



THE QUARTERLY EPIC NEWSLETTER FOR OPTICS

EDITORIAL

Paving the Way to the Future for the European Display Industry

With the pre-eminence of a small number of powerful display companies in Asia, and the vast investments they are making in manufacturing infrastructure to enable production on larger and larger substrates with associated reductions in cost, it is tempting to ask the question, 'Is there a future for a European Display Industry'?

It is EPIC's firm belief that the answer to this question is 'yes'. EPIC exists to foster links between European companies engaged in photonics, and to represent their needs to EU policy makers who can make a significant difference in the future positioning of the EU photonics industry of which the display sector represents a significant component.

In CDT's own field of expertise of polymer OLED displays, EPIC members are playing a leading role in developing the core technology as well as the enabling technologies (ranging from the high performance materials to integrated drive circuits) that are essential to commercialise them. Moreover, the simpler fabrication processes and lower plant costs associated with polymer OLED technology lower the barrier to entry to potential display manufacturers from the multi-billion dollar levels that currently characterise the global LCD industry-and are driving its rapid consolidation. This can only assist in opening the field to new entrants who would not otherwise stand a chance of entering the LCD industry.

EPIC has formed an OLED technology working-group to assist CDT and other EPIC members in developing specific recommendations to communicate to EU policy makers. This input will assist the EU in crafting the next generation of collaborative European-funded R&D projects in Framework 7, with themes that will be of considerable benefit and value to those working in the community. EPIC members are also organising an OLED workshop to focus specifically on issues relating to the commercialisation of OLED displays in Europe. This promises to be an exciting event, and we look forward to sharing more details of the workshop in the near future.

EPIC is working to ensure that this burgeoning display industry is more than a flash in the pan but has a sustainable and a bright future.

Jonathan Halls, Cambridge Display Technology

The logo for AIXTRON, featuring the word "AIXTRON" in a stylized, red, italicized sans-serif font.

The logo for C|D|T, featuring the letters "C", "D", and "T" in a blue sans-serif font, separated by vertical bars.

The logo for OSRAM Opto Semiconductors, featuring the word "OSRAM" in a bold, orange sans-serif font, with "Opto Semiconductors" in a smaller, black sans-serif font below it.

The logo for PHILIPS, featuring the word "PHILIPS" in a bold, blue sans-serif font.

The logo for SAGEM, featuring a blue circular icon with a stylized 'S' shape inside, followed by the word "SAGEM" in a bold, blue sans-serif font.



Production: Yole Developpement, Mathieu Quiblier

<http://www.epic-assoc.com>



NEWS

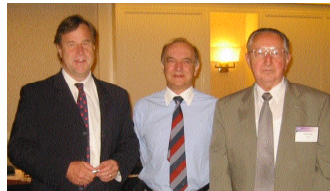
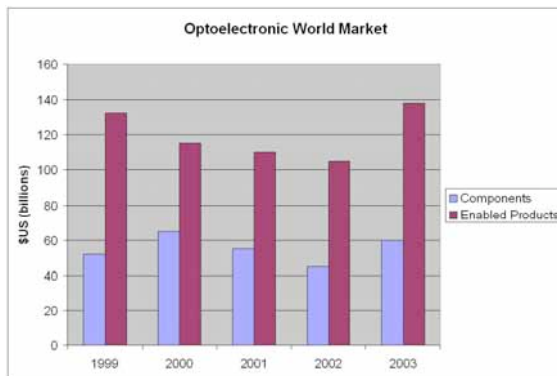
EPIC Joins International Photonics Coalition

<http://www.epic-assoc.com>

EPIC was voted into the International Coalition of Optoelectronics Industry Associations at its annual meeting in Denver Colorado on July 28, 2004. The coalition, known as the ICOIA meets regularly to discuss and exchange information on industrial development in the photonics sector, including market share, national and regional initiatives, and collaborative opportunities. Other members are: OIDA (US), The Australian Optoelectronics Assoc, PIDA (Taiwan), KAPID (Korea), OIDA (Japan), The Photonics Association of Singapore, The Hong Kong Optoelectronics Assoc, OPTEC-Net (Germany), Scottish Optoelectronics Assoc. The ICOIA has been in operation for over 20 years.

