



THE QUARTERLY EPIC NEWSLETTER FOR OPTICS

EDITORIAL

Technology innovation has been driven by applications in the defence and military sectors for many years. Today, security in the civilian as well as in the military arena is a prime concern, and is driving both technology innovation and creating high-technology job opportunities.

There are two main market environments for security applications: a market closer to the military tradition where the security of the supplier is essential and a second market closer to a conventional commercial situation where there are many suppliers, and free-market competition between providers helps the consumer. This dual-use of technology brings both economic and technology benefits to customers in both market sectors. Although suppliers in Europe, Asia and the United States are working to deliver products, the market is dominated by the United States because of its sheer size as a single and unified marketplace. The US government tends to manipulate competition in favour of its national industries by using the export license, (intended to keep advanced technology out of the hands of terrorists) as a commercial tool to maintain its advantage in technology on one hand, and to maximise its commercial potential on the other.

The picture of the European situation could be summarised in the following way: each country has its own defence policy. Without exception, national investments in military and security technologies have been decreasing over the last decade. As a result, the size of the industry is in *each European country* now well below the critical mass. Our competitive position relative to that of the United States is somewhat unbalanced. On the other hand, competence in strategic technologies for security is an imperative for each nation. It appears obvious that Europe must represent its 25 nations in order to lead an effective and coordinated policy that encourages industries in the EU to develop capabilities that are necessary to assure the defence and security of the European economic area.

The recent European action (preparatory action and European security research plan) is encouraging, because it represents a first major step in this direction. This specific approach can be extended to a much wider range of strategic technologies (oriented either toward civilian or military markets).

Photonics is one of these strategic technologies to be mastered by Europe, and two areas in particular are good examples where developments in European technology are needed to challenge products being exported by the US: micro-displays and detectors. In these areas (e.g. low-light-level, near-IR detection and high definition O-LED micro displays), more advanced products are being exported from the United States, and this situation causes European systems integrators to get their supplies from the other side of the Atlantic with all the constraints this implies. To avoid being caught in such a critical situation, only a significant co-ordinated effort at the European level could close the technology gap, as been accomplished in other areas such as lighting, integrated circuits, and commercial aircraft.

In conclusion, Europe needs to protect the R&D, Intellectual Property Rights, and its technologies against the rather aggressive policy of the United States. Europe needs to reinforce the positioning of its industry and to setup a co-ordinated effort in R&D policy. Thus, European industries will be able to face a more equitable competitive environment with the United States. By improving the status of researchers in Europe, by creating a full European patent, and then by using the exportation authorisation of such components in equipment and systems as an aggressive commercial tool (co-ordinated between administration and industries), we could reach a situation of symmetric trade and beneficial policy for the whole commercial chain.

Jean-François COUTRIS

SAGEM Executive VP - Director, Optronics & AirLand Systems Division

RIXTRON

C|D|T

OSRAM
Opto Semiconductors

PHILIPS

 **SAGEM**

EPIC
NEWS

Production: Yole Developpement, Mathieu Quiblier

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



European Photonics Industry Consortium

EPIC and the VDI Produce: Photonics in the 21st Century: A strategic white paper for photonics

www.epic-assoc.com/downloads

Under the leadership of EPIC and the VDI (The Society of German Engineers) a coalition of leading players in photonics industries and technologies has written and published a White Paper supporting the need to focus on photonics as a strategic technology for Europe. Initial meetings organised in 2004 served as the starting point for preparing this strategic vision. Contributions have been received by many companies, universities and research institutions. These have been distilled into a 20-page pamphlet that emphasises the importance of the opportunities and challenges facing the European community, and proposing a plan of actions in FP-7 to help enable the European industry capitalize on the opportunities and extends its technology and business leadership in this area.

