

# **6th International Symposium on the Science and Technology of Light Sources**

Budapest, Hungary  
30 August – 3 September 1992

ISBN: 978-1-5108-4110-9

**Printed from e-media with permission by:**

Curran Associates, Inc.  
57 Morehouse Lane  
Red Hook, NY 12571



**Some format issues inherent in the e-media version may also appear in this print version.**

Copyright© (1992) by Foundation for the Advancement of the Science & Technology of Light Sources (FAST-LS) All rights reserved.

Printed by Curran Associates, Inc. (2017)

For permission requests, please contact Foundation for the Advancement of the Science & Technology of Light Sources (FAST-LS) at the address below.

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

[www.fast-ls.org](http://www.fast-ls.org)

**Additional copies of this publication are available from:**

Curran Associates, Inc.  
57 Morehouse Lane  
Red Hook, NY 12571 USA  
Phone: 845-758-0400  
Fax: 845-758-2633  
Email: [curran@proceedings.com](mailto:curran@proceedings.com)  
Web: [www.proceedings.com](http://www.proceedings.com)

Session 1

Chairman: R. Devonshire

Phosphors

- 1:I J. Schanda  
Energy efficient light sources and applications
- 2:I S. Kamiya  
Recent progress in lamp phosphors
- 3:P V. Bobay, J. Osán, L. Balázs  
Thermoluminescent study of Seca blue phosphor samples
- 4:P X. M. Chen  
Manufacturing of the photoluminescent glass doped with  $B_2O_3-La_2O_3$  and its application in fluorescent lamp
- 5:P C. Caretti, P. Manini, A. Renzo, E. Rabusin  
Sodium radiation-induced hydrogen emission from a  $H_2$ -doped barium film
- 6:P L. L. Hope  
Ray-tracing estimation of Kubelka-Munk parameters and application to phosphor layers and plaques
- 7:P K. Iwama, T. Higashi, T. Matsuda, S. Kamiya  
The luminescence properties of  $Ce^{3+}$  - and  $Mn^{2+}$  - activated cerium magnesium aluminate phosphors
- 8:P L. Pogány, L. Balázs  
Characterization of ALON layer on the inner bulb surface
- 9:P E. Tombácz, J. Szigeti, L. Balázs, G. Sajó  
Interpretation of pH-dependent colloid stability of aqueous phosphor suspensions and their stabilization by polyelectrolyte adsorption

- 10:P**      **T. M. Zhou, Y. J. He, H. Shao, L. M. Wang**  
Studies on luminous features of phosphor coating of compact  
fluorescent lamps
- 11:L**      **H. Ito, Y. Yuge, A. Taya, M. Tamatani, K. Terasima**  
Charging tendency of phosphors and fluorescent lamp perfor-  
mance
- 12:L**      **H. C. G. Verhaar, B. J. Roelevink**  
Mercury-analysis of fluorescent lamps

Session 2

Chairman: J. Maya

LP Discharges

- 13:I M. Neiger  
Dielectric barrier discharges: an unusual new light source
- 14:L Y. Watanabe  
Cathode fall characteristics at high frequency operation
- 15:L R. Itatani, M. Kubo, M. Aono, M. Ryoko  
Variable luminous color discharge lamp
- 16:P E. Arnold, K.-J. Dietz, G. Gnass, S. Reber, W. Schwarz  
A low pressure mercury lamp with enhanced UV – C radiation flux
- 17:P D. Chen, G. Ma, L. Yang, Z. Cai  
Improvement of compact fluorescent lamps by filling different mixture gases
- 18:P S. Coe, J. A. Stocks, A. J. Tambini  
Experimental and theoretical study of the negative glow and Faraday dark space regions of a fluorescent lamp
- 19:P J. J. de Groot  
Miniaturisation in electronic compact fluorescent lamps
- 20:P M. Duncan, R. Devonshire, J. A. Whitby  
Laser diagnostics of electrode operation in low-pressure Hg-Ar lamps
- 21:P D. Y. Fang  
The axial electric field of compact fluorescent lamps
- 22:P J. Ingold  
Cathode-plasma interface in the fluorescent lamp

