

# **8th International Symposium on the Science and Technology of Light Sources**

Greifswald, Germany  
30 August – 3 September 1998

ISBN: 978-1-5108-4112-3

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Foundation for the Advancement of the Science & Technology of Light Sources  
FAST-LS  
Belmayne House  
99 Clarkehouse Road  
Sheffield, United Kingdom  
S10 2LN

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INVITED LECTURES (IL)

| <u>No</u> | <u>Topic</u> | <u>Title</u>  |
|-----------|--------------|---|
| 01        | Experim.     | Exotic Gas Discharges (not printed)<br>Alfred Rutscher (Greifswald)   |
| 02        | A            | Endura: A New High Output Electrodeless Fluorescent Light Source<br>Valery <u>Godyak</u> , Jack Shaffer (Osram Sylvania, Beverly)   |
| 03        | A            | Mercury Reduction in TL Fluorescent Lamps<br>Manuel Oomen (Philips Lighting Company, Fairmont)  |
| 04        | C            | Modeling the breakdown and glow phases of HID lamp ignition<br>Leanne C. Pitchford (CPAT, Toulouse)   |
| 05        | C            | Ultra High Performance Discharge Lamps for Projection TV Systems<br>Ernst Fischer (Philips Research, Aachen)  |
| 06        | F            | Diagnostics and Modeling of Micro-Discharge for PDP's and Other Applications<br>Kunihide Tachibana (Kyoto University)   |
| 07        | E            | Dielectric Barrier Discharge<br>Frank <u>Vollkommer</u> , Lothar Hitzschke (Osram, Munich)  |
| 08        | G            | Advances in Fiber Optics: Fiber Applications Move into the Mainstream<br>John M. <u>Davenport</u> (GEL, Cleveland), W.J. Cassarly (Optical Research Associates)                                   |
| 09        | M            | Basic Aspects of the Plasma Modelling of Excimer Lamps<br>Detlef <u>Loffhagen</u> , Rolf Winkler (INP, Greifswald)  |
| 10        | Special      | Performance and Applications of High-Brightness InGaN-LED<br>Kanji Bando (Nichia Chemical Industries, Ananishi)   |
| 11        | H            | Dimming of Fluorescent Lamps without Flicker or Striations Using Electronic Ballasts of Special Design (paper until printing not received)<br>Pekka Hakkarainen (Lutron Electronics, Coopersburg) |
| 12        | D            | High-Power Excimer Sources<br>Erich <u>Arnold</u> , Ralf Dreiskemper, Silke Reber (Heraeus Noblelight, Hanau)   |
| 13        | C            | Inductively Coupled Electrode-less HID Lamp System<br>Akihiro Inouye (Toshiba Lighting and Technology, Yokosuka)  |
| 14        | K            | Improved Envelope Materials Impact Environmental and Lighting Performance<br>William H. Rhodes (Osram Sylvania, Beverly)  |
| 15        | General      | Lighting and Seeing, the Difference between Night and Day<br>Mark S. Rea (Rensselaer Polytechnic Institute, Troy)   |

LANDMARK LECTURES (LL)

| <u>No</u> | <u>Topic</u> | <u>Title</u>  |
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| 01        | I            | Existing State and Future Prospect of Lighting Education of Light Sources and its Related Technologies in University<br>T. Yamaya |
| 02        | A            | Mercury Consumption Reduction in Fluorescent Lamps<br>K. Matsuo   |
| 03        | C            | Light Sources for Video Projection<br>H. Mönch  |
| 04        | C            | The Evolution of Low Wattage Metal Halide Lamps with Ceramic Arc tubes<br>S. Mucklejohn   |
| 05        | C            | A Further Step to a Complete Description of the High-Pressure Discharge in Mercury<br>H. Hess                                     |
| 06        | C            | Modelling the Spectrum of a S <sub>2</sub> High Pressure Discharge<br>A. Körber   |
| 07        | K            | Enhancement of Rare Earth Metals by Chemical Vapour Transport in Metal Halide Lamps<br>K. Hilpert                                 |
| 08        | F            | High-Luminance, High-Efficiency, and Simple-Structured Flat Discharge Lamp for LCD Backlightings<br>T. Shiga                      |
| 09        | M            | Modelling of High Pressure Discharge Lamps Including Electrodes<br>P. Flesch  |
| 10        | G            | Barium Glow Discharges for Lighting Applications<br>J. Lawler   |
| 11        | M            | Non-LTE Modelling of Arc Column of High Pressure Sodium Discharge Lamps<br>S. Hollo   |
| 12        | M            | Modeling of High Intensity Discharge Lamps<br>T. Krücken  |
| 13        | H            | Modelling of Fluorescent Lamps for Power Supply Design<br>T. Vos  |
| 14        | K            | New Materials and New Structure for Hot Cathodes<br>M. Hamada   |
| 15        | K            | Wall Blackening in Metal Halide Lamps Containing Rare-Earth Bromides<br>W. van Erk  |