The companies and institutions that have signed the document recognise these critical needs, and have committed to work together to achieve the recommend actions:

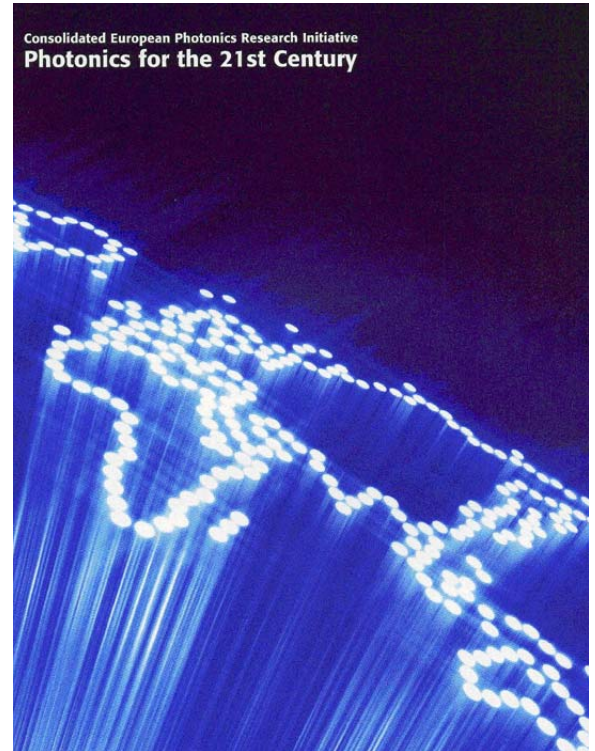
- Supply the necessary research environment capable of supporting the visionary and industrially relevant R&D activities for Photonics components, systems and their application over a broad range of industry sectors;
- Establish strategic links between mainly SME-based Photonics industries and principal user industries to share their long term vision and to mobilise a critical mass of resources;
- Foster co-operation and smooth out the current fragmentation of national and European R&D activities.

The most important recommendation for action is:

- All stakeholders endeavour to put in place a Technology Platform for Photonics to ensure that Europe strives to be a leader at the forefront of the photonics century ahead.

The next challenge is to assure that the White Paper gets read and accepted. EPIC and VDI have scheduled a presentation and discussion with European Commissioners Potonik (for Science and Research) and Reding (Information Society and Media). Additional lobbying events are in the planning.

EPIC members are urged to read, defend and promote the vision paper. We will be happy to send you as many hard copies as you need for this important task. Send us an e-mail with your order information.



Photonics for the 21st Century: leadership for photonics in FP-7

EPIC Materials Technology Group Meets in Cambridge, Develops Workshop Topics

On April 14, 2005 the materials technology group met in Cambridge to plan strategy regarding FP-7, and to develop topics for an EPIC workshop on photonic materials. The meeting was organized and led by Terry Clapp of Dow Corning.

The global interests of Dow Corning include a broad portfolio from silicon to gases. He spoke to specific company interests in polymer waveguides and applications of siloxanes and silanes to the Photonics sector. Dow Corning is targeting the automotive sector with new LED lenses and encap-



Terry Clapp, Dow Corning Research, UK



Andreas Kaluza, Global Light Industries, Germany



Jérôme Charmet, Haute Ecole ARC, Switzerland



Andy Hayden, SAES Getters, UK

substances using high reliability siloxane materials.

SAES-Getters is a leader in advanced solutions for hermetic packages, incorporating getters for water vapor, oxygen and other impurities. In Italy, SAES has strong interests in lithium niobate and tantalate for optical applications in optical harmonic conversion for solid-state lasers, including periodically-poled crystals.

Global Light has a keen interest in finding better packaging techniques for its automotive products. Kaluza cited the LED as an example and indicated that key challenges remain in packaging for the harsh thermal and mechanical environments in the automobile.

The Haute Ecole has developed technology in the field of MEMs as well as a highly novel process that prints functional devices (including waveguides) by ink-jet onto fluid surfaces from which they may be transferred if required. Applications to Lab-on-a-chip appear most attractive.

UMICORE has principal interests in IR optics and applications of germanium materials for passive optics and electronics applications including substrates for GaN LEDs. They use germanium as well as chalcogenides for IR-



David Callejo Muñoz
SAES Getters, Italy



Hans Vercammen,
Umicore, Belgium



Tom Pearsall, EPIC



Professor Harry
Coles, Cambridge
University, UK

Sensors and optics for vision systems. The meeting was hosted by Professor Harry Coles of Cambridge University and Director of the Centre for Molecular Materials in Photonics and Electronics. Professor Coles presented an overview of the work going on in the Centre for Molecular Materials including a presentation on a liquid crystal laser with truly astonishing properties. His presentation can be downloaded on the EPIC site in the members' section.