- 23:P X. Li  
A novel low wattage fluorescent lamp
- 24:P F. A. S. Ligthart  
General scaling law for the luminous flux of fluorescent tubes
- 25:P P. E. Moskowitz  
Fluorescent lamp electrode diagnostics by laser induced fluorescence
- 26:P T. Sakurai, T. Saikatsu, O. Myodo  
VUV radiation of the rare-gas discharge fluorescent lamp at pulsed discharge
- 27:P L. Wang, G. X. Jia, Lixi Yang, J. Guo  
Circuit parameters measurement of high frequency electric discharge lamps and electronic ballasts
- 28:P L. Wang, Lixi Yang, G. Jia, Laishun Yang  
Frequency property of low pressure electric discharge lamps
- 29:P S. Zhu, W. Zhou, S. Li  
Studies of the VUV xenon resonance radiation sources
- 30:I F. Beleznyay  
Semiconductor light sources

Session 3

Chairman: R. Bergman

HT Chemistry + Materials

- 31:I G. Eriksson  
Integrated thermochemical databases
- 32:P T. R. Brumleve, M. Fields, S. A. Mucklejohn  
Preparation, vapour pressure and thermochemical parameters of thulium(III)iodide
- 33:P W. van Erk, P. Cobben, P. Bennema  
Wall blackening in metal iodide lamps seen from a crystal growth point of view
- 34:P O. Horacsek, Cs. Tóth, K. Horacsek  
Void growth and its relation with the bubble dispersion in doped tungsten wires
- 35:P D. M. Jenkins, J. S. Ogden  
Matrix isolation studies on high temperature lamp chemistry
- 36:P S. A. Mucklejohn, A. T. Dinsdale  
Modelling multicomponent metal halide systems
- 37:P S. A. Mucklejohn, D. L. Trindell, R. Devonshire  
An assessment of the vapour pressures and thermochemical parameters for the rare earth tribromides
- 38:P T. D. Russel  
Silica and tungsten corrosion in discharge lamps
- 39:P J. Szöllősi, I. Somogyi  
Strengthening possibility of glass bulbs
- 40:L G. M. Fordsdyke  
The reactions of vitreous silica in discharge lamp environments

- 41:L      Z. Boksay  
Inhomogeneity as an inherent property of silicate glasses
- 42:L      G. Zilberstein, H. J. Kim  
Creep and fracture behavior of NS tungsten in oxygen-doped atmospheres



Session 4

Chairman: S. Kamiya

Incandescent lamps

- 43:I R. S. Bergman, T. G. Parham  
Applications of thin film reflecting coating technology to lamps
- 44:P L. Bigio, B. Kubicki, P. J. Codella  
FTIR diagnostics of tungsten-halogen lamps: role of halogen conc., phosphorus, wall material and burning environment
- 45:P É. Dancs  
Comparison of physical and life parameters of GLS lamps with and without phosphorus getter
- 46:P W. Dieudonné, K. Schmitz, R. Stehling  
More efficiency for thermoforming processes
- 47:P I. Gaál  
Radiation properties of coils
- 48:P G. Hebbinghaus, G. Frank  
High quality infrared reflecting filters on lamps prepared by dip coating
- 49:P L. Y. Lu, Y. Z. Gu  
Spectral irradiance standard lamp
- 50:P A. Nagy, Cs. L. Tóth, I. Károlyi, A. Kálovics  
Effect of tungsten and molybdenum mandrel wire size variation on incandescent lamp performance
- 51:P L. Nagy, L. Bigio  
Gas composition investigation in tungsten halogen lamps
- 52:P J. M. Ranish, L. E. Hoegler  
A simple lead corrosion model for quartz halogen lamps

