Dr. Stéphane Guillerez CEA
Dr. Dirk Vanderzande IMO-IMOMEC	Dr. David Kronholm Nano-C	Dr. Matthew Lloyd NREL
Dr. Serge Beapré University of Laval	Dr. Peter Eckerle BASF	Dr. Bertrand Jannon Alcan
Dr. Yulia Galagan TNO/Holst Centre	Dr. Gang Li Solarmer	
Dr.Olle Inganäs IFM Linköping University	Dr. Jean Lyc Gardette University of Blaise Pascal	

Standardisation

Contact person: Albert van Breemen, Holst Centre/TNO, albert.vanbreemen@tno.nl

As a follow-up of the International Summit on OPV Stability (ISOS-2 '09), three initiatives were initiated:

• All presentations, summaries of the break-out sessions of ISOS-2 together with OPV roadmaps of the Department of Energy and the FP6 project OrgaPVnet are made available via the ISOS-2 website (http://isos-2.wikispaces.com/).

• A lifetime testing template was drafted by NREL, Konarka and Plextronics to aid the community in creating standards for the lifetime assessment of organic photovoltaic devices similar to the IEC Thin Film PV Standard 61646. This document (http://isos-2.wikispaces.com/#RecPrac) is meant to serve as a basis for future standards that are used throughout the community. It is not intended to be final, but to be the start of a living document that will become more refined within the timeframe of the OPERA project and beyond. The reader is encouraged to give their comments via either http://isos-2.wikispaces.com/message/list/home or email to albert.vanbreemen@tno.nl

• Organization of the ISOS-3 '10 workshop together with Risø National Laboratory for Sustainable Energy, and all the members of the ISOS-2 organizing committee. Date and venue of the workshop will be 19-23 april 2010 in Roskilde, Denmark. For more information visit http://opera-project.eu/index.php?id=16&lang=EN or http://isos-3.wikispaces.com/

Workshop Announcement

A joint workshop between the Organic Electronics Association (OE-A), OPERA and PRODI- EU-projects on the topic of "Quality Control, Measurement, Manufacturing and Standards Preparation for OTFTs" will be held during the oe-a working group meeting on Nov. 10th 2009 in Leverkusen, Germany.
The following topics will be presented as a discussion base for the workshop:
•Report OE-A Working Group "Quality Control and Measurement" (Th. Hollstein, TU Darmstadt)
•Standards preparation efforts within OPERA (C. Winnewisser, CSEM)
•Evaluation of R2R manufacturing strategies of oFETs within PRODI (G. Pieterse, TNO)
•Why bother about Standards? (G. Lenhart, ETSI)
Please email to ingrid.willam@vdma.org if you want to join the workshop.
More information about the oe-a working group meeting is found at: www.oe-a.org.

Please check the website for updates on this project.
Go to http://www.polymap.eu/

News from the PolyNet Platforms

Research Cooperation Platform – Whitepaper PolyNet Critical Research Issues announced

The Research Cooperation updated the Set of Critical Research Issues and prepared the 1st PolyNet Whitepaper on that.

Revision of Critical research issues
The critical research issues (CRIs) are used within PolyNet as a tool to find research topics that are of particular importance to the field of organic and large area electronics within the European research community and/or the European industry. The CRIs should address high priority knowledge gaps towards industrial use of organic and large area electronics. Recently, a revision of the CRIs was performed, using the procedure outlined in Figure 1.

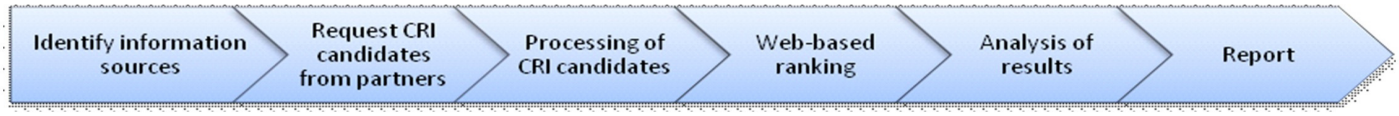

Figure 1. The CRI revision process.
As a result, a list of CRIs, ranked in approximate order of importance as viewed by the PolyNet partners, has been produced. As seen in Figure 2, the CRIs span all the 5 R&D categories used in PolyNet, with some preference towards issues related to materials and processing. Among the top-ranked candidates are topics related to integration and encapsulation. Also worth mention is that the integration of environmental issues into R&D efforts was ranked among the top third of the CRIs.