The timetable for proposing, framing and organising an SPIE workshop was explored. Tom provided a viewpoint that given current actions working towards a date early in 2006 seemed appropriate (probably February). Working back from this: the call would have to come out in August 2005. This means that the working group would have to agree the theme and present the first draft by mid-May. It was agreed that this required that these notes and supporting documents would be made available to the full membership of the working group (including those absent from the meeting) immediately with an appeal to for them to be prompt in responding.

Possible topics were identified

- "Manufacturing Materials and Processes for LED Production"
- "Optics in the CMOS platform: optical functionality and optical interconnects"
- "Bio-photonics and sensors for bio-medical and life-sciences"

Other topics are actively solicited from all Working Group (and other EPIC) Members. Please contact Terry Clapp with your ideas right away.

iSuppli is selected to produce the EPIC OLED workshop report; releases new OLED study

<http://www.isuppli.com>

In preparation for the EPIC OLED Workshop, iSuppli announced the results of its study on the OLED marketplace. Andrew Murray of iSuppli will be helping to lead the working group sessions at the meeting and will lead the production of a custom report for EPIC members on the prospects for development of a robust OLED industry in Europe.

Worldwide OLED panel market revenue expanded to \$408 million in 2004, up 63 percent from \$251 million in 2003, iSuppli estimates. Thirty-one million OLED panels were sold in 2004, nearly double from 16.8 million in 2003. In 2004, 89 percent of OLED panel market revenue was derived from sales to the mobile-phone market. Mobile phones are expected to remain the largest application for OLEDs during this decade.

Amid rapid sales growth for Organic Light-Emitting Diode (OLED) displays, Samsung SDI in 2004 leveraged its

strong presence in the mobile-phone business to take the number-one rank in the global OLED panel market, according to iSuppli Corp. Samsung SDI dominated the OLED market in 2004, with 44 percent of unit sales. The company last year replaced Pioneer of Japan as the leading OLED supplier.

With the rising usage of OLEDs as an alternative to LCDs for mobile-phone displays, the market is expected to grow to \$615 million in 2005, up 50.7 percent from 2004. Unit sales are expected to nearly double again in 2005 to reach 60 million.

Looking to the long term, the OLED market in 2011 is forecast to rise to 341 million units valued at \$2.9 billion. This represents a Compound Annual Growth Rate of 34 percent in units and 29 percent in value from 2005 to 2011.

OLEDs now are being utilized as the main display of phones, as opposed to being purely a secondary display, as has been the case up until recently. Mobile phones also are increasingly using color OLED panels, rather than monochrome.

EPIC and the SPIE Announce the O-LED Workshop in Cambridge, UK 6-7 June 2005.

You are invited to attend a unique workshop that will focus on the business case for a sustainable European OLED industry - set against the backdrop of the present-day LCD flat panel display industry which is dominated by a small number of Asian companies, and an increasing fashion for off-shoring of manufacturing facilities.

Invited speakers will be drawn from a wide variety of backgrounds, including display companies, deposition tool manufacturers, materials developers, and market analysts. The workshop will consist of presentations from invited speakers, poster sessions, and interactive discussion forums.

OLEDs are reaching an exciting and critical point in their commercialisation roadmap, and this workshop will be both timely and highly relevant to individuals and organisations already active in OLED research and development, or wanting to learn more about Europe's current and future role in this emerging technology.

All attendees will participate at the meeting in working groups focussed on key issues. The results of these sessions will form the basis of EPIC's recommendations to the European Commission on initiatives to be pursued in FP-7.

Contributions in the form of Posters are solicited in, but not limited to, the following areas:

- OLED applications and customers
- OLED technology
- product, performance and process roadmaps
- OLED manufacturing processes and equipment
- IP protection, licensing and business models
- OLED materials development and supply
- Enabling technologies (e.g. driver ICs, encapsulation etc).