**Contributed Posters (according to the list of topics)**

- A01 Modeling of 2-mm ID fluorescent lamps  
J.F. Waymouth
- A02 Preheating characteristics of a fluorescent lamp cathode  
M. Myojo, A. Waki
- A03 On the chemical processes in Zr-containing fluorescent tube emission mix  
F. Nagel, C. Flury
- A04 Neon (mercury free) fluorescent lamp with amber colour  
C. Roozekrans, F. Ligthart, J. Geboers
- A05 Technical issues for designing the electronic compact fluorescent lamp with a diffusive glass globe  
T. Yasuda, T. Tanaka, K. Nishio, M. Izumi
- A06 A long life induction lamp with high lumen output  
J. Gielen, P. Antonis, H. Verhaar
- A07 Mercury consumption reduction in fluorescent lamps (see LL02)  
K. Matsuo, T. Atagi, Y. Ikai
- A08 The influence of the inert gas on 253.7 nm UV efficiency in CFL  
S. Zhu, Y. Liu, Z. Sun
- A09 Evaporation characteristics of Zn-Hg fluorescent lamp doses by thermogravimetric analysis  
T.R. Brumleve, S.C. Hansen, P.W. Lehigh, D.A. Stafford, K.S. Wilcox
- A10 The influence of current wave crest ratio on the fluorescent light life  
X. Yu
- A11 Variable color temperature fluorescent lamp  
J. Ravi, J. Maya
- A12 Plasma conductivity estimation in inductively coupled electrodeless discharge by equivalent circuit  
Y. Watanabe
- A13 The prediction of mercury partial pressures above amalgams using MTdata  
G.M. Forsdyke, S.A. Mucklejohn, A.T. Dinsdale
- A14 Sheath losses of capacitive fluorescent lamps operated at lower radio frequencies (RF)  
R. Hilbig

- A15 Time resolved near-IR emissions from fluorescent lamps  
R.S. Bergman
- A16 Variable colour temperature fluorescent lamps  
L.P. Bakker, G.M.W. Kroesen, F.J. de Hoog
- A17 TQS - Total quality shield. A low mercury dosing and getter product for fluorescent lamps industry  
S.P. Giorgi, M. Righetti
- A18 The dynamical behaviour of pulsed low-pressure discharges  
R. Devonshire, G.R. Harris, T.J. Healey, D.A. Stone, R.C. Tozer
- A19 Characteristics of electrodeless ferrite-free fluorescent lamps operated at frequencies 1-15 MHz  
O. Popov, J. Maya
- A20 On the validity of self-consistent modelling of the positive column of fluorescent lamps  
G. Zissis, H. Lange, D. Porras, P. Hardt
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- B01 Line voltage tungsten halogen general purpose lamp having a 51 mm integral reflector  
L. de Weerd, R. de Ceuster
- B02 Application of small angle neutron scattering method for characterization of potassium bubbles in K-Si-Al doped tungsten  
P. Harmat, A. Nagy, O. Horacsek
- B03 Creep and cavitation in vibrating coils of incandescent lamps  
I. Gaal, P. Harmat, C.L. Tóth
- B04 Tungsten improvement for shock-resistant lamps  
F.J.M. Mertens
- B05 Theoretical analysis of spectral power distributions from microcavity radiators  
S. Sekine, K. Kashiwagi, M. Ueno, M. Ohkawa
- B06 The influence of sol-gel derived interference multi-layer coatings at different temperature on halogen sunlight spectrum  
Z.-G. Lu, X.-Y. Hu, S.-J. Zhang, T. Wang, A.-H. Gao
- B07 Deposition of multi-layer for halogen lamps by LPCVD  
S. Suzuki, T. Kojima, S. Shimaoka
- B08 Investigation of HfN coatings on tungsten for incandescent lamp efficacy improvement  
L. Bigio