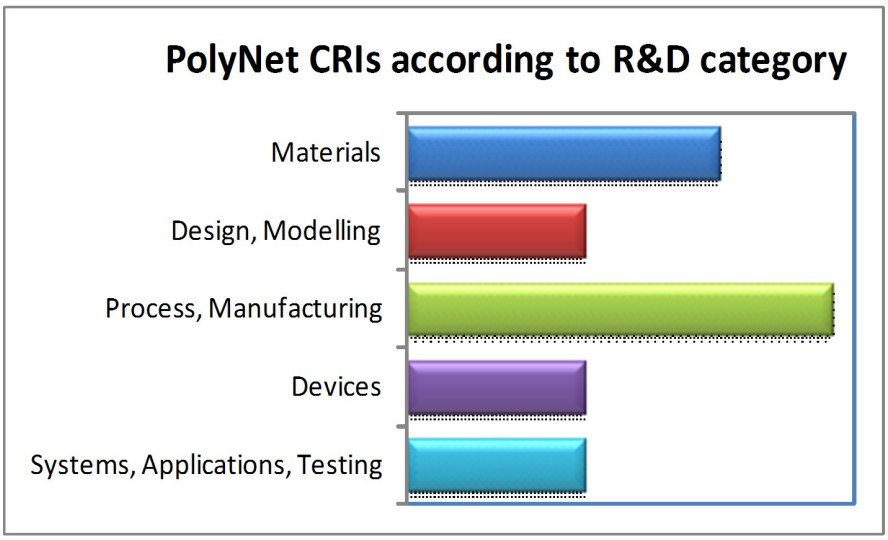

Figure 2. PolyNet CRIs according to R&D category.
Within PolyNet, the revised list of CRIs will be used as input in the process of defining new and revised research collaborations for the next year.
More detailed results will be published in the 1st PolyNet White Paper until the end of October 2009.
Contact Research Platform: Isak Engquist (isak.engquist@itn.liu.se), Linköping University, Sweden

Service Platform

The PolyNet Service Platform published the 2nd Service Brochure.
Organic and large area electronics industry and industry using OLAE products using needs various services from research institutes and universities and from other companies. In PolyNet we interviewed companies and asked their particular needs in this area. Materials related services were found to be most important: testing, printing, formulation and device characterisation. Also more integrated service offering is appreciated by companies and moreover companies would like to have easier access to pilot facilities. In PolyNet we are developing new services and especially service chains (where several institutes together provide the service with an integrated added value).

As an example, we develope several novel service chain where research institutes and universities together can provide totally new solutions for companies (see figure below). E.g. Nanoimprinting of transistor offers an excellent opportunity to make high quality transistors, but it requires very different expertises and special facilities, like FIB for imprinting tool making, electroforming, R2R nanoimprinting, SD and gate electrode manufacturing, printing or evaporation of dielectric and OSC, testing, characterisation and modelling. Currently no institute alone can provide such expertise, but it is now available through PolyNet Service Platform.

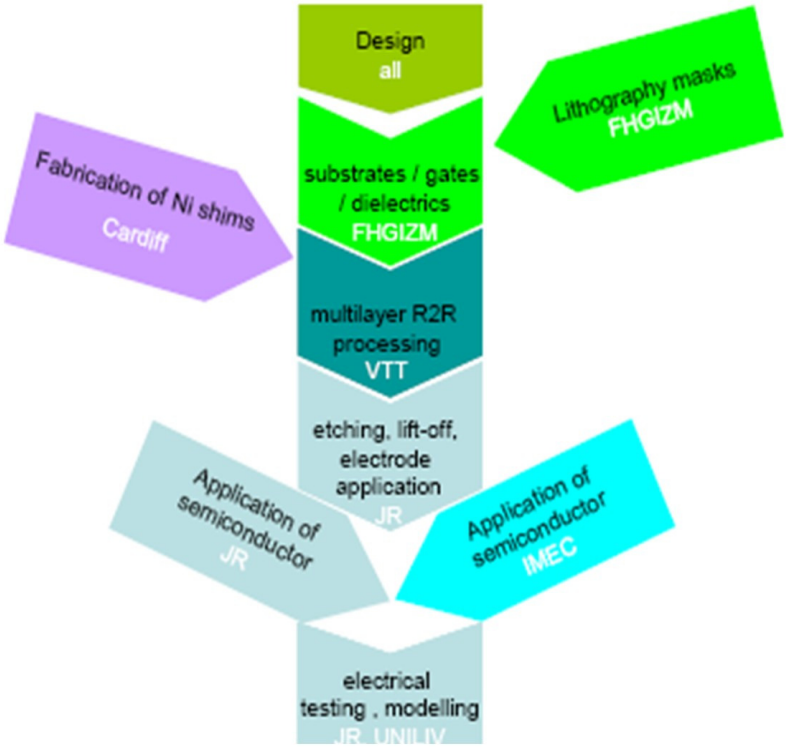

Figure 3. Process Flow and Collaboration in RC Nanoimprint Lithography.

