

2020 Fifth Junior Conference on Lighting (Lighting 2020)

**Ruse, Bulgaria
24 – 26 September 2020**



**IEEE Catalog Number: CFP20V04-POD
ISBN: 978-1-7281-9964-1**

**Copyright © 2020 by the Institute of Electrical and Electronics Engineers, Inc.
All Rights Reserved**

Copyright and Reprint Permissions: Abstracting is permitted with credit to the source. Libraries are permitted to photocopy beyond the limit of U.S. copyright law for private use of patrons those articles in this volume that carry a code at the bottom of the first page, provided the per-copy fee indicated in the code is paid through Copyright Clearance Center, 222 Rosewood Drive, Danvers, MA 01923.

For other copying, reprint or republication permission, write to IEEE Copyrights Manager, IEEE Service Center, 445 Hoes Lane, Piscataway, NJ 08854. All rights reserved.

****** This is a print representation of what appears in the IEEE Digital Library. Some format issues inherent in the e-media version may also appear in this print version.***

IEEE Catalog Number:	CFP20V04-POD
ISBN (Print-On-Demand):	978-1-7281-9964-1
ISBN (Online):	978-1-7281-9963-4

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
E-mail: curran@proceedings.com
Web: www.proceedings.com



TABLE OF CONTENTS

	Page #
Session 1	
Interior, Exterior and Road Lighting. Lighting Quality. Light Pollution	
Daylight Design and Architectural Lighting	
Weaving with Light	1
R. Vital, A. Karmon, <i>Israel</i>	
Three-Dimensional Modeling and Comparative Photometric Analysis of LED Lamp with Polycarbonate, Polymethyl Methacrylate and Acrylic Diffuser Materials	7
P. Tsankov, M. Yovchev, H. Ibrishimov, <i>Bulgaria</i>	
Estimation of the Light Pollution, Introduced by the Architectural Lighting of an Educational Building	12
I. Petrinska, D. Ivanov, <i>Bulgaria</i>	
Architectural Lighting Development when Financial Restrictions Apply	16
I. Petrinska, D. Ivanov, <i>Bulgaria</i>	
Session 2	
Management of Lighting and Renewable Energy Sources	
Energy Efficiency and Economic Aspects of Lighting	
Smart Grid-based Conceptual Model of Virtual Infrastructures for Developing Innovation Capability of Danube Macroregion	20
D. Antonova, N. Venelinova, S. Kunev, I. Kostadinova, <i>Bulgaria</i>	
Improving the capacity for adoption of renewable energy sources in transport and logistics: approbation of a methodological approach	25
S. Kunev, D. Antonova, I. Kostadinova, <i>Bulgaria</i>	
Sources of Long-Term Economic Growth and High Technologies in Telecommunications	29
D. Stefanov, D. Antonova, <i>Bulgaria</i>	
Tunnel lighting control system as a component of SCADA cloud technology for road section	33
A. Pachamanov, K. Georgiev, <i>Bulgaria</i>	
Optimization of Energy Consumption of Road Tunnels	38
V. Gueorgiev, <i>Bulgaria</i>	

Session 3

Photobiology and non-Visual Effects of Light

A Study of Lightings for Elder with Dementia	43
Ch. Chen-Yu, H. Chen, M. Ronnier Luo, Ch. Fang, G. Hu, <i>Taiwan</i>	
Dynamic Color Temperature Sleep Assistant Light Implemented on the Mobile Device	46
Ch. Chen-Yu, Y. Wang, <i>Taiwan</i>	
Electroencephalographic study of human brain: chromatic light impact on biological rhythms	50
S. Roslyakova, S. Kolgushkina, V. Prokopenko, <i>Russia</i>	
UVC irradiators for sterilization of recirculated air in workrooms	54
A. Pachamanov, D. Pavlov, B. Pregyov, <i>Bulgaria</i>	
Photobiological Safety of LED Lighting Systems Applicable in Educational Buildings	60
D. Pavlov, K. Nikolova, D. Ivanov, I. Petrinska, <i>Bulgaria</i>	

Session 4

Lighting Technology (lamps, luminaires, lighting controls)