INVITED SPEAKERS:

Craig Cruickshank, CEO, Cintelliq, Ltd (United Kingdom)

Andrew Murray, Director, Displays Research Europe, iSuppli/Stanford Resources(UK)

Bas van Rens, CEO, OTB-Display (Netherlands)

Eric Maiser, General Manager, German Flat Panel Displays Forum (Germany)

Jan Blochwitz-Nimoth, CTO Novalled (Germany)

Ian Underwood, Director of Strategic Marketing, Micro-Emissive Displays (UK)

Martin Fleuster, PolyLED Development Manager, Philips Corp. (Netherlands)

Bastian Marheineke, Manager Sales and Marketing, OLED Business Unit, AIXTRON (Germany)

Ruediger Sprengard, Manager OLED Development, Merck KGaA (Germany)

Philippe Berger, Manager-Displays Division, ST Microelectronics (France)

Michael Hack, Vice-President of Strategic Product Development, Universal Display Corp. (USA)

Marc Boukerche, IST Programme, European Commission (Belgium)



Innovation doesn't happen in the dark

Workshop on
Building European OLED Infrastructure
The Møller Centre, Cambridge, UK
6-7 June 2005
spie.org/events/eol

Europe is playing a unique and key role in the development of OLED displays and their enabling technologies. Plan to participate in OLED 2005 and work with colleagues to develop these promising new applications.

We welcome your contributions!

 European Photonics Industry Consortium **SPIE Europe**

For information contact Jonathan Halls: jhalls@cdttd.co.uk

EPIC Members Start OLLA: A Project to Advance Lighting with O-LEDs

www.olla-project.org

European companies and research institutions have joined forces for OLLA, a 4-year EUR 20 million integrated project with the goal of producing high-brightness light-emitting tiles based on organic LEDs. These tiles are destined for general-purpose lighting applications.

Five members of EPIC: AIXTRON, Covion, Osram-OS, Philips Lighting and the University of Ghent, are among the 24 participants. Overall project management is assured by Philips Lighting.

Peter Visser, the OLLA project manager, says: "In recent years, O-LED technology has improved to the point where it is now possible to envision O-LEDs as the next solid state light source. In order to make this happen, significant advances must still be made in device efficiency, lifetime at high brightness, high throughput fabrication processes, and the generation of illumination quality white light. That's exactly what we will do in OLLA. We will aim for a lifetime of 10,000 hours – which is 10 times longer than a standard incandescent bulb and an efficiency of 50 lumens per Watt."

Application studies will complement the research efforts to match technology development with consumer interests. A separate work package for training and dissemination will serve as a platform to raise the awareness of lighting designers, architects and end-users about O-LEDs and their possible use in lighting applications. OLLA is one of the world's largest joint research projects on the development of white O-LEDs.



A White O-LED tile: 13 x 13 mm developed by Philips Lighting.

EPIC Welcomes New Members

EPIC welcomes its new members:

- ALSI
- ASML Special Applications
- Center for Nanophotonics – FOM
- Olivetti Ink-Jet.

ALSI, located in the Netherlands specialises in laser separation of integrated circuit chips. ASML is a world-wide leader in advanced precision optical lithography equipment. ASML Special Applications is seeking new technologies and new applications for pattern definition. The FOM Institute of Photonics specialises in the creation of speciality materials by ion-implantation. Recently, they have developed processes for the fabrication of photonic crystal structures and synthesis of silicon nano-crystals. They are located in the Netherlands. Olivetti Ink-Jet is located near Torino in Italy. The application of ink-jet technologies to the fabrication of photonic devices is an important new direction and appears promising for device and circuit fabrication at lower cost and higher volumes.

EPIC Enters Two European Programmes

www.epic-assoc.com

EPIC is a partner in two European proposals that have been retained for funding in FP-6

1. MONA: Merging Optics and Nanotechnologies

Project Summary:

The MONA project is a specific support action that will contribute to the coordination of photonics research in the DG-IST with nanotechnology research in the DG-Research. There are three principal objectives:

1. Create a common site for the exchange of information concerning research, networks of excellence, and integrated projects in photonics and nanotechnologies.
2. Promote the timely exchange of scientific results, market development, and technology needs through MONA-developed workshops.
3. Develop a European roadmap for photonics and nanotechnologies.

Participants:

CEA-LETI	France	EPIC member
IMEC	Belgium	
Acreo	Sweden	EPIC member
Schott	Germany	
Alcatel-Thales III-V LAB	France	
Aixtron	Germany	EPIC member
ASMI	Netherlands	
EPIC	European	
VDI-TZ	Germany	
Optics Valley	France	EPIC member
Yole Développement	France	

The EPIC budget is 168 000 euros, of which 72 800 covers salaries. The project duration is 2 years.