For request to the PolyNet Service Platform please use http://www.noe-polynet.eu/public/services/contact-form
Contact Service Platform: Markku Känsäkoski (markku.kansakoski@vtt.fi), VTT, Finland

Knowledge Platform

EOOE (European Observatory on Organic Electronics) reports with selected topics and Conference reports are available: http://www.noe-polynet.eu/public/knowledge/eooe-results/

Summary Session 3: Organic Multifunctional Materials (NoE PolyNet) 2nd International Symposium for Flexible Organic Electronics (IS-FOE09)
8-10 July 2009; Halkidiki, Greece

Chair: J. Ulanski and E. Dobruchowska, Department of Molecular Physics, Faculty of Chemistry, Technical University of Lodz, Poland

The session was dedicated to multifunctional materials that allow reducing the number of steps in fabrication of organic large area electronic devices (e.g. field effect transistors and photovoltaic cells). Such materials can be obtained in two ways; by synthesis of new organic semiconductors with specific properties and/or development of unconventional production methods of uniform anisotropic layers of organic semiconductors and their micro- or nanocomposites with controlled morphology. This constitutes the critical research issue, which might contribute to up scaling and commercialisation of the lab-elaborated technology. The subject of the session was coherent with the main research stream of one of the Research Collaborations ("Multifunctional Materials for OFETs and OPVs") established in the in frame of Network of Excellence for the Exploitation of Organic and Large Area Electronics (PolyNet, FP7 Project). Therefore, the speakers (listed below) had been selected mainly among the PolyNet partners.

Lars Heinze (coordinator), from VDI/VDE Innovation + Technik GmbH, Germany, presented the aim of the project.

Jacek Ulanski, from Technical University of Lodz, Poland, delivered an invited lecture on “Electrical and optical anisotropy of ordered layers of organic semiconductors”. During the talk, several solution based methods, preferred from the application point of view, yielding highly anisotropic layers of organic semiconductors were described. The methods originate from the so called “reticulate doping technique”, in which the low molecular weight "dopant" forms a separate crystalline phase created in situ during polymer matrix solidification. Another critical problem, addressed by the speaker, was the industrial requirement for simple methods of determination of organic molecules’ orientation in thin layers. It was shown, that polarized Raman spectroscopy can be useful technique for controlling the molecular order in organic crystalline materials, suitable also for on-line monitoring.

Ewa Dobruchowska, from Technical University of Lodz, Poland, in the talk on “Flexible n-type OFETs produced by single batch solution based method” presented the original technique of obtaining multifunctional composites for OFET application, consisting of highly oriented semiconducting crystals immersed in polymer matrix, that serves at the same time as a dielectric component and encapsulating coating. The results of X-Rays Diffraction measurements, confirming that these and similar composites contain uniaxially arranged crystalline domains, were presented in the next paper (“Perylenediimide (PTCDI-C5) based bi-layers for organic electronics applications”) by Christoforos Gravalidis from Aristotle University of Thessaloniki, Greece.

Malgorzata Zagorska (external partner of PoyNet), from Warsaw University of Technology, Poland, showed the route of solution processible naphthalene and perylene bisimides from synthesis, through electrochemical and structural characterization to fabrication of all organic field effect transistors. Flexible n-channel OFETs were prepared by spin coating and printing, without the necessity of the use of vacuum deposition techniques. The best of the fabricated transistors, operating in air show the charge carriers mobility of 4×10-2 cm²/(Vs).

The paper on “Tuning the photoluminescence of poly(4,4’-diphenylenevinylene) (PDV) by controlling the preparation and structure of various systems: from solutions to solid layers” by Adam Tracz, from Centre of Molecular and Macromolecular Studies, Polish Academy of Science - Lodz, Poland, presented a study that was done outside PolyNet. The paper was showing new examples of tuning poly(4,4’-diphenylenevinylene) photoluminescence by controlling the preparation and structure of various systems: from solutions to solid layers.