**53:L**

**R. Kersten**

Cooking with light

**54:L**

**M. Makhlouf, R. Devonshire, H. F. Boysan**

Non-equilibrium effects in the recirculating gas flows in incandescent lamps

Session 5

Chairman: D. O. Wharmby

Modelling/Diagnostics

- 55:I      B. Nyíri  
Notes on local equilibrium in high pressure discharges
- 56:P      K. E. Brown, L. Cifuentes, D. A. J. Mottram,  
S. A. Mucklejohn, B. Preston  
The role of modelling in new product development
- 57:P      P. Y. Chang, W. Shyy  
Three-dimensional natural convection in horizontal high  
pressure discharge arc
- 58:P      K. Charrada, G. Zissis, M. Stambouli, A. Asselman  
On the possibility to simulate the mercury discharge lamp  
during the start-up phase
- 59:P      S. Drawert  
Barium absorption spectroscopy in the electrode region of  
fluorescent lamps
- 60:P      S. Holló, B. Nyíri  
On the cathodic modes in discharge lamps
- 61:P      H. Kawahara, K. Wani  
Time-dependent computer model of a high-pressure mercury  
lamp
- 62:P      I. Pérès, L. C. Pitchford, J. P. Boeuf, H. Gielen, P. Postma  
Current – voltage characteristics in low pressure cold cathode  
argon discharges
- 63:P      M. Stambouli, A. Asselman, K. Charrada, N. Sewraj  
Experimental parameters determination in the start-up phase  
of a high pressure mercury discharge

- 64:P**      **J. F. Waymouth**  
Integration of the Elenbaas-Heller equation
- 65:L**      **A. J. Page**  
A study of electrical characteristics of deuterium lamp cathodes
- 66:L**      **D. Karabourniotis, E. Drakakis, A. Palladas**  
Determination of excited-state densities in non-LTE high pressure discharges

Session 6

Chairman: A. G. Jack

HID

- 67:I T. Hiramoto  
Compact HID lamps for liquid crystal projectors
- 68:P M. Goodman, R. Snellgrove  
New emissive materials for unsaturated vapor sodium lamps
- 69:P A. Itoh, K. Okamura  
Evaluations of sodium reduction in HPS arc tube
- 70:P G. M. J. F. Luijks  
Sodium-PCA interaction in unsaturated HPS lamps
- 71:P W. P. Moskowitz, W. M. Keeffe  
Microgravity simulation studies of metal halide lamps for space station applications
- 72:P J. M. Strok  
A practical method for HPS arc tube efficacy
- 73:P K. Tomokiyo, Y. Kitahara, T. Watanabe, T. Uemura  
Effects of cold spot temperature and operation frequency on the spectral properties of metal halide lamps for LCD projectors
- 74:L J. T. Dolan, M. G. Ury, C. H. Wood  
A novel high efficacy microwave powered light source
- 75:L K. S. Haagsma  
Non-passive failure of high pressure gas discharge lamps

Session 7

Chairman: J. F. Waymouth

RF Discharge/Novel

- 76:I J. Schlejen  
Inductively coupled fluorescent lamps: "The QL lighting system"
- 77:L V. A. Godyak, R. B. Piejak, B. M. Alexandrovich  
Radio frequency driven miniature fluorescent lamps
- 78:L C. N. Stewart, M. E. Duffy, J. T. Dakin, V. D. Roberts,  
S. El-Hamamsy, H. L. Witting, A. Inoye, K. Shimizu, K. Araki  
Inductively Coupled HID Lighting System
- 79:P C. von Arx, U. Kogelschatz  
Intense silent discharge excimer UV source operating at room temperature
- 80:P M. E. Duffy, J. T. Dakin, G. E. Duffy, M. M. Secen  
Diagnostics and model of an inductive HID Hg Discharge
- 81:P V. A. Godyak, R. B. Piejak, B. M. Alexandrovich  
Matching network losses for capacitive RF discharge
- 82:P A. T. Rowley, D. O. Wharmby  
Power dissipation and light generation in surface wave discharges
- 83:P M. Shinomiya, M. Toho, M. Kawaguchi  
Impedance characteristics and its equivalent circuit of the electrodeless fluorescent lamp excited by the air-cored coil
- 84:I R. Scholl, B. Weber, C. Weijtens  
New light generation mechanism: continuous radiation from clusters