

Illuminating Engineering Society Annual Conference 2023

Light Responsibly

Schaumburg, Illinois, USA
3-6 August 2023

ISBN: 978-1-7138-9964-8

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© (2023) by Illuminating Engineering Society of North America (IES)
All rights reserved.

Printed by Curran Associates, Inc. (2024)

For permission requests, please contact Illuminating Engineering Society of North America (IES)
at the address below.

Illuminating Engineering Society of North America (IES)
120 Wall Street
Floor 17
New York, NY 10005-4001
USA

Phone: (212) 248-5000

Fax: (212) 248-5017

ies@ies.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
Web: www.proceedings.com

Contents

Peer-Reviewed Papers

A Study on the Impact of Fabric Shade Properties on Daylight Glare Probability.	1
<i>Abdulrahman Aljuhani & Richard Mistrick</i>	
Bio-Inspired Daylighting: Relationships Between Six Biological Informed Design Frameworks.	34
<i>Mary Guzowski</i>	
Application of the Zonal Cavity Method for Exterior Lighting Calculations	79
<i>Michael Myer</i>	

Technical Presentations

Shedding Light on Dementia Care: A Clinical Trial on the Effects of Dynamic Lighting on Sleep and Mood in Institutionalized Older Adults	105
<i>Nina Sharp, Mahya Fani, Mohammed Alrahyani, Ndeye Yague</i>	
Improving Cognitive Performance of Remote Workers with At-Home Application of Biodynamic Lighting	125
<i>Nina Sharp, Mahya Fani, Mohammed Alrahyani, Ndeye Yague, Dongwoo Yeom, Molly Mayfield, Shawn Youngstedt</i>	
A New Metric for Visibility of the Phantom Array Effect	147
<i>Naomi Miller & Jianchuan Tan</i>	
Discomfort Glare from Overhead Sources	178
<i>Belal Abboushi & Naomi Miller</i>	
CALiPER Radiometric Testing of Germicidal UV Products, Round 1: UV-C Towers and Whole-Room Luminaires.	198
<i>Jason Tuenge</i>	
Performance of Wearable Light Sensors for Circadian Photobiology.	216
<i>Rugved Kore</i>	
An Analysis of Interior Design Parameters and their Impact on Circadian Lighting in Educational Settings.	244
<i>Mahya Fani, Nina Sharp, Maryam Anaraki, Amir Farbod Shahverdi</i>	
Shining a Light on Migraines: Effects of Spectral Power Distribution on Migraine Related Photophobia.	254
<i>Lydia Simpson</i>	

Deeper Analysis of Networked Lighting Controls	282
<i>Michael Myer</i>	
Connected Emergency Lighting	295
<i>David Bratt & Derek Grepe</i>	
Correlated Color Temperature is Not a Suitable Proxy for the Biological Potency of Light	324
<i>Tony Esposito</i>	
Light under Construction: New York City Sidewalk Shed	362
<i>Nayoun Ryu</i>	
Brightness Perception and Accuracy of Luminous Efficiency Functions	400
<i>Wangyang Song & Dorukalp Durmus</i>	
Color Contrast and Visual Clarity of Indoor Environments	426
<i>Yuwei Wang & Dorukalp Durmus</i>	
Ecological Impact of Outdoor Lighting: Method for Controlled Studies of Insect Threshold Response to Light	454
<i>Maria Nilsson Tengelin, Stefan Källberg, Annika Jägerbrand, Petter Andersson</i>	
Drone-Based Measurements of Upward Scattered Light From White and Amber Road Lighting Systems	481
<i>Stefan Källberg & Maria Nilsson Tengelin</i>	
Analyzing the Effects of Partition Characteristics on the Non-Visual Environment of Offices	516
<i>Mahya Fani, Maryam Anaraki, Amir Farbod Shahverdi, Zahra Sadat Zomorodian</i>	
Spectral Simulations: A Sensitivity Analysis of Simulation Parameters on Estimates of Illuminance and Equivalent Melanopic Lux	527
<i>Sarah Safranek & Corey Strachan</i>	
Monte Carlo Analysis for Energy Codes	533
<i>Michael Myer</i>	

Posters Presented

Ecological Effects of Anthropogenic Lighting and Recommendations to Minimize Impacts	551
<i>Annika K. Jägerbrand</i>	
Energy Efficiency and Light Pollution Mitigation Support Environmental Goals	552
<i>Adrian Martin</i>	
Lighting Application Efficacy: Calculating Spatial Efficiency of Indoor Lighting	555
<i>Parisa Mahmoudzadeh, W. Hu, W. Davis, D. Durmus</i>	
Calibrating Low-cost Light Sensors for Accurate Equivalent Melanopic Lux Measurement	558
<i>Young Joo Son, Zachary C. Pope, Linhao Li</i>	



120 Wall Street, 17th Floor
New York, NY 10005

www.ies.org