Contact: Ewa Dobruchowska (Ewa.Dobruchowska@p.lodz.pl), Technical University of Lodz, Poland

PolyNet Events & Exhibition

• Booth No. 18 at the 5th Global Plastic Electronics Conference and Exhibition (27 – 29.10.2009 / Maritim Hotel & Conference Center, Dresden, Germany): http://www.plastic-electronics-europe.com/home.aspx)
• ICOE 2010 (22. - 25.06.2010 – Paris, France / icoe@univ-paris-diderot.fr)
• ISFOE 2010 (http://isfoe.physics.auth.gr/ - 7.-09.07.2010 - Halkidiki, Greece)

About NoE PolyNet

The NoE PolyNet (Network of Excellence for the Exploitation of Organic and Large Area Electronics / OLAE) aims to establish Europe in the OLAE area as the world leader in science, technology development and subsequent commercial exploitation of printing and large area technologies for heterointegration of flexible electronics.

Contact PolyNet Coordinator

Lars HEINZE / VDI/VDE Innovation + Technik GmbH, Steinplatz 1, 10623 Berlin, Germany
Tel. +49 30 310078 165 / Fax +49 30 310078 223
heinze@vdivde-it.de , www.noe-polynet.eu

PRODI completes requirements on roll-to-roll manufacturing equipment

The PRODI project has completed its work on mapping out requirements on roll-to-roll manufacturing equipment for organic solar cells, printed displays and OTFTs. Using the expertise of the contributing research partners and the industrial collaborators PRODI has generated specifications and parameters that support European processing machinery manufacturers, production line integrators, process measurement and automation industry in developing solutions for the manufacture of these applications.

Definition of the manufacturing requirements in PRODI WP1 has been supported by a proven and consistent methodology. A system engineering method Quality Function Deployment has been used by research partners in translating application requirements into measureable and prioritised engineering targets for their production.

Work on collecting and generating requirements will continue. Now completed roll-to-roll manufacturing equipment requirements are currently being consolidated with the requirements for measurement and automation on roll-to-roll production lines. The outcomes of these developments will be used by PRODI members in creating a vision of success for the European polymer and printed electronics industry.

For further information on Prodi, please log onto http://www.project-prodi.eu/

LOPE-C

Large-area,
Organic & Printed Electronics
Convention

May 31 – June 02, 2010
Congress Center, Messe Frankfurt, Germany

LOPE-C 2010

Large-area, Organic and Printed Electronics Convention
Frankfurt, Germany, May 31-June 2, 2010

LOPE-C - Large-area Organic and Printed Electronics Convention
- covers the latest commercial and technological achievements in organic, inorganic and printed devices, systems and materials.
LOPE-C represents the entire industrial value chain - academic research to R&D to production to commercialization to end-user cultivation.
- LOPE-C is the official annual conference and exhibition of the OE-A.
- Join more than 800 attendees and 75+ exhibitors at LOPE-C 2010.

LOPE-C 2010 includes:
- Business conference
- Main conference
- Exhibition
- Pre-conference seminars

Call for Papers:
Considering participation in the peer-reviewed track?
The regular LOPE-C peer-reviewed conference track are to foster the exposure of scientists and engineers to the international
community and encourage them to present their latest work. This track also includes an interactive session on June 1, 2009,
with poster presentations.

A call for papers will be published on November 16, 2009
Instructions at: www.lope-c.com/callforpapers
Submission deadline for abstracts: January 18, 2010.
www.lope-c.com

Position Available

Business Development's Profile
Printed Electronics

THE COMPANY
Group specializing in Organic Electronics R+D, from the scientific and technological convergence of chemistry and electronics, through printed electronics manufacturing techniques. The group is composed of a public research centre, a university and a technology institute.

BACKGROUND
The Business Development must have skills for personal relationships and relations with institutions. Ability to interpret emerging technologies, from a multidisciplinary perspective, and to structure their application and valorisation, as well as ability to define business development and Group's development strategies with the incorporation of scientific and technological talent. Support to the promotion of strategic research lines for the Group and ability to enhance Group's collaboration with other R & D agents. Preparation of partnership agreements, confidentiality agreements, patents, etc.