2. OPERA: Optics and Photonics in the European Research Area

Project Summary:

To withstand growing competition from low labour cost countries, there is a need to join forces in industry, research, and politics to meet the needs of photonics industries and to solve their common problems.

The main objective of OPERA is to provide a framework for adequate interaction of European IST-research in photonics and to develop and implement a joint strategy for research and industry in FP-7.

A Key Action, coordinated by EPIC, is to define the focus areas for funding of photonics research in FP-7. EPIC will assure the organisation and animation of two symposia to be held in 2006. One symposium will be held in Eastern Europe, probably Poland and the second symposium will be held in Western Europe, probably Paris.

Other activities are organised to solicit input from participants in European cooperative research programmes.

Participants:

VDI-TZ	Germany	
Enterprise Ireland	Ireland	
IMEC	Belgium	EPIC member



TNO	Netherlands	
Ministry of Science	Slovenia	
iDeTra	Spain	
Optics Valley	France	EPIC member
UK-CPO	UK	
EPIC	European	
European Optical Society	European	

The Epic budget is 88 400 euros, of which 48 000 euros covers salaries. The project duration is 2.5 years

Martine KEIM-PARAY joins EPIC

Keim-paray@epic-assoc.com +331 4505 7263

EPIC has recruited Ms. Martine KEIM-PARAY to join EPIC as a full-time employee starting 2 May 2005. Ms. KEIM-PARAY will contribute to all phases of EPIC operations, but especially to the administration of programme actions and smooth functioning of the EPIC office

Ms. KEIM-PARAY is French by birth and trilingual in English, French, and German, having lived for many years in Germany. She has worked in a number of industry situations, notably with Dynamit-Nobel. Her presence will make a terrific contribution to the productivity of the EPIC association. Call us on the telephone to experience the difference!



Martine Keim-Paray

The European Commission sends to Parliament a EUR 67.8 Billion Budget for the 7th Framework Programme for 2007-2013. Funding is doubled compared to FP-6.

http://europa.eu.int/comm/research/future/index_en.cfm

On 6 April 2005, the European Commission adopted a proposal for a new EU programme for Research. The programme places greater emphasis on the needs of European industry to help it compete internationally. Simpler and easier participation in the programmes will be a priority action. The next step is debate by the Member States (Council) and European Parliament, before a final decision is adopted.

What is the Commission's proposal?

The Commission has put forward an ambitious proposal for the EU Seventh Research Framework Programme 2007-2013 (FP-7). Subtitled "Building the European research area of knowledge for growth". The programme duration is increased from 4 to 6 years. The Commission proposes in particular to double the FP-7 budget compared with FP-6, rising to EUR 67.8 billion over the period 2007-2013. More than half this amount: EUR 39 Billion, will be allocated to cooperative research and development projects. According to the Commission proposal, FP7 will be organised in four specific programmes.

1. Cooperative Research and Development

Objective: to gain European leadership in key areas through co-operation of industry and research institutions. Support will be given to research activities carried out in trans-national cooperation, from collaborative projects and networks to the coordination of national research programmes. Nine themes are identified:

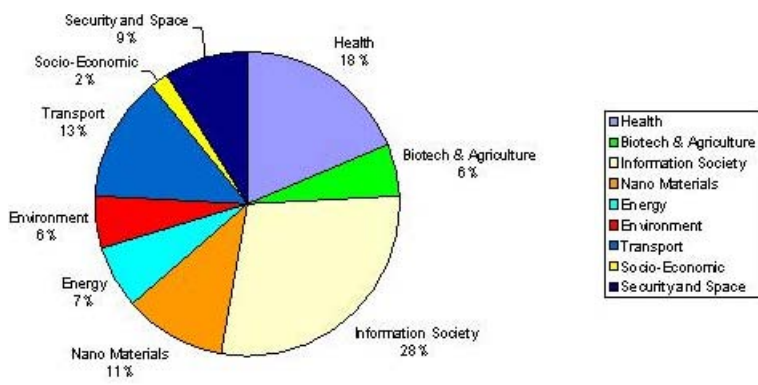
- Health
- Food, agriculture and biotechnology
- Information and communication technologies
- Nanosciences and nanotechnologies, materials and new production technologies
- Energy
- Environment (including climate change)
- Transport (including aeronautics)
- Socio-economic sciences and the humanities
- Security and Space

2. Ideas: Strengthen the excellence of our science base by fostering competition at European level.

3. People: Reinforce career prospects and mobility for our researchers

4. Capacities: Building and renewing the research infrastructure.

A key feature of FP7 will be a significant simplification of its operation. Measures are being considered to make the programme as straightforward as possible for potential participants. The European Commission has established a sounding board composed of representatives of small companies and research teams – groups which seem to face the biggest difficulties in participating in the programme.