EPIC made two presentations at the meeting; one on EPIC activities, and a second on the R&D priorities of the European Commission in the 6th framework programme. In addition, EPIC received market development information for both components and displays from industry associations in Japan where half the photonics market volume is generated, Taiwan, and Korea, where growth is exceptionally high.

According to the OIDA, the world market for optoelectronic components was about \$60 Billion in 2003, with over 60% sales related to flat-panel displays and optical memories.



From left to right: Tom Pearsall, EPIC, Chris Gracie of the SOA, and Arpad Bergh of OIDA during the annual meeting of the ICOIA in Denver, July 28, 2004.

EPIC Welcomes New Members

<http://www.epic-assoc.com>

EPIC welcomes 11 new members to the association since the last edition of the *EPIC NEWS*:

- Albis Optoelectronics	components for communications	(Switzerland)
- CEA-LETI	research and development	(France)
- COM Research Center	research and development	(Denmark)
- Covion Organic Semiconductors	organic and polymer LED materials	(Germany)
- Dow-Corning	materials for photonics	(Belgium)
- Pico-Giga International	solid-state lighting	(France)
- Rohm and Haas	materials for photonics	(UK)
- Süss Microtech	photonic fabrication systems	(Germany)
- Time-bandwidth Products	ultra-fast Laser systems	(Switzerland)
- TriVeCo	consulting in photonics	(Germany)
- University of Wroclaw	research and education	(Poland)

Welcome aboard!

You can find complete contact information for all members on the EPIC website (<http://www.epic-assoc.com>) in the member's page.

EPIC now has 50 members.



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Highwave Optical Technologies Acquires DA LightCom, EPIC member

<http://www.highwave-tech.com/>

Highwave Optical Technologies, a publicly-listed company that makes active fiber-based components for Dense Wavelength Division Multiplexing (DWDM) systems announced today an agreement with the shareholders of DA-LightCom for the acquisition of 100% shares of the company. The all-stock deal is worth about 8.5 million euros. This acquisition brings a badly needed cash infusion 2.5 million euros to Highwave. After the transaction, one or several shareholders of DA-LightCom may own more than one third of the capital of Highwave.

DA-LightCom designs and provides a range of products for high-speed communications. Their cost-effective technology for packaging both photonic and electronic devices in the microwave regime has allowed them to address markets in both communications and defense. Highwave, whose products are focussed on high-capacity telecommunications applications, have suffered from the collapse of this market in 2002. The company has downsized from 1000 employees to fewer than 60 today. This acquisition brings a badly needed cash infusion 2.5 million euros to Highwave, and will broaden their customer base.

Scottish Government Invests 7 Million Euros to Stimulate Photonics Industries

<http://www.scottish-enterprise.com/>

At the end of June, development agency [Scottish Enterprise](http://www.scottish-enterprise.com/) (<http://www.scottish-enterprise.com/>) officially opened an optoelectronics packaging house and incubator called [Optocap Ltd.](http://www.optocap.com/) (<http://www.optocap.com/>) With 7 million euros in funding from government bodies, Optocap is supposed to become self-sustaining after three years. Optocap, created to commercialize intellectual property developed at universities, already has a couple of startups in its incubator. [Conjunct Ltd.](http://www.symington.org/conjunct/index.htm) (<http://www.symington.org/conjunct/index.htm>) is developing an optoelectronics device that will address the inherent deficiencies of electrical buses. [MicroEmissive Displays Ltd.](http://www.microemissive.com/) (<http://www.microemissive.com/>) is developing microdisplays for portable consumer electronic goods.

