Technical Programme

EPIC/SPiE Europe
Manufacturing LEDs for Lighting and Displays

10–11 September 2007
Conference Centre Adlershof
Berlin, Germany

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Lithography
Packaging
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Cooperating Organizations
Participate in this two-day workshop and help bring high-brightness LED lighting into the mainstream

You are invited to present your research in this unique interactive forum for developers, material and equipment manufacturers, users, analysts and investors in the burgeoning high-brightness LED market.

Take the opportunity to work with the panel of distinguished invited speakers, listed below, from the LED industry to help establish a viable high-brightness LED market in Europe

Thomas Pearsall, EPIC, Workshop Chair

Register Today! Prices go up €75 after 6 September 2007

Opening Presentation
Date: Monday 10 September
Time: 09.30 - 09.45
Location: Bunsen Saal

Issues and solutions: opportunities for European LED manufacturers
Paper 6797-01
Author(s): Thomas P. Pearsall, European Photonics Industry Consortium (France)
SESSION 1: Markets and Applications

Date: Monday 10 September
Time: 09.45 - 11.00
Location: Bunsen Saal
Session Chair: Eric Vanlathem, Dow Corning Corp. (Belgium)

09.45: Markets and technology needs for UHB-LEDs (Invited Paper)
Paper 6797-02
Author(s): Philippe Roussel, Yole Développement (France)

10.10: LEDs in automotive lighting and signaling: a customer point of view (Invited Paper)
Paper 6797-03
Author(s): Stephan Berlitz, AUDI AG (Germany)

10.35: A customer viewpoint on LEDs and lasers for displays (Invited Paper)
Paper 6797-04
Author(s): Patrick R. Vandenberghe, Barco N.V. (Belgium)

POSTERS—Monday

Date: Monday 10 September
Time: 11.00 - 12.00 · Location: Bunsen Saal

All registered workshop attendees are invited to attend the interactive poster session. Posters will be on display after 10.00 Monday morning in the Conference Area Hallway. An interactive poster sessions with authors present will be held on Monday 11.00 to 12.00 and 16.45 to 17.45. Light refreshments will be served.

A silicon wafer packaging solution for HB-LEDs
Paper 6797-14
Author(s): Tom E. Murphy, Hymite GmbH (Germany)

Phosphor-converted high-power LEDs
Paper 6797-15

Advances in MOCVD production tools for SSL
Paper 6797-16
Author(s): Frank Schulte, Kai Christiansen, Rainer Beccard, Bernd Schineller, Michael Heuken, AIXTRON AG (Germany)

Comparison of different LED Packages
Paper 6797-17
Author(s): Henning Dieter, Christian Miesen, Dirk Pütter, Bernhard Bachl, Vossloh-Schwabe Optoelectronic (Germany)

Low-cost plated ohmic contacts to p-type GaN
Paper 6797-18
Author(s): Liam Lewis, Declan Casey, Pleun Maaskant, James F. Rohan, Mahbub Akhter, Tyndall National Institute (Ireland)

Thermal improved packaging of UHB LEDs
Paper 6797-19
Author(s): Hermann Oppermann, Rafael C. Jordan, Bernhard Wunderle, Fraunhofer-Institut für Zuverlässigkeit und Mikrointegration (Germany)

Converter film technology for homogeneous white-light LEDs
Paper 6797-20
Author(s): Rafael C. Jordan, Jörg Bauer, Hermann Oppermann, Fraunhofer-Institut für Zuverlässigkeit und Mikrointegration (Germany)

Sacrificial ZnO template approach for chemical lift-off of GaN from c-Al2O3 substrates
Paper 6797-21
Author(s): David Rogers, Ferechteh H. Tehrani, Nanovation SARL (France); Abdallah Ougazzaden, Georgia Tech Lorraine (France); L. Divay, Univ. de Technologie de Troyes (France); T. Moudakir, Ctr. National de la Recherche Scientifique (France); T. Aggerstam, Kungliga Tekniska Högskolan (Sweden); D. McGrouther, J. N. Chapman, Univ. of Glasgow (United Kingdom)