RESPONSIBILITIES
• Management in the university and research centres as well as in the related national and international R & D systems (public research organisations, administration, etc.).
• Drawing up of strategy proposals for the technological and business development of the Group.
• Writing reports of potential applications of the Group's R & D proposals.
• Assessment of skills and knowledge of potential researchers.
• Ability for technology transfer of the Group's R & D to client companies.
• Knowledge of the calls for public funds allocated to R & D.
• Knowledge of patent rights and copyright.

Candidate's PROFILE
• Scientific or engineering training: materials, electronics, physics, industrial engineering. PhD would be preferable. Management skills of scientific and technological R & D.
• Work experience: minimum 2 years.

SKILLS
• Good communication skills.
• Proven scientific and technological knowledge in any of the fields of organic electronics (electronic systems, materials chemistry, conductive materials, printing techniques, etc.).
• Languages: English fluent (written and spoken). Knowledge of German is an advantage
• Possibility to travel around Europe for research activities of the European research system (European projects, research centres, conferences, associations, participation in international working groups, etc).

Interested persons should send personal CV to cephis@uab.cat

Two-year post-doctoral position Université Paris Diderot Electrolyte-Gated Organic Field-Effect Biosensors

A post-doctoral position will be available in January 2010 at the University Paris Diderot- Paris 7 within the frame of a 7th PCRD European project. The position is opened for two years. The aim of the project is to develop biosensors with electronic transduction, eventually leading to an amplified response. The sensors will combine a defined bio-probe with an organic field-effect transistor. The structure of the device will consist of a recognition element (antigen, antibody...) placed on top of an organic semiconductor. The candidate will join a dynamic multidisciplinary research team with international expertise in the design, synthesis and characterization of organic materials for organic electronics. His research area will focus on the design and synthesis of new organic semiconductors.
The open position requires a Ph.D. in Organic Chemistry, Materials Science, Chemical Engineering, or a closely related discipline. A solid background in the synthesis and characterization of conjugated polymers is required. Experience in surface modification, biology, electronic devices, and hand-on experience in device fabrication techniques is highly desirable. The successful candidate should be highly motivated, safety conscious, and have outstanding laboratory skills. Excellent oral and written communication skills are required, and a track record of presentations and publication of scientific results in peerreviewed journals is expected. The candidate should have ability to work in a team and interact actively with a broad number of colleagues. Further details can be obtained by e-mailling to one of the contact person below. Applicants should send a detailed CV with a list of publications, and names of references.
• Gilles Horowitz horowitz@univ-paris-diderot.fr Tel: +33 1 5727 5430
• Abderrahim Yassar yassar@univ-paris-diderot.fr Tel: +33 1 5727 7212

The 3rd International Symposium on Flexible Organic Electronics (IS-FOE10)
It will take place at 7-9 July 2010, in Eagles Palace Hotel, Ouranoupolis, Halkidiki, Greece, located on the eastern peninsula "Athos".
The purpose of the Symposium is to bring together scientists and engineers actively engaged in the research, development, and manufacturing for Flexible Organic Electronics including organic/inorganic materials, flexible substrates, manufacturing processes, circuit designs, flexible devices, system integrations and product applications, and to discuss current progresses in this emerging field.
Conference Topics:
• Organic electronic materials (small molecule and polymers)
• Organic Multifunctional materials
• Organic/inorganic and hybrid materials and systems
• Flexible substrates & encapsulation methods & materials
• Molecular electronics and photonics
• Self-organized molecules and systems
• Theory & modeling (materials, components and devices)
• Manufacturing (printing, vacuum, chemical) & quality control processes
• Flexible displays & lighting
• Flexible solar cells & batteries
• Flexible circuits & sensors
• Flexible RFIDs & smart textiles
• Integrated smart systems
Organizing Committee
Chair: S. Logothetidis, LTFN, Greece Co-chairs: G. Malliaras, EMSE, France G. Hadziioannou, LCPO, CNRS, France M. Ando, Hitachi Europe, Ltd., UK K. Hashimoto, University of Tokyo, Japan J. Kallitsis, University of Patras, Greece R. Lazzaroni, University of Mons-Hainaut, Belgium.
Conference Internet Site: http://isfoe.physics.auth.gr

5. How to join the Quadriga Associated Network Member

Offer to become a member of the Quadriga Associated Network on Organic and Large Area Electronics