Study on Factors Correlation of Personal Lighting Comfort Model in Cyber-Physical Human Centric Systems	64
W. Wang, Y. Fang, W. Wang, Q. He, N. Zou, <i>China</i>	
Dual-band CPW Transparent Bandpass Filter for Wireless Communication	69
S. Azizi (<i>Morocco</i>), L. Canale (<i>France</i>), S. Ayoud (<i>Morocco</i>), M. El Halaoui (<i>Morocco</i>), P. Dupuis (<i>France</i>), A. Asselman (<i>Morocco</i>)	
In-Vehicle Lighting and its Application in Automated Vehicles: A Survey	73
A. Shah, Ya. Lin, <i>China</i>	
Influence of the Constructive and Environmental Parameters on the Thermal Conditions of a LED Driver	77
B. Evstatiev, N. Evstatieva, S. Kadirova, <i>Bulgaria</i>	

Session 5

**Lighting Calculations. Photometry and Colorimetry
Common Lighting Aspects. Standards and Legislation in Lighting**

New CIE Standard Illuminant L and its Effect on Measurement Uncertainty	81
G. Bizjak, M. Kobav, <i>Slovenia</i>	
Colorimetric Characterizations of Large Area White OLEDs Under Thermal and Electrical Stress Using TM-30-18 Method	87
O. Abdellah (<i>Morocco</i>), A. Haddad (<i>France</i>), M. Halaoui (<i>Morocco</i>), P. Dupuis (<i>France</i>), L. Canale (<i>France</i>), A. Asselman (<i>Morocco</i>), G. Zissis (<i>France</i>)	
Analysis of the measurement plane change in street illumination measurements	93
P. Jaskowski, P. Tomczuk, <i>Poland</i>	
Test-based approach for selecting new PACS	96
D. Georgieva, V. Georgiev, I. Evgeniev, M. Nenova, <i>Bulgaria</i>	

Session 6

LED Lighting

Research of Effectiveness on LED Dimming Lighting Installations	102
O. Petrov, <i>Bulgaria</i>	
Considerations for measuring the electromagnetic interference of LEDs projectors with the supply electrical network	105
S. Diga, N. Diga, C. Bratu, P. Nicoleanu, G. Vochescu, <i>Romania</i>	
Comparison between optimal methods for control of DC/DC converter for supplying of LED lighting	109
G. Vacheva, N. Hinov, <i>Bulgaria</i>	
Challenges of Usage of Fuel Cells for LED Lighting	113
G. Vacheva, V. Dimitrov, N. Hinov, <i>Bulgaria</i>	
ISO standard implementation impact in COVID-19 era on UV-lighting devices	117
M. Nenova, V. Nenova, D. Georgieva, V. Georgiev, <i>Bulgaria</i>	

Session 7

LED Lighting

Modelling and optimization of DC/DC converter for supplying of LED lighting	121
G. Vacheva, N. Hinov, <i>Bulgaria</i>	
Modeling of Hybrid Systems with Renewable Energy Sources for Smart Home	125
G. Vacheva, B. Gilev, N. Hinov, <i>Bulgaria</i>	
Study of the photometric and colorimetric characteristics of the optical systems of LED domestic lamps	129
P. Tsankov, M. Yovchev, H. Ibrishimov, <i>Bulgaria</i>	
Light emitting diode modules with reflective optical system that implements the "Flat beam" lighting technology	133
A. Ashryatov, D. Churakova, <i>Russia</i>	

Session 8

**Ergonomics and Physiology of Vision. Human Aspects of Lighting
Renewable Energy Sources and Lighting**

Calibration of a Brightness Matching Experiment setup in Mesopic and Scotopic Conditions	135
P. Dupuis (<i>France</i>), L. Kukacka (<i>Czech Republic</i>), L. Canale (<i>France</i>), M. Vik (<i>Czech Republic</i>), A. Richter (<i>Czech Republic</i>), G. Zissis (<i>France</i>)	
Sketch drawing on infinite paper sheets	141
I. Evgeniev, D. Georgieva, V. Georgiev, M. Nenova, <i>Bulgaria</i>	
Self-limiting tunnel lighting system, powered by a photovoltaic system	145
A. Pachamanov, K. Georgiev, M. Dimitrov, <i>Bulgaria</i>	
Rehabilitation and modernization of outdoor lighting systems in settlements	150
A. Pachamanov, S. Petrov, <i>Bulgaria</i>	