Improvement of ultra-high brightness white LEDs
Paper 6797-22
Author(s): Tanja Mesli, Global Light Industries GmbH (Germany)

Enhanced efficiency of near-UV emitting LEDs for solid state lighting applications
Paper 6797-23
Author(s): Dandan Zhu, Univ. of Cambridge (United Kingdom); Brian Corbett, Tyndall National Institute (Ireland); Clifford McAleese, Menno J. Kappers, Univ. of Cambridge (United Kingdom); Pleun Maaskant, Brendan J. Roycroft, Mahbub Akhter, Tyndall National Institute (Ireland); Colin J. Humphreys, Univ. of Cambridge (United Kingdom)

Semiconductor nanowires for solid state lighting : simulation, epitaxy, integration, optical and electrical characterization
Paper 6797-24
POSTERS—Monday (continued)

Analysis of accelerated life test and failure-mode watt-class bared-LEDs chip using Weibull-based statistical models
Paper 6797-25
Author(s): Seung Hyun Park, Sue-Hyun Lim, Nam Hwang, Yongick Cho, Young-Moo Yu, Korea Photonics Technology Institute (South Korea); Seung-Ju Park, Gwangju Institute of Science and Technology (South Korea)

Thermal analysis of wafer-level LED packages with multichips
Paper 6797-26
Author(s): Jeung-Mo Kang, Jae-Wan Choi, Jae-Wook Kim, Jeong-Hyeon Choi, Du-Hyun Kim, Geun-Ho Kim, Yong-Seon Song, Yu-Ho Won, Jeong-Soo Lee, LG Electronics Inc. (South Korea)

Optical and structural characteristics of high-performance InGaN/GaN multiple quantum well light-emitting diodes
Paper 6797-27
Author(s): Zhe-Chuan Feng, National Taiwan Univ. (Taiwan)

Effect of ambient temperature on performance for LED lamp
Paper 6797-28
Author(s): Yongick Cho, Korea Photonics Technology Institute (South Korea)

A luminance-regulated serial/parallel white LED driver based on boost converter
Paper 6797-29
Author(s): Xin Liu, Shuxu Guo, Yuchun Chang, Bin Sheng, Guotong Du, Jilin Univ. (China)

Enhancement of external quantum efficiency of LEDs by fabricating photonic crystal in ITO p-contact layer
Paper 6797-30
Author(s): H. Lin, X. Zhang, S. Liu, X. Ren, Xiamen Univ. (China)

Synthesis and luminous characteristics of Ba$_2$MgSi$_2$-xAl$_x$O$_8$:0.1Eu$^{2+}$, 0.1Mn$^{2+}$ phosphor for WLED
Paper 6797-31
Author(s): Changyu Shen, Yi Yang, China Jiliang Univ. (China)

The lifetime measurement of 1W GaN light-emitting diodes
Paper 6797-32
Author(s): WeiLing Guo, Beijing Univ. of Technology (China)

Lunch Break 12:00 - 13:30

SESSION 2: Manufacturing Challenges
Date: Monday 10 September
Time: 13:30 - 15:10 • Location: Bunsen Saal
Session Chair: Gary Colquhoun, SPIE Europe Ltd. (United Kingdom)

13.30: Challenges and opportunities for high-volume manufacturing of UHB LEDs
(Invited Paper)
Paper 6797-05
Author(s): Mathias P. Viegers, Philips Applied Technologies (Netherlands)

13.30: Binning: Why is it there and what challenges does it present? (Invited Paper)
Paper 6797-06
Author(s): Wim Braber, Future Electronics (United Kingdom)

14.20: Challenges in packaging for thermal and optical management (Invited Paper)
Paper 6797-07
Author(s): Andreas Kaluza, Global Light Industries GmbH (Germany)