Cooperative Research and Development will focus on 9 thematic areas. Information Society will receive the largest share with 28% of the budget or EUR 11 Billion.

The programme will have more focus than in the past on developing research that responds to the needs of European industry, through the work of Technology Platforms and the new “Joint Technology Initiatives”. These will be projects in fields of major European public interest on subjects identified through dialogue with industry, in particular in the European Technology Platforms.

Photonics exhibition Fascination of Light at the European Commission

VDI The Association of German Engineers presented its travelling education exposition: “Fascination of Light” to the European Commission on 12 April 2005. The exhibition features five main themes, such as information, communication and imaging or life science and health care. The exposition was opened by the Director General of the DG Information Society and Media (ISM), Fabio Colasanti, Prof. Wolfgang Sandner from the Max Born Institute in Berlin, Rosalie Zobel Director in the DG ISM and Rudolf Strohmeier the Head of Commissioner Reding’s Cabinet. The hosting of the exhibition by the European Commission highlighted the EPIC –VDI vision paper “Photonics for the 21st Century”. The paper has been endorsed by more than 60 personalities from science and industry, covering 16 European countries.



Tom Pearsall and Rainer Zimmermann at the opening ceremony for the VDI exposition: Fascination of Light. The ceremony was followed by a meeting to plan the next steps in the project to create a Photonics Technology Platform.

T.P. Pearsall was present for the opening ceremonies and met afterward with Rainer Zimmermann, Director of nanoelectronics and photonics research, Prof Sandner and the VDI to plan the next steps in the promotion of the vision paper, and in particular the creation of a Photonics Technology Platform.

The Head of Commissioner Reding’s Cabinet, Rudolf Strohmeier and Director General of the DG Information Society, Fabio Colasanti with Prof. Wolfgang Sandner from the Max Born Institute in Berlin visiting the exhibition.



Modulight lands contract with Tyco electronics for design services of laser diode chips

www.modulight.com

On Mar 7th, 2005- Laser Diode, Incorporated a unit of Tyco Electronics, has engaged Modulight for design services for the development of new laser diode chips. Mr. Mark Schuckert, LDI operations manager for communications components highlights, "Modulight products have shown to be very reliable and consistent in quality. The new products developed by Modulight will open up new and exciting markets. We are very satisfied with Modulight uninterrupted service, rapid response and their true commitment to close co-operation with their customers."

"In all our work with LDI and other Tyco Electronics business units, we have noticed their high quality of operations. Tyco Electronics' LDI unit has a long history in this business. The fact that they have chosen us once again convinces us that we are going the right way. We are very happy to work with Tyco Electronics.," explains Mr. Pekko Sipilä, Modulight product line manager for transmitter lasers.

Modulight, Inc. is an EPIC member. The company designs, manufactures and markets laser diodes for telecom, datacom, CATV, industrial, medical, automotive, space and defense applications. Modulight products include FP and DFB laser diodes with wavelengths between 650 to 1700 nm in laser bar, bare-die/chip, TO-CAN, TOSA and fiber pigtail form. The Company also supplies customized lasers for a variety of applications.

Profitable Aixtron watchful on "stormy" market

www.aixtron.com

After experiencing its "most difficult year ever" in 2003, Aixtron bounced back to profitability in 2004 as revenue soared 55% year-on-year.

On 5 April 2005, MOCVD equipment supplier Aixtron announced a return to profitability after posting 2004 sales of EUR 140 million (\$180 million). That represents a 55% improvement on the 2003 revenue figure, which was carried through to the bottom line as the Aachen, Germany, company posted a profit of EUR 7.1 million.

In 2003, which Aixtron had described as the "most difficult in its 20-year history", the company made a loss of EUR 17.8 million. The burgeoning LED market was largely responsible for the improvement, with the sector accounting for 81% of equipment dispatched in 2004. In 2003, the equivalent figure was 74%.

