

## Tuesday, March 13, 2018

**Tuesday, March 13 | 9:00am – 10:00am | Room: Murray Hill East**

### **The Cross-Discipline Future of Lighting Design Education**

Lyn Godley, Jefferson University Associate Professor

A new direction in lighting design education — several disciplines outside the traditional lighting curriculum are involved in this expanding field, and each individual field has its own language, specific terms and approaches. Multidisciplinary know-how for lighting must provide a hands-on approach with students from a range of curricular programs working together, broadening their scope of knowledge and demonstrating their individual and interdependent relevance to the lighting field.

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**Tuesday, March 13 | 9:00am – 10:30am | Room: Nassau**

PANEL DISCUSSION

### **Mixed Signals: Animating Lighting with Different Protocols**

Shaun Fillion, NYSID; Chuck Cameron, Stan Deutsch Associates; Jeff Hoenig, Cline Bettridge Bernstein Lighting Design; Ted Hayes, RAB Lighting

Mesh networks like Zigbee are a fast-growing option for controlling lighting. What is the impact on a facade, LED wall or color changing cove when a mesh network is used to trigger a lighting effect? We will compare mesh networks with traditional controls protocols like DMX and DALI. We will look at linear and non-linear dispersion of lighting cues, and the effect this can have on an animated facade. A live demonstration will be displayed and discussed.

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**Tuesday, March 13 | 9:30am – 10:30am | Room: Murray Hill West**

### **Bridging the Uncanny Valley – Enhancing the User Experience of Smart Lighting**

Brent Protzman, Lutron

This presentation will illustrate how daylighting and electric lighting technologies must work in tandem to deliver a holistic approach to improving well-being, social connectivity, and enhancing productivity. It will describe the benefits of lighting control solutions that put people first, and capitalize on the opportunities to improve building value. As owners and occupants begin to embrace the possibilities of smart lighting control, they will also increasingly expect these systems to be more adaptable, more flexible, and more in tune with their individual needs.

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**Tuesday, March 13 | 10:00am – 11:00am | Meet Outside Room: Murray Hill East**

### **DOCENT TOUR**

A free personal guided tour of LEDucation with an industry professional. The Docent Tour allows you the opportunity to ask one on one questions without interruption. Learn about the latest industry trends in a fun and exciting environment. All attendees welcome. Those attending the Docent tours will be eligible to win a \$100.00 gift card — one drawing each day. Registration required.

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**Tuesday, March 13 | 10:30am – 11:30am | Room: Murray Hill East**

### **The Future's So Bright U Gotta Wear Shades**

Steven Rosen, Available Light; Adam Carangi, Lumenetix

This presentation will explore the emotional triggering factors of light, new research about the physiological effects of light, and the intersection of art and science as lighting designers look for novel techniques for integrating light within the built environment. It is this interconnection where things get interesting and a discussion on how the application of tunable light, and the associated issues of control systems, will be the heart of our session. To explore this thesis, a practicing Lighting Designer will share the stage with a former Lighting Designer turned spokesman-for-tunable. Together they will argue that technology, when employed under the influence of fundamental design principles, can produce extraordinary experiences.

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**Tuesday, March 13 | 11:00am – 12:00pm | Room: Murray Hill West**

### **Contemporary Luminaire Design Trends**

Kevin Leadford, Acuity Brands Lighting

This presentation discusses a number of design trends that are currently shaping the industry and promising to redefine the role of lighting as we know it. New technologies are making dimensions such as color and dynamic behavior over time viable for main-stream lighting, and that constitutes exponential change. This presentation explores a few of the dimensions that appear to be gaining traction, and attempts to illuminate some of the reasoning behind their development. Implications to the user experience are discussed, along with the inadequacy of present lighting metrics.

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**Tuesday, March 13 | 11:00am – 12:30pm | Room: Nassau**

PANEL DISCUSSION

## **How To Use TM-30**

Michael Royer, Pacific Northwest National Laboratory; Jason Livingston, Studio T+L; Wendy Luedtke, ETC

A specifier, manufacturer, and researcher team up to discuss what TM-30 means and how it can be used to improve lighting quality. This presentation will use demonstrations to illustrate what the metrics mean, then several design scenarios will be considered. This presentation is specifically intended to help bridge the gap between science and practice.

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**Tuesday, March 13 | 12:00pm – 1:00pm | Room: Murray Hill East**

## **Stargazing vs. Safety: The Dilemma of Exterior Lighting**

Jane Slade, RAB Lighting; Shaun Fillion, NYSID

Can safety and stargazing coexist? Can a security light expose a trespasser without creating light trespass? Designers today are faced with a challenge of balancing best practices in security lighting without flooding the neighbors with light, all while maintaining a view of our night's sky. While the Model Lighting Ordinance (MLO) restricts light where it is not needed, guidelines for security lighting are often in contradiction. The seminar will cover current practices for Dark Skies and security lighting, challenges with adaptation, and the use of controls to bridge the gap.