14.45: Packaging of high-power density LEDs: challenges for thermal and optical management (Invited Paper)
Paper 6797-08
Author(s): Siegmund Koblikke, Perkin Elmer Elcos GmbH (Germany)
SESSION 3: Phosphors and Displays
Date: Monday 10 September
Time: 15:30 - 16:45 • Location: Bunsen Saal
Session Chair: Hermann Oppermann, Fraunhofer-Institut für Zuverlässigkeit und Mikrointegration (Germany)

15.30: Advanced LED phosphor materials (Invited Paper)
Paper 6797-09
Author(s): Holger Winkler, Merck KGaA (Germany)

15.55: Advantages and issues for photonic quasi crystal LEDs in large-panel back-light unit applications (Invited Paper)
Paper 6797-10
Author(s): Martin D. B. Charlton, Mesophotonics Ltd. (United Kingdom)

16.20: Nonlinear conversion of lasers with periodically poled materials for RGB (Invited Paper)
Paper 6797-11
Author(s): Peter Smith, Stratophase Ltd. (United Kingdom)

POSTERS—Monday
Date: Monday 10 September
Time: 16.45 - 17.45

All registered workshop attendees are invited to attend the interactive poster session. Posters will be on display after 10.00 Monday morning in the Conference Area Hallway. An interactive poster sessions with authors present will be held on Monday 11.00 to 12.00 and 16.45 to 17.45. Light refreshments will be served.

SESSION 4: LED Lighting Products
Date: Monday 10 September
Time: 17.45 - 18.35 • Location: Bunsen Saal
Session Chair: Philippe Roussel, Yole Développement (France)

17.45: High-performance LED lamps for the automobile: needs and opportunities (Invited Paper)
Paper 6797-12
Author(s): Wolfgang Pohlmann, Thomas Vieregge, Martin Rode, Hella KGaA Hueck & Co. (Germany)

18.10: GaInN LEDs: straight way for solid state lighting (Invited Paper)
Paper 6797-13
Author(s): Ulrich Zehnder, Berthold Hahn, Johannes Baur, Stefan Bader, H. J. Lugauer, Andreas Weimar, OSRAM Opto Semiconductors GmbH (Germany)

Welcome Reception
Monday 10 September 19.15 to 22.00
Please join us for the informal workshop get-together in the historical city of Berlin.
19.00: Departure for reception
19.15-22.00: Welcome Reception
LED Manufacturing Workshops
Time: 09.00 - 16.30
Introduction: 9.00 to 9.10
Thomas Pearsall, European Photonics Industry Consortium (France)

9.10 to 9.30: Opening Presentation
Philippe Roussel, Yole Développement (France)

9:30 to 12:30: Workshops
10.00 to 10.30: Coffee Break

Break-out Sessions
The following sessions will provide an exciting opportunity for every participant to play an active role in developing LED Manufacturing in Europe. The workshop will be divided into five break-out groups, each focusing on a specific area:

Break-out Group 1
Topic: How to make money with LEDs that have a nearly infinite lifetime?

Break-out Group 2
Topic: What are the key LED patents you need to access in order to stay long term in the business?

Break-out Group 3
Topic: Will warm white SSL come from RGB or blue LED + phosphors?

Break-out Group 4
Topic: What light source for MEMS-based light engines (ie projection display) LED or LD?

Break-out Group 5
Topic: Binning: Is this part of realistic mass manufacturing? Binning for power, binning for color... etc.