The outlook appears positive as well, with orders up 40% on the previous year, while the company claims to be maintaining its sales prices and taking market share from its competitors. As well as being upbeat on the prospects for the newly-acquired Genus division, Aixtron says that the emerging application for LEDs being used to backlight large displays and the next-generation DVD market will benefit the company in the near future.



Speaking in Xiamen, China at the International Forum on Solid-State Lighting, Bernd Schulte, Aixtron COO and President of EPIC emphasised the importance of MO-CVD technology in the progress toward industrialisation of LEDs for lighting. Aixtron has more than 70% market share of MO-CVD sales in China.

Bookham signs \$50 million Nortel deal

www.bookham.com

On 4 April 2005 Bookham Technology, member of EPIC, announced a supply arrangement with Nortel for a \$50 million contract for soon-to-be-discontinued components produced at its Paignton, UK, facility.

Nortel's twelve-month order will extend the lifetime of Bookham's Paignton site in the UK, where these products are to be made. The contract cannot be fulfilled with current inventory, and so additional component manufacture will take place at the facility. The agreement will also see Bookham sell components at slightly higher prices than under the previous Nortel deal.

Investors reacted positively to the deal, and Bookham's share price nearly doubled on March 30, closing at \$3.19.

Photonics in the Automobile Report is Published

EPIC and Yole Développement have published a joint market report on photonics in the automobile. This report analyzes the size and the timing of opportunities for photonics systems in the 6 major applications areas for the automotive market:

- Front Lighting
- Rear Combination Lighting
- Interior Lighting
- Displays
- Adaptive Cruise Control
- Sensors and Controls

The report is based on interviews with industry specialists, on discussions and debates at the Workshop on Photonics in the Automobile, held last December, and on synthesis of existing market information for both the LED and automotive sectors. Through this approach, the report contains a significant amount of information and analysis not available elsewhere. The report has been distributed to all EPIC members as part of the membership agreement.

The report is available for purchase by non-members of EPIC. Revenues from these sales will help to cover the cost of preparation of the report, will help fund future EPIC activities.

OPTO AUTO



European Photonics Industry Consortium

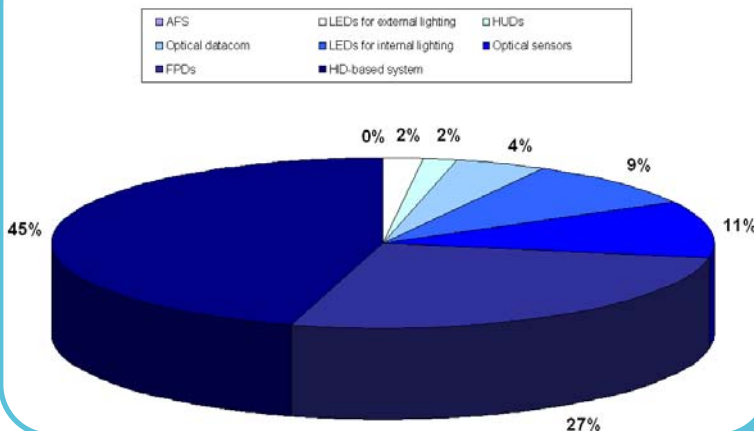


Photonics in the automobile



YOLE DÉVELOPPEMENT

2003 Market for Photonics in the Automobile



Price: EURO 2,450/US\$ 2,950

Yole Développement and EPIC are jointly presenting a new report on Photonics in the automobile. This report is analysing the technologies, the current and future applications of photonics in cars, market trends and forecasts, SWOT... Today, photonic devices are already used in cars e.g. LEDs for brake or interior lighting or backlighting, optical sensors like for rain detection or for automatic wipers...

Four different application fields of car photonics are tackled in the report:

1. Lighting (rear & front lighting and interior illumination)
2. Display (TFT LCD, OLED...)
3. Optical data communication (PCS, protocols...)
4. Optical sensors (night vision, adaptive cruise control, safety sensors...)

In the future, photonics will enable the marketing of new functions in cars and make them more secure, more fuel-efficient and with improved designs. Photonics is an answer to today's automotive challenges... but optics integration is also challenging.

Contact: David Jourdan, Tel: +33 472 83 01 90, Email: jourdan@yole.fr, website: www.yole.fr