[Kamelian Ltd.](http://www.kamelian.com/) (<http://www.kamelian.com/>), a vendor of semiconductor optical amplifiers has not fared so well. Although the company is still operational, it is being run by administrators on behalf of creditors. Other Scottish startups that have not survived include Essient Photonics and Terahertz Photonics, both of which shut up shop last year. These startups were spawned after the initial success of Kymata, a manufacturer of Arrayed Waveguide Gratings. During the recession, Kymata cooled off pretty quickly. It was bought by for \$119 million, and then closed along with the rest of Alcatel's Optronics Group. Kymata's technology was saved at the eleventh hour by [Gemfire Corp.](http://www.gemfire.com/) (<http://www.gemfire.com/>).

Northlight Outsources Packaging to Thailand

<http://www.northlightoptronics.se>

Swedish optical components manufacturer and EPIC member Northlight Optronics has signed a three-year volume manufacturing agreement with Fabrinet, a manufacturing services company based in Thailand. Northlight, which produces InP-based laser transmitters, receivers and optical amplifiers, including 10 Gb/s EML and DFB lasers, for applications such as long-haul, metro and high-speed Ethernet. Northlight will continue to undertake epitaxial growth of components, with the module packaging and manufacture of optical sub-assemblies outsourced to Fabrinet. The process transfer is already underway, with Fabrinet expecting to ship products during the current quarter.

"The demand for active components is picking up and we are getting very encouraging feedback from our customers regarding our new TOSA/ROSA platform," said Dirk Sinerius, Northlight's CEO.

Mark Schwartz, Fabrinet's CFO, added: "Fabrinet's skilled engineers, low cost labor force, and broad base of optical manufacturing technologies are attractive to companies seeking an outsourced manufacturing partner. Since formally opening our European office last year, we have seen a substantial growth in our European business."

Cambridge Display Technology Headed for Initial Public Offering

<http://www.cdtitd.co.uk/>

Cambridge Display Technology Ltd. has filed for an initial public offering of shares on the Nasdaq market, through its subsidiary Cambridge Display Technology Inc. The offering is expected to raise about \$40.25 million. For more information, see the CDT registration statement posted on the SEC web site at <http://www.sec.gov>



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Osram Targets Night Vision with Infrared Emitter

<http://www.osram.com/>

EPIC member Osram Opto Semiconductors has produced an infrared emitter that delivers 50 mW at a "normal" chip size. The 0.3 x 0.3 mm device, which emits at 850 nm, has been designed with the automotive and security sectors in mind, for use in applications such as night vision systems. This is because the emission wavelength is ideally suited to illuminating CMOS and CCD light detectors.

The infrared LED exploits Osram's thin-film chip technology, which allows most of the light generated out through the top of the device and reduces loss from the side of the chip.

This means that the light output increases in direct proportion to the surface area of the chip. Osram says that it will present a prototype device at the Electronica show that is nine times the normal size and produces 400 mW at 1 A drive current. In the future, the company plans to offer 1 mm² chips emitting 400 mW in its "Dragon" package. Osram also believes that the light emission can be improved considerably in future device generations. In two years, it says, output will be increased to 70 mW for the standard chip dimensions.

Even at the current output level, Osram claims that the LED produces a record radiant intensity of 700 mW/sr in a 5 mm radial package. As well as providing illumination for CCD and CMOS imagers, the high power and shorter wavelength of the LED could increase the distance over which wireless headphones operate.

Symposium on New Opportunities for Photonics in Europe

<http://www.epic-assoc.com>

EPIC organized and presented this Symposium at the 30th European Conference on Optical Communications in Stockholm, Sweden on 9 September 2004. More than 200 people attended the morning and afternoon sessions.