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**Tuesday, March 13 | 12:30pm – 1:30pm | Room: Murray Hill West**

## **When You Come to a Fork in the Road, Take It: Exploring The Paths to Energy Code Compliance**

Marty Salzberg, Lighting Design

NYC adopted a new energy code late in 2016. This course assumes that the attendees are somewhat familiar with the code as it has been in use for more than a year. There are differences in the two paths to compliance; the IECC Path and the ASHRAE 90.1 Path. By comparing and analyzing the differences you will learn how to choose the path that is right for your project.

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**Tuesday, March 13 | 1:00pm – 2:30pm | Room: Nassau**

PANEL DISCUSSION

## **The Lovers of Light – a Point Counterpoint Game Show Discussion on Lighting Topics We Care About**

Ron Steen, Xicato; Dave Young, ETC; Jana Owens, Fluxwerx; Angelica Santana, CM Kling + Associates; Natalia Lesniak, Lumen Architecture; Marial Tavian Acevedo, Solus

This interactive panel will be executed in a game show format with audience participation.

### **Topic 1: Color**

Point: CRI is good enough.

Counterpoint: TM-30 is a must.

### **Topic 2: Tunable White and Manipulation of Spectral Distribution in the built environment**

Point: Color Change is a must – we have the technology so use it.

Counterpoint: Fixed white points are fine. "You want color change, use a window, damn it!"

### **Topic 3: Control and the IoT**

Point: This is all a bunch of bunk and hype. Where is the IoT? I don't see it and we don't need it.

Counterpoint: The future is now, and we must emerge into the next phase of digital lighting.

### **Speed Round Topics:**

- 1) Wireless Control or Wired – is the wire your friend or enemy?
  - 2) Efficacy – does it matter anymore?
  - 3) Attic Stock – should you buy it, and if yes, how much?
  - 4) Should manufacturers cover labor if things go wrong?
  - 5) Should manufacturers sell directly to end users and cut channel markups?
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**Tuesday, March 13 | 1:30pm – 2:30pm | Room: Murray Hill East**  
**Using LED Lighting for Video in Conference and Other Spaces with Cameras**

Brooke Silber, Jan & Brooke Luminae; Jim Yorgey, Lutron

Video conferencing technologies are constantly changing and our lighting needs adapt. Participants will increase their understanding of the fundamentals of LED sources and compatibility with cameras and current AV technologies. Appropriate luminaire types will be discussed. Direct distribution parabolic troffers, indirect luminaires, White Tuning fixtures and specialty LED video conference luminaires will be evaluated. Demonstrated will be the importance of balancing multiple lighting elements for good video imaging. The presentation will review the new ANSI Standard IES/InfoComm RP-38 performance standards including luminance performance criteria for key elements of the video conference room such as participants, work surfaces, and walls, and additional requirements for displays, light sources, and shades.

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**Tuesday, March 13 | 2:00pm – 3:00pm | Room: Murray Hill West**  
**Community Friendly Lighting**

Bob Parks, Smart Outdoor Lighting Alliance (SOLA)

Community friendly lighting emphasizes lighting quality, visual comfort and improved visibility using white light. Lighting fixtures that mitigate glare using innovative optical design and appropriate color temperature enable lighting designs that preserve neighborhood character and ambiance while enhancing the quality of life and enticing community interaction after dark. LED technology can dramatically improve visibility at lower lighting levels saving energy, CO2 and money. However, in an attempt to maximize these savings, the quality of lighting often suffers, and the impact on the public is seldom considered. A major component of community friendly lighting is public outreach and engagement to solicit feedback for those that must live with the consequences. By conducting town hall meetings, pilot tests, walking tours and surveys, city staff can inform the public of plans and give them the opportunity to see and judge options before finalizing decisions. In this presentation we will examine how cities can benefit from new technology, quality lighting design, and improved communication and interaction with the public.

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**Tuesday, March 13 | 3:00pm – 4:00pm | Room: Murray Hill East**  
**Understanding California Title 24 and 20 and Its Impact on Lighting**

Jamie Eck, Satco Nuvo Lighting

California's Title 24 and Title 20 will have a major impact in the US as it relates to lighting for end users and manufacturers alike. These regulatory codes are the most aggressive energy codes in the United States in their pursuit to be energy efficient. The standards which go into effect January 2018 will set a new standard for lighting in the United States.