The Quadriga Project is a joint initiative of the European Commission, the Directorate General of Information Technology & Media and 4 Collaboration Action Projects within the seventh Framework Program: OPERA, PolyNet, PolyMap & Prodi [See also www.quadriga-org.eu]. The main objectives of all four collaborative projects is to foster the position of Europe as a gravitation point in the research of organic & large area electronics, to strengthen the position of Europe as a main hub in this area and ultimately to contribute to the creation of new start-ups and to the creation of knowledge based employment. The previous OLAE newsletters that have been published by the EU are also available on the website. Contributions for the future newsletters are welcome and we will endeavor to include all relevant news submitted.
Here are just a few of the benefits offered:
• You will receive newsletters on the topic area of large area and organic electronics regularly, but at least three times a year;
• You will receive first hand information and participation details about Networking Events organized by the EU;
• You will receive advanced information about Quadriga Workshops on the topic area;
• You will receive preferred registration information about all Quadriga events
Please go to the following at www.quadriga-org.eu/index.php?id=12&lang=EN to register.

6. Upcoming Events

OLAE Finance and Investment Roundtable: Do European SMEs have any future?
(Attached to 5th Global Plastic Electronics Conference & Showcase - see below)
27 October 2009 9.00 -12.00
Maritim Hotel & Conference Centre, Dresden, Germany
The roundtable will provide attendees with the opportunity to discuss the latest and exp
ected future development trends in finance and investment in the field of plastic electronics. A particular objective of the roundtable is to explore alternative survival strategies, such as public-private partnerships, for European start-ups and SMEs.
http://opera-project.eu/subpages/nieuws.php?lang=EN

5th Global Plastic Electronics Conference and Showcase
27, 28 & 29 October 2009
Maritim Hotel & Conference Centre, Dresden, Germany
More information to follow:
http://www.plastic-electronics-europe.com/

OE-A 19th WG Meeting
9-10 November 2009
Leverkusen, Germany
www.oe-a.org

Pre-Standards for oFETs and organic ICs Workshop
10 November 2009 (part of above event)
A workshop on defining pre-standards for oFETs and organic ICs applications will be held within the frame of the oe-a working group meeting in cooperation the European project OPERA in Leverkusen, Germany on Nov. 9th-10th, 2009. The workshop aims at establishing pre-standards for measurement protocols, quality control, and lifetime-testing for oFETs and oICs. The workshop addresses companies as well as research organizations being active in the field of organic & large area electronics (OLAE).
For further details and registration please be referred to http://www.oe-a.org or www.opera-project.eu

SciTech Europe 2009: Innovation Across Europe
Thursday 12 November 2009
The Square, Brussels
http://www.publicserviceevents.co.uk/main/overview.asp?ID=94&dm_i=4HD,1Z51,107FUR,6B3U,1FORUM

Forum be-flexible 2009
25 - 26 November 2009
Fraunhofer IZM, Munich
Thin Semiconductor Devices - Flexible Electronic Systems
10th anniversary of Thin Semiconductor Devices
www.be-flexible.de

Photonics 21 Annunal Meeting
14 - 15 January 2010
Brussels, Belgium
http://cordis.europa.eu/fp7/ict/photonics/concertmeet_en.html

Photonics4Life Traing on Entreprenership in Biophotonics
25 Jaunary 2010
Brussels, Belgium
For more information, please contact: Tom Guldemont, Photonics business developer tguldemo@vub.ac.be Tel: 0032(0)2/629 10 19
http://www.photonics4life.eu/P4L/Events/Photonics4life-intensive-training-on-Entrepreneurship-in-Biophotonics

OPTRO 2010
3 - 5 February 2010
OECD Conference Center, Paris, France
http://www.optro2010.com/

ISOS 2010
International Summit on OPV Stability
Roskilde, Denmark
19 - 23 April 2010
More information to follow - follow new on the OPERA website:
http://opera-project.eu/index.php?id=16&lang=EN

ICOE Summer School
22 - 25 June 2010
Paris, France
(Date saver - more details to follow)

3rd International Symposium on Flexible Organic Electronics (IS-FOE10)
7-9 July 2010
Eagles Palace Hotel, Ouranoupolis, Halkidiki, Greece. (located on the eastern peninsula "Athos".)
http://isfoe.physics.auth.gr/

IS-FOE Summer School
7 - 10 July 2010
Halkidiki, Greece
(Date saver - more details to follow)

The next issue of the Quadriga Newsletter will be released in February/March 2010. If you have any news or wish to have an event included in the “Upcoming Events” section, please email copy to victoria.plompen@plastic-electronics.org before February 16th 2010.
We would like to thank all contributors for their work.

For more information on Quadriga please go to http://www.quadriga-org.eu/

Disclaimer:
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