The Symposium programme was:

- Dr. Graham Cross, Farfield Sensors, United Kingdom
"Commercialization of Optical Waveguide Biosensor Technology"
- M. Jean-Christophe Eloy, Yole Développement, France
"Market Opportunities for Photonic Components and Systems"
- Marina Meliga, Agilent, Italy
"Sources for Plug and Play Components for Datacom and Telecom Applications"
- Thomas P. Pearsall, EPIC, France
"Roadmapping a Durable Photonics Industry in Europe"
- Dr. Torsten Sven Schaal, Daimler-Chrysler AG, Germany
"Optical Communications Inside and Outside the Automobile"
- Dr. Klaus Streubel, Osram Opto Semiconductors GmbH, Germany
"LEDs and Solid-State Lighting"
- Michael Hohenbichler, Information Society Technologies, European Commission
"Photonics Technologies in FP-6 and FP-7"



The symposium emphasized some important economic and technology developments, in particular the need for European industry to be competitive on a world-wide scale, and that long-haul optical communications is no longer a main driver. High-volume low cost manufacturing for broadband access and LEDs for lighting applications were two of the more promising new directions.

Dr. Klaus Streubel, from EPIC member Osram-OS talked about high-brightness LEDs and the prospects for solid-state lighting. Currently the LED world-wide market is \$2.7 billion. The solid state lighting component of this market is \$130 million in 2003. Growth rates are strong, well over 40% per year for the last two years. The biggest challenge is improvement in wall-plug efficiency in terms of lumens per watt. New developments are challenging 100 lumens per watt, the efficiency of fluorescent lighting. The limiting factor is packaging: no surprises there. All the presentations have been recorded on a CD and mailed to EPIC members.



Dr. Klaus Streubel of Osram-OS presented state of the art results on high-brightness LEDs



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The European Commission Reveals More on Content of Call 5

<http://www.cordis.lu/ist>

One of the featured speakers at the EPIC Symposium at ECOC 2004 was Dr. Michael Hohenbichler, newly-appointed programme officer in photonics in the DG-IST. He presented an overview of next year's 5th call of FP-6. His complete presentation has been sent to all EPIC members as a part of the EPIC Symposium CD-ROM. It gives the most complete vision of FP-7 to date, as well as a detailed picture of the 5th call.

According to Hohenbichler the 5th call will emphasize integration technologies, moving toward photonics systems on a chip, and the integration of photonics and electronics technologies. The push is to develop lower cost components and systems for broadband access in particular. This emphasis supports the recommendations made by EPIC members at the May 6 consultation meeting in Brussels.

To prepare FP-7 programmes, the 5th call will also solicit projects integrating photonics and biotechnology, and an increased emphasis on sensors for security.

Funding instruments are Integrated Projects, STREPS, and Coordination Actions. Networks of Excellence will not be considered, also in harmony with EPIC recommendations.

Finally the Commission has explicitly opened the door for specific support actions providing access to components. This will allow EPIC to submit a proposal to support the ACCORD (Advanced Components Cooperation for Optoelectronics Research and Development) programme.

The complete presentation of Hohenbichler can be found on the ECOC 2004 CD-ROM, recently sent to members.



Michael Hohenbichler, IST programme officer, presented encouraging information regarding the photonics programme in IST for the 5th call which will open in May, 2005.

EPIC visits members in the Berlin area

On September 20, 2004, EPIC members in the Berlin area met in the laboratory of Prof. Dieter Bimberg at the Technical University of Berlin to discuss priority actions for the 5th call of FP-6 and also FP-7. The meeting was organized by Bernd Weidner of Optec-BB. Tom Pearsall gave an overview of EPIC and received a number of comments and suggestions for improving the impact of EPIC on the European scene. The attendees were:

Companies and institutes	Attendees
Technical University of Berlin	Prof. Dieter Bimberg Dr. Jürgen Bruns Dr. Heinar Schmidt
Siemens	Dr. Markus Joschko
Heinrich Hertz Institute	Dr. Walter Döldissen Dr. Norbert Grote Dr. Wolfgang Schlaak
NL Semiconductor	Dr. Nikolai Ledentsov
Spectra-Physics	Wolfgang Gries
Optec-BB	Bernd Weidner
EPIC	Dr. Tom Pearsall Dr. Hans Grallert
Fraunhofer-IZM	Dr. Henning Schroeder Dr. Klaus-Dieter Lang
U ² t Photonics	Dr. Andreas Umbach



Hans-Joachim Grallert of EPIC (right) and Henning Schröder of the Fraunhofer-IZM at the Berlin EPIC members meeting.