13.00 to 14.00: Lunch Break

14.00 to 15.15: Presentations from Groups
14.00 to 14.15: What are the Key Patents?
14.15 to 14.30: Will Warm white be RGB or blue + phosphors?
14.30 to 14.45: What Light source for MEMS based Light Engines
14.45 to 15.00: Binning: part of mass manufacturing?
15.00 to 15.15: How to make money with long-lifetime LEDs
15.15 to 15.40: Coffee Break
15.40 to 16.30: Discussion
16.30: Closing Remarks
Thomas P. Pearsall, European Photonics Industry Consortium (France)
The SPIE Europe/EPIC Workshop on “Manufacturing LEDs for Lighting and Displays 2007” takes place in the event rooms of Berlin Adlershof. The main entrance is off Rudower Chaussee 17. The Conference Centre is part of the Technology Park Berlin Adlershof, an area known today as the “City of Science, Technology and Media, which used to be the Johannisthal airbase. Germany’s first motorized aircraft took off from here at the beginning of the 20th century. After World War II, the airport was closed and three institutions took over the area, amongst them the East German Academy of Science. Following the German reunification in 1990, the State of Berlin took over the area in 1991 and through consecutive investments turned it into the prosperous conglomeration of research institutes, university laboratories and companies that it is today. In addition to the six institutes of the Humboldt University and other twelve facilities of research, there are more than 370 companies working together, who mainly concentrate on physics, chemistry and biology. Since 1998, this is also the home of BESSY II, the High-luminosity radiant source. For further information on the city of science and the venue of this event, please see www.adlershof.de.

Catering
Coffee Breaks and lunches will take place in front of the main conference room. For times, please see the conference programme. Poster Reception and the Event Get Together are included in the registration fees.

SPIE Europe Onsite Services
SPIE Europe will have on display a range of scholarly books, tutorials, proceedings, and CD-ROMs for professionals and educators in the fields of optics, photonics and imaging. Browse the newest SPIE publications, and take advantage of special meeting prices for ordering publications, extend your membership, pick up one of our educational posters free of charge, or obtain further information on the SPIE Digital Library.

Audiovisual Information for Speakers
The plenary room will have a computer available. Authors are requested to bring their oral presentation on portable media, i.e. flash-disk or CD.

Registration Counter
The SPIE Europe registration counter and chair check-in desk are located outside the plenary room.

SPIE Digital Library
All paper presentations from SPIE Europe/EPIC Workshop on Manufacturing LEDs for Lighting and Display 2007 will be available in the Digital Library. For further information on pricing packages or how to subscribe, please visit the Digital Library website.

Visa/Passport Information
A valid passport is required. Entry clearance requirements are dependent on the citizenship of the applicant. Citizens of many countries (including EU member countries and the USA) do not need a visa to visit Germany for stays of up to 90 days. Please check the visa requirement list if you are not sure whether or not you need a visa.

Audio/Video/Digital Recording Policy
Due to copyright restrictions, no recordings of any kind are permitted without prior written consent of the presenter in any conference session, short course or poster sessions. Consent forms are available at the SPIE Europe Registration Desk and anyone wishing to record must have a written consent form signed and filed for each presenter being recorded. Individuals not complying with this policy will be asked to leave a given session and asked to surrender their film or recording media.

Refunds
There is a €35 service charge for processing refunds. A letter requesting the refund should state the registrant’s name and to whom the check should be made payable. Requests for preregistration refunds must be received no later than 7 business days prior to the first day of the meeting to be honored. SPIE Membership dues and SPIE Digital Library subscriptions are not refundable.

Laser Safety Policy
SPIE supplies tested and safety approved laser pointers for all conference meeting rooms, and for short course rooms if instructors request one. For safety reasons, SPIE requests that presenters use the laser pointers provided in each meeting room. Use of a personal laser pointer at an SPIE event represents user’s acceptance of liability for use of a non-SPIE supplied laser pointer device. Misuse of any laser pointer could lead to eye damage.
Tourist Information

Berlin has come full circle, from being the seat of the German Royalty, then the government, and the stage for many a historic event to being a symbol for the Free World during the Cold War period to again becoming the capital of the now re-united Federal Republic of Germany. This chequered history is reflected in its atmosphere, its people, its buildings, its monuments, in short, the entire city who will all offer the traveller a warm and vibrant welcome. For further information on sightseeing and tourist information, please see the Berlin Tourism website:


Travel to Berlin

By Plane

Berlin features three airports (Tegel, Tempelhof, and Schönefeld) of which Berlin-Schönefeld is the airport closest to the venue, Tegel the furthest. Berlin-Adlershof is about 6km away from this airport and can be reached by public transport or taxi.