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- C01 Electrical field strength and electrode voltage drops of an ac mercury high-pressure discharge  
H. Schöpp, G. Hartel, H. Hess, L. Hitzschke
- C02 Perfect colour rendition from a pulsed high pressure cesium lamp  
J. Liu, K. Günther, H. Kaase, F. Serick
- C03 Radiation output of an ac high-pressure mercury vapor discharge considering radiation transport  
G. Hartel, H. Schöpp, H. Hess, L. Hitzschke
- C04 Ignition process of HPS lamps with high xenon pressure  
A. Lembcke, K. Günther
- C05 A further step to a complete description of the high-pressure discharge in mercury (see LL05)  
H. Hess, G. Hartel, H. Schöpp, L. Hitzschke
- C06 Investigation of the cathode plasma sheath in high-pressure sodium discharges  
M. Kettlitz, R. Wendt
- C07 Luminous flux maximisation of mercury-free high pressure sodium lamps  
C. Vlekken, R. Geens
- C08 Intensity distributions of line spectra emitted from inductively-coupled metal-halide-lamp  
M. Hamamoto, T. Hashimoto, S. Higashisaka, S. Wada
- C09 Pressure dependent UV-C emission from high-pressure mercury lamps  
M. Lambrecht, W. Heering
- C10 Determination of the powerflux into lamp cathodes  
R. Bötticher, W. Bötticher, D. Windelberg
- C11 Modelling the spectrum of a S<sub>2</sub> high pressure discharge (see LL06)  
A. Körber
- C12 Longitudinal acoustic mode structure in a ceramic high intensity discharge lamp  
J. Kramer
- C13 Light sources for video projection (see LL03)  
H. Mönch, G. Derra
- C14 Mercury-free HPS lamp with high CRI and its one application on plant growth  
N. Saito, K. Murakami, K. Horaguchi, A. Okada, K. Nishioka
- C15 ECOARC: a new concept for energy reduction  
R. Geens, J. Cox, C. Vlekken

- C16 Life performance of inductively coupled electrode-less metal halide lamp  
A. Itoh, K. Uemura, T. Ishigami, A. Inouye
- C17 HPS lamps with integrated antenna  
Y.J.J. Dams, H.A.M. Coenen, R.A.J. Keijser
- C18 Dimming of ceramic metal halide lamps  
R.A.J. Keijser
- C19 Arc-straightened operation of short arc metal halide lamps containing  $\text{HoI}_3\text{-InI}$  for LCD projectors  
M. Horiuchi, K. Miyazaki, S. Kominami, K. Takahashi, M. Takeda
- C20 The evolution of low wattage metal halide lamps with ceramic arctubes (see LL04)  
S.A. Mucklejohn
- C21 The life of a twinarc high pressure sodium lamp  
R. Geens
- 
- D01 High power excilamps  
V.F. Tarasenko, M.I. Lomaev, A.N. Panchenko, V.S. Skakun, E.A. Sosnin
- D02 Continuous wave vacuum ultraviolet light sources based on excimer halides  
A. Ulrich, J. Wieser, H. Dahi, D.E. Murnick
- D03 Coaxial and planar excilamps pumped by barrier discharge  
E.A. Sosnin, V.S. Skakun, V.F. Tarasenko
- D04 VUV-radiance of high pressure hollow cathode discharges in xenon  
H. Lange, A. El-Habachi, K.H. Schoenbach
- D05 Microhollow cathode discharge excimer lamps  
R.H. Stark, A. El-Habachi, W. Shi, K.H. Schoenbach
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- E01 VUV spectrum of barrier discharge in Xe-Kr mixture  
G.N. Gerasimov, G.A. Volkova, G.N. Zvereva
- E02 Experimental investigations of phosphor coated xenon barrier discharges  
J. Dichtl, R. Kling, M. Neiger
- E03 Investigations on the secondary electron emission coefficient in dielectric barrier discharges  
S. Götze, S. Müller