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**Tuesday, March 13 | 3:00pm – 4:30pm | Room: Nassau**

PANEL DISCUSSION

**Challenges of Connected Lighting and Sensor Integration**

Kevin Martin, William Mills, and Justin Cathey, Northern Illinois University

The increasing adoption of LED lighting is driven by regulatory, energy efficiency and maintenance factors. At the same time advances in sensor technologies and increased connectivity resulting in the 'Internet of Things' (IoT), is spurring numerous changes in building control systems (BCS) including lighting controls. Another evolving facet related to lighting is the recognition of health and productivity impacts (both positive and negative) associated with LED lighting. For LED lighting, lighting characterization based solely on using photopic photometers is no longer applicable as they do not take into account contributions from scotopic lighting which can be significant. There is a need for improved measurement and reporting utilizing spectrometers, to provide spectral power distribution (SPD) information. Lighting systems are already being embedded with wireless communication beacons which can be used as part of an indoor location system in retailers, healthcare facilities, universities, and logistics centers. In particular, emergency response and security could be improved as real-time monitoring would automatically report exposure monitoring, 'man down', and security mishaps. The different types of sensors, connectivity technologies and associated security related concerns are issues that will impact the adoption of advanced connected lighting systems. This presentation will discuss issues related to proper LED lighting measurement, sensor connectivity/interoperability and security. The presentation will include some current research from the Building Energy Efficiency, Ergonomics and Management (BEEEM) laboratory at Northern Illinois University (NIU). [go.niu.edu/beeem](http://go.niu.edu/beeem)

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**Tuesday, March 13 | 3:30pm – 4:30pm | Room: Murray Hill West**

## **Light and WELL Building Standard**

Joyce Reyes, LightBox Studios; Michael Mehl, LightBox Studios; and Molly Dee, JB&B

More and more buildings are becoming Well Certified to promote and advance health and wellness in the built environment through design. The authors will discuss the lighting features within the WELL Building Standard. A brief overview of the lighting features that were achieved in CookFox's new WELL Gold Certified studio.

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**Tuesday, March 13 | 4:30pm – 5:30pm | Room: Murray Hill East**

## **Design for Human Experience**

Alfred Borden and Anna Ammari, Studios Architecture

A building lobby is more than a place of egress or opportunity to showcase a company's brand. This space can be a sanctuary, providing a moment of respite from our go-go society, which fills our days with a continuous stream of visual and mental stimulation. Through minimalist design, rhythmic patterns, and activation of familiar materials this case study discussion will explain how the design team improved the daily experience of New York City office workers. This case study, of a New York City office lobby, will prove that no space is too small to incorporate design elements that intentionally elevate the human experience. Attendees will learn how to reframe their approach to amenity space design and will understand how small intentional design decisions can have a significant impact on the human experience. This discussion will encourage attendees to incorporate aspects of WELL Building Standard Concepts into their projects. The breakout groups will discuss which emotions are activated by a curated selection of photographs relating to WELL Building Standard Concepts. Attendees will identify design elements pictured that they feel support the emotions expressed. The individual groups will then rejoin the collective to discuss.

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**Tuesday, March 13 | 5:00pm – 6:00pm | Room: Murray Hill West**

## **What's So Smart About Smart Lighting Control Systems?**

Anne Cheney, Melanie Freundlich Lighting Design

Smart Lighting Control Systems are the new disruptive technology in the lighting industry. What are the key components of these systems that will help lighting Specifiers better understand what they are specifying? What standards should those components be meeting? What certification (label) should be on each part of a control system? Today's energy codes require advanced lighting control systems on commercial construction projects: daylight sensors, occupancy/vacancy sensors, programming interfaces, and networked systems. Many lighting control systems also include wireless systems, artificial intelligence, internet access to the cloud and the potential for analytics and remote control. This session will review the components, organization, and standards for smart lighting control systems from a Specifiers perspective (Lighting Designer, Electrical Engineer, Architect...).

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**Tuesday, March 13 | 5:00pm – 6:30pm | Room: Nassau**

PANEL DISCUSSION

## **Shall We Meet by the Elevator at 3000K....? Characterizing Multichannel Lighting in Office and Hospitals**

Meg Smith, Philips Lighting; Patricia Rizzo, Philips Lighting; Chad Groshart, Atelier Ten

Time, space and color truly intersect, or collide, in the world of multichannel lighting. LED platforms, driver limitations, SPDs, sensors and software — these are but a few elements to consider as researchers create lighting systems for 24-hour working and healing environments today. Designers face an onslaught of new companies and technologies: IOT, sources, protocols and interfaces. Together, we'll explore how these new design parameters are being integrated into new lighting systems and the impact of the pace of change on projects and the design community. Join the discussion, supported by case studies of cutting edge healthcare, WELL projects and office environments illustrating the use of new tools to help imagine and create lighting systems.