By Train

Berlin is well-connected through the Inter-German Inter-city system. Every day, some 1100 long-distance, regional and rapid transit trains call at the 14 platforms on two different levels.

For further information on connections and pricing, please visit the Station’s website:


Public Transportation

Berlin features an extensive public transport system, combining the Underground, buses and tram system seamlessly. For further information, please

The local DLR institute offers you the option to find your way to Berlin-Adlershof with the help of their city-router software:


Coming from the “Berliner Ring” (A100)
• At the Schönefelder Cross carry on to the A 113 in direction of the airport Schönefeld
• Exit Junction Trepтов (Federal Road number 96a) heading towards the City Centre.
• At the S-Bahn Station Adlershof turn left into the Rudower Chaussee

Coming from the City Motorway
• City Motorway heading South (towards Airport Schönefeld)
• Exit Adlershof

From the City Centre (Alexanderplatz)
• Follow Federal Road number 96a heading towards Airport Schönefeld
• At the S-Bahn Station Adlershof turn right into Rudower Chaussee.

Hotel Accommodations

SPIE Europe has arranged a number of hotel room blocks in hotels in the vicinity of the venue. Please note the reservation deadlines and contact the hotels directly to make your booking, referencing “ELD2007” throughout to obtain the best possible pricing. After the reservation deadlines, all unsold rooms will go back to the respective hotels and the prices may increase.

<table>
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<th>Cat.</th>
<th>Hotel Name Address</th>
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<tr>
<td>4*</td>
<td>Michels Hotel am Schloß Köpenick (Best Western) Grünauer Straße 17-21 12557 Berlin</td>
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<td>€ 58.00</td>
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<td>24 August 2007</td>
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<tr>
<td>4*</td>
<td>Aparthotel an der Spree Weiskopffstr. 16-17 12459 Berlin</td>
<td>Tel: +49-30-5300500 Fax: +49-30-53005066 <a href="mailto:info@spreapart.de">info@spreapart.de</a></td>
<td>€ 95.00</td>
<td>ELD2007</td>
<td>10 August 2007</td>
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<tr>
<td>4*</td>
<td>Berolina Airport Radickerstr. 76 124890 Berlin</td>
<td>Tel: +49-30-670955 Tel: +49-30-6709522 Fax: +49-30-67095222 <a href="mailto:airport@berolinahotels.de">airport@berolinahotels.de</a></td>
<td>€ 65.00</td>
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<td>3*</td>
<td>Hotel Alter Markt Alter Markt 11A 12555 Berlin</td>
<td>Tel: +49-30-65488011 Fax: +49-30-65488011 <a href="mailto:info@hotel-alter-markt.de">info@hotel-alter-markt.de</a></td>
<td>€ 48.00</td>
<td>ELD2007</td>
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Preregistration for EPIC/SPIE Europe Manufacturing LEDs for Lighting and Displays 2007
10–11 September 2007
Berlin, Germany

German VAT number: 25/246/80120

Register online: spie.org/eld

Mail or fax this form with payment:
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Register and Pay Today!
After 6 September 2007, Fees increase €75
PLUS you must register onsite. Student fees increase €50

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Full conference registration includes: conference dinner and lunch, one Proceedings volume, admittance to all conferences, coffee/tea breaks. (Proceedings included as part of the registration plan include tax and shipping.)

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Full meeting plus one proceedings volume Member €545 €605
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☑ Guest Dinner Tickets  ☐ I will be attending the LED Manufacturing Workshop Tuesday 11 September.
(See online programme for details). I wish to join the following breakout sessions:

☐ Breakout Session 1 ☐ Breakout Session 2 ☐ Breakout Session 3
☐ Breakout Session 4 ☐ Breakout Session 5

Payment Method (Please read carefully)
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