- F01 High-luminance, high-efficiency, and simple-structured flat discharge lamp for LCD backlightings (see LL08)  
T. Shiga, K. Hirayama, K. Hashimoto, S. Mikoshiba, S. Shinada
- F02 Characteristics of the VUV emission from an AC PDP cell  
K.-W. Whang, H.S. Jeong, J.H. Seo, J.K. Kim, C.K. Yoon
- F03 Ar pressure dependence of plasma parameters in Ar-Hg discharge used for liquid crystal display backlighting  
M. Goto, K. Ohtani, T. Arai
- F04 The Townsend's coefficient in helium/xenon- and xenon/neon-mixtures  
M. Otte, S. Pfau, J. Rohmann
- F05 A two-dimensional simulation of pulsed discharge for a color plasma display  
Y. Murakami, H. Murakami, H. Matuzaki, K. Tachibana
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- G01 Fullerene C<sub>60</sub> as a new emitting additive for a low pressure gas discharge light source  
V.M. Milenin, N.A. Timofeev, S.V. Kidalov, S.V. Kozyrev, A.Ya. Vul
- G02 High brightness full color LEDs  
Y. Suehiro, T. Sato, K. Uchida, S. Yamazaki
- G03 Characteristics of xenon radiation of xenon-neon mixture operated with pulsed discharge  
M. Aono, H. Kurokawa, M. Jinno
- G04 Barium glow discharges for lighting applications (see LL10)  
J.E. Lawler, H.M. Anderson, J.J. Curry
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- H01 Electronic ballast for pulsed operation of dielectric barrier discharges  
P. Schwarz-Kiene, W. Heering
- H02 Transformer in a novel modified half-bridge inverter for fluorescent lamp ballasts  
H. Matsuo, K. Shimizu
- H03 A dimming circuit in self-excited electronic ballast for electrodeless fluorescent lamps  
T. Fukue, K. Harada, Y. Ishihara, T. Todaka, F. Okamoto
- H04 Chemical equilibrium in cluster light source  
B.M. Smirnov
- H05 A new electronic starter for miniature metal halide lamps with reactor ballast  
D.-Ch. Zhu, B.-Y. Huangfu

H06 Modelling of fluorescent lamps for power supply design (see LL13)  
T. Vos, F. Ligthart, M. Hendrix, T. Stommen, U. Chittka, J. van der Mullen, W. van den Bosch

H07 High frequency power supply systems for multiple-operating of fluorescent lamps  
K. Taniguchi, H. Morita, T. Urayama

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I01 A bioluminescence application for illumination  
N. Nameda, S. Itoh

I02 Directly modulated infrared radiation source for optical gas analysers  
J. Scherzer, S. Grob

I03 Acoustic resonances in pulsed vortex-water-wall high-pressure-argon-arc lamps  
D. Kouroussis, R. Bonert, F.P. Dawson

I04 Kinetic study of  $(\text{ArNe}^+)$  and  $(\text{ArHe}^+)$  heteronuclear ions using flash x-ray excitation  
L. Hure, E. Robert, C. Cachoncinlle, J.M. Pouvesle, J. Wieser, A. Ulrich

I05 Existing state and future prospect of lighting education of light sources and its related technologies in university (see LL01)  
T. Yamaya, M. Oki, T. Itoh

I06 A pulsed UV-C source with a plasma-focus element  
A. Wekhof

I07 Modeling of cathode heating in vortex-water-wall high-pressure-argon-arc lamps  
W. Hu, F.P. Dawson, M.S. Benilov

I08 Microwave slot antenna type ultraviolet light source for fluid treatment  
D. Korzec, D. Boonyawan, J. Engemann

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K01 New materials and new structure for hot cathodes (see LL14)  
M. Hamada, A. Takeishi, M. Takahashi, M. Yodogawa, H. Harada

K02 Pinch protection of quartz glass burners by chromizing  
M. Steinmann

K03 Annealing behavior of emission bands induced by pile irradiation in fused silica  
S. Nasu, S. Ishida, A. Koshino, R. Yamamoto, H. Nannto, T. Tanifuji, K. Noda, N. Kuzuu

K04 Wall blackening in metal halide lamps containing rare-earth bromides (see LL15)  
W. van Erk

K05 Photoluminescent materials based on  $\text{Eu}^{2+}$  doped alkaline earth halide phosphates  
D. Nötzold

- K06 Vacuum ultraviolet excitation spectra of powder phosphors containing isolated Mo<sub>4</sub> and linked Mo<sub>4</sub> type tetrahedral ions  
S. Tanimizu, T. Suzuki, M. Shiiki, C. Okazaki
- K07 Substructure of arc spots at thermionic cathodes  
B. Jüttner, H. Pursch
- K08 Enhancement of rare earth metals by chemical vapour transport in metal halide lamps (see LL07)  
K. Hilpert, U. Niemann
- K09 Dynamics of quartz wall ablation during a pulsed discharge in xenon flash lamp  
S. Raikov
- K10 Europium doped alkaline rare earth orthophosphate phosphors  
M. Kloss, A. Rohmann, U. Sasum, L. Schwarz, D. Haberland
- K11 Scandium silicate and tungsten silicide equilibria  
R. Snellgrove
- K12 Photon cascade emission of Pr<sup>3+</sup> in oxide hosts  
W. Beers, A. Srivastava
- K13 Quartz corrosion reactions in the discharge vessel of metal halide lamps  
T. Karwath, W. van Erk, K. Hilpert
- K14 Cathode fluorescence as an intrinsic probe of cathode processing and performance  
A. Buckley, S. Dejmanee, G.J. Wilson, R. Devonshire
- K15 The application of atomic force microscopy to the study of wall reactions in halogen lamps and metal halide discharge lamps  
S.P. Oliver, J.C. McGourlay, R. Devonshire
- K16 An oxygen dispenser for improving the luminous flux of metal halide lamps  
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H. Elloumi, E. Kindel, C. Schimke, G. Zissis, H. Schöpp
- L02 Acoustic resonance phenomena in high pressure discharge lamps  
S. Epron, A.P. Cojocaru, M. Aubès, J.-J. Damelincourt
- L03 Measuring the temperature distribution at thermionic cathodes in an argon model lamp  
D. Nandelstädt, J. Luhmann, B. Michelt, J. Mentel
- L04 Experimental determination of the cathode fall in a high pressure low current argon arc  
J. Luhmann, D. Nandelstädt, B. Michelt, J. Mentel