Wolfgang Gries of Spectra-Physics during the EPIC members meeting in Berlin. Wolfgang Gries is the leader of the Laser Technology Group within EPIC.



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The VDI Announces a Forum: Innovative Lighting with LEDs, 22-23 November

<http://www.vdi.de/>

The VDI (German Society of Engineers) announces a technology forum on Light-Emitting diodes to be held November 22 and 23 at the VDI headquarters in Düsseldorf. EPIC and OPTEC-NET are co-sponsoring this event. The technical programme committee includes EPIC members: Markus Kamp from Global Light Industries and Norbert Stath from Osram. Presentations will be given in German.

The presentations include technologies for both organic and inorganic LEDs. Applications treated include displays, architectural lighting, projection systems, general lighting, and automotive applications. Attendance requires payment of a registration fee. For further information about attending this meeting, please contact:

VDI Wissensforum IWB GmbH

Kundenzentrum

E-mail: <mailto:wissensforum@vdi.de>

Web-site: <http://www.vdi-wissensforum.de>

Telephone: +49 211 62 14 154



The Fraunhofer IWS, EPIC and the European Laser Institute Sponsor Open House in Dresden

http://www.iws.fraunhofer.de/e_welcome.html

The Fraunhofer Institute for Material and Beam Processing in Dresden organized an international Open-house on Tuesday September 21. The use of lasers for manufacturing processes like welding, cutting, hardening, coating, and micro processing is a steadily growing activity. The market volume for these lasers is about 1 billion euros per year, and half the world-wide manufacturing and sales are made by European companies.

Presentations were made in all these areas by the technical team of the Fraunhofer Institute; Overviews were given by Neugebauer of the European Commission, Kaierle of the Fraunhofer European Laser Institute in Aachen (EPI member) and Pearsall of EPIC.

The IWS has produced an excellent CD-ROM of the meeting. This CD-ROM contains both the slides presented and the synchronized audio. If you wish to enquire about obtaining a copy, please contact:

Ms. Julia Ziemer

Fraunhofer Institute for Material and Beam Technology

E-mail: <mailto:julia.ziemer@iws.fraunhofer.de>

Fax: +49 351 2583 300



EPIC General Secretary TP Pearsall emphasized the importance of the European industrial laser industry, a \$1.5 billion world-wide market that is dominated by European designs, manufacturing and marketing.



Udo Klotzbach of the Fraunhofer Institute of Material and Beam Technology in Dresden, and EPIC member, Dr. Klotzbach talked about developments in materials laser microprocessing. The main application is drilling precision holes: nozzles for fuel injection systems, printer heads, and texturing of bio-implants for hip replacement. Dr. Klotzbach showed precision-drilling in steel with a diameter less than 20 microns, and surface roughness much less than 1 micron.



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European Workshop on Photonics in the Automobile: Geneva, 29 November – 1 December

<http://spie.org/conferences/programs/04/epa>

EPIC, Optics Valley and the VDI have organised the first European Workshop on photonics in the automobile. The meeting is being sponsored by the SPIE, and will be held at the World Meteorological Organization, in Geneva, Switzerland.

The introduction of photonic components and systems into the automobile is an extremely attractive opportunity for the photonics community. Photonics opens up a new palette for the car designer, both for the design and placement of exterior lighting, but also for interior lighting and display. Both front headlamps and rear combination lamps can be realized using LEDs. Sensing and navigational control for driving under low-visibility conditions is also possible and promises to usher in a new age of safe and secure automobiles.