- L05 Investigation of the attachment of an argon arc to a thermionic tungsten cathode  
D. Nandelstädt, J. Luhmann, B. Michelt, J. Mentel
- L06 Spectroscopic diagnostics of a low pressure deuterium discharge  
A. Buckley, G.J. Wilson, R. Devonshire
- L07 Determination of absolute densities of additives in HID lamps  
E. Kindel, M. Kettlitz, C. Schimke, H. Schöpp
- L08 Dependence on the operating frequency of cathode fall voltage  
T. Uetsuki, N. Taguchi, W. Noda
- L09 The electron density and temperature in the Philips QL-lamp  
J. Jonkers, J.A.M. van der Mullen, J. van Dijk, D.C. Schram
- L10 Spectroscopic diagnosis of a high-pressure metal iodide ( $\text{ScI}_3$ , NaI, Hg) HID lamp plasma  
M. Kubo, H. Taniguchi, S. Mori, T. Inagaki, K. Tachibana
- L11 The laboratory for UV and VUV radiometry of the Physikalisch-Technische Bundesanstalt at Bessy I  
J. Hollandt, H. Rabus, M. Richter, R. Thornagel, G. Ulm
- L12 Photocell enhanced technique for measuring electrode starting temperature of fluorescent lamps  
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- L13 Raman microscopy as a non-destructive diagnostic tool for lamp chemistry  
S.P. Oliver, R. Devonshire
- L14 Deuterium lamps. Spectroscopic measurements of electron densities and gas temperatures  
A. Carstens, E. Arnold, K.-J. Dietz, E. Smolka
- L15 A temperature and emissivity diagnostic for fluorescent lamp electrodes  
R.C. Garner
- L16 Temporally and spatially resolved spectroscopic investigations of dielectric barrier discharges  
F. Adler, S. Müller
- L17 High pressure quadrupole mass spectrometer for residual gas analysis in fluorescent lamps  
M. Righetti, P. Manini

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- M01 Modelling of arc-electrode systems - preliminary results for high pressure xenon arc lamps  
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- M02 Modeling of high intensity discharge lamps (see LL12)  
M. Born, H. Giese, T. Krücken, M. Neiger
- M03 Non-LTE modelling of arc column of high pressure sodium discharge lamps (see LL11)  
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- M04 A collisional-radiative model for high-frequency discharges  
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- M05 Theoretical modelling of the cathodic region of high intensity discharge lamps  
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- M06 Mathematical modelling of multiple regimes of current transfer to hot arc cathodes  
M. Benilov
- M07 Modelling of high pressure discharge lamps including electrodes (see LL09)  
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- M08 On abnormal intense radiation at the rotation of electron around a dielectric sphere  
L.Sh. Grigorian, H.F. Khachatryan, P.F. Kazarian
- M09 Three-dimensional simulation of emission properties for a general light source  
C. Pizarro, S. Royo, N. Tomàs, J. Arasa
- M10 Towards a general collisional radiative model  
J. van Dijk, H.W.P. van der Heijden, A. Hartgers, J. Jonkers, J.A.M. van der Mullen
- M11 On the study of the thermal equilibrium in the high-pressure mercury plasmas under AC operating mode  
K. Charrada, G. Zisis, H. Elloumi, M. Stambouli
- M12 Numerical study of radial temperature profiles of high intensity discharge lamps  
S. Hashiguchi, S. Mori, K. Tachibana
- M13 Rigorous derivation of a non-LTE electrical conductivity for electrode regions of high pressure discharge lamps  
P. Flesch, M. Neiger
- M14 Radiative transfer in high-current Ar-Hg discharges  
J. van Dijk, R.M.J. Haanraads, J.A.M. van der Mullen