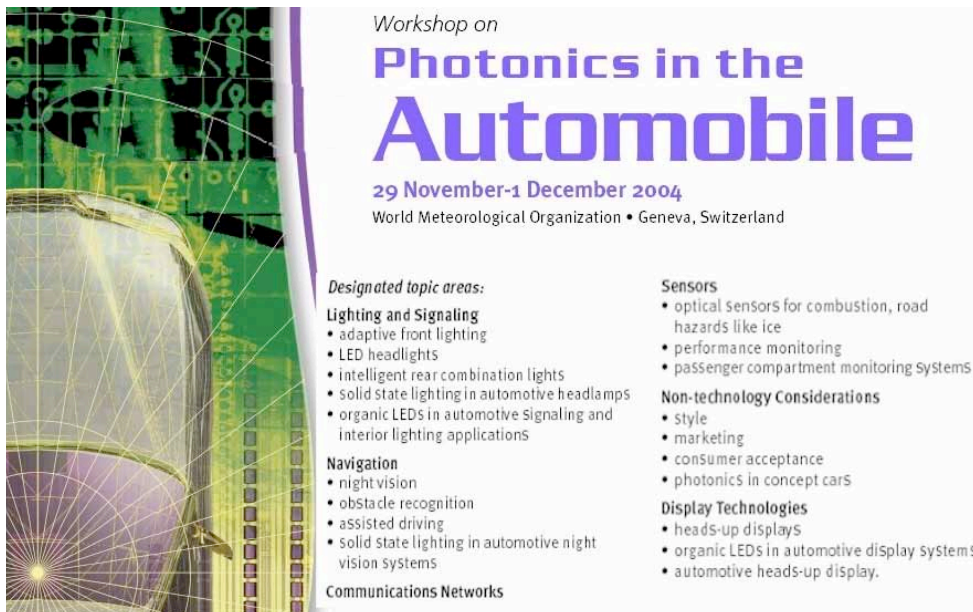
The goal of the workshop is to give you new tools for the introduction of photonic components and systems into the automobile. Attendees will learn about new technologies and applications and will also participate directly in the development of this vision.

On day 1 there will be a review of important issues and technologies. Selected speakers from the automotive industry will speak about the challenges and opportunities. These presentations will alternate with poster presentations of technologies that represent access to the opportunities and solutions to the challenges. There will be several discussion sessions to review and compare the topics and subjects being presented.

On day 2, there will be a presentation of the pre-workshop market study from Yole Developpement. Then, attendees will break-out into focus groups to determine the opportunities, the challenges, the resources needed, and identify where support from European and national R&D programmes could make a difference.

On Day 3, each focus group will present a report to the workshop on its findings.

We look forward to your participation, so please register today!



The poster features a stylized image of a car's front end with green and yellow light patterns overlaid, suggesting advanced lighting or sensor technology. The text is arranged in a clean, professional layout with a mix of bold and regular fonts.

Workshop on
Photonics in the Automobile
29 November-1 December 2004
World Meteorological Organization • Geneva, Switzerland

Designated topic areas:

- Lighting and Signaling**
 - adaptive front lighting
 - LED headlights
 - intelligent rear combination lights
 - Solid State lighting in automotive headlamps
 - organic LEDs in automotive signaling and interior lighting applications
- Navigation**
 - night vision
 - obstacle recognition
 - assisted driving
 - solid state lighting in automotive night vision systems
- Communications Networks**

- Sensors**
 - optical sensors for combustion, road hazards like ice
 - performance monitoring
 - passenger compartment monitoring systems
- Non-technology Considerations**
 - style
 - marketing
 - consumer acceptance
 - photonics in concept cars
- Display Technologies**
 - heads-up displays
 - organic LEDs in automotive display systems
 - automotive heads-up display.



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