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**Tuesday, March 13 | 6:00pm – 7:00pm | Room: Murray Hill East**

## **Dr. StrangeLED or: How I Learned to Stop Worrying ...**

Kenneth Schutz, Focus Lighting

...and Love the LED. LEDs are much more complicated than 'legacy' technologies and horror stories of installations gone wrong have become part of our industry's daily fare. This presentation will explain the complexities; explore what LED technology needs from Designers, Installers, Owners, and Maintenance staffs; and offer specific strategies for some of the most common problems.

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**Tuesday, March 13 | 6:30pm – 7:30pm | Room: Murray Hill West**

## **Can Changes in Color Temperature Influence Subjective Impressions in an Environment?**

Craig Bernecker, Parson School of Design, The Lighting Education Institute

The work of John Flynn has been a benchmark in predicting subjective responses to lighted environments, and the basis for lighting design practice recommendations in the CIE, the IES Handbook (9th and 10th editions), and is often cited in other studies.

Some of the subjective impressions Flynn identified include spaciousness/confinement, relaxation/tension, privacy/public, as well as overall impressions of preference. The characteristics of a lighted environment, or 'lighting modes' as he called them, include overhead (vs. peripheral), uniform (vs. non-uniform), bright (vs. dim), and visually warm (vs. visually cool) lighting. Today's availability of solid state lighting (LED) sources provides a much wider array of light source colors of almost limitless steps in color temperature, while maintaining good color rendering across those steps. Thus there would appear to be a significant opportunity to revisit Flynn's work to determine just how much a role light source color might have on subjective impressions of architectural environments. Such a study was undertaken in a dedicated test space at Parsons School of Design. The parameters and results of this test will be discussed.

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## **Wednesday, March 14, 2018**

**Wed, March 14 | 8:30am – 9:30am | Room: Murray Hill West**

### **The Future of Lighting Will Be Personalized**

JP Bedell, Stan Deutsch Associates

The lighting and identification technology necessary to provide truly personalized experiences is here and we will see its deployment soon. The tools are available for architects and interior and lighting designers to begin designing spaces with these capabilities in mind. With a combination of identification technology such as Bluetooth devices and RF ID, and digital lighting that can dim and change color instantly, we've reached the point where the technology for truly personalized lighting is affordable and easily programmable. We are already seeing this technology in the consumer space (see: Philips Hue). That will become the norm in office spaces, educational and therapy spaces and healthcare facilities. This presentation will give an overview of the technology behind lighting personalization and then present practical-use case scenarios. It will close with next steps for specifying a personalized lighting system.

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**Wed, March 14 | 9:00am – 10:00am | Room: Murray Hill East**

### **Treat Your Building as a Patient: Improving Environmental Hygiene Using Visible Light Disinfection**

Clifford Yahnke, Kenall Manufacturing

Healthcare Acquired Infections (HAIs) are a problem facing all healthcare providers and patients causing approximately 1.7M infections with an excess cost of approximately \$35-50B annually. With increasing antibiotic resistance, improved environmental hygiene has become an area of increasing focus for the entire facility. This session will discuss the role of specification-grade lighting and visible light disinfection in preventing HAI. A case study from a major regional hospital demonstrating the use of visible light disinfection with clinical data related to bioburden and infection rate reduction will be presented.

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**Wed, March 14 | 9:00am – 10:30am | Room: Nassau**

PANEL DISCUSSION

### **Rethinking Urban Pedestrian Lighting Metrics**

Leora Radetsky, LIRC Rensselaer Polytechnic Institute; Susanne Seitinger, Philips Lighting

The LRC worked with Philips to identify promising approaches and metrics for characterizing the performance of urban pedestrian lighting. Typical recommended practices for crosswalk and pedestrian lighting focus solely on illuminance quantities. The LRC's performance specifications are based, instead, on visual performance using a validated model that considers light level, contrast, pedestrian size and driver age, along with headlight illumination. Several advanced LED lighting systems were modeled to improve the safety and conspicuity of pedestrians in two real-world intersections in Austin, Texas. We will discuss how the LRC's performance specifications can be used to assess different scenarios. Furthermore we will address the feasibility of these scenarios for implementation.

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**Wed, March 14 | 9:30am – 10:30am | Meet Outside Room: Murray Hill West**

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**Wed, March 14 | 10:00am – 11:00am | Room: Murray Hill West**

## **Everything You Ever Wanted to Know About Dimming LEDs**

Tom Shearer and Ethan Biery, Lutron

This presentation will explore the many different options for dimming LEDs. We will start by explaining common terms and metrics that are often used to discuss dimming LEDs and will then discuss a few of the different analog and digital methods of dimming. How does each method work, what are the pros and cons, and what do you need to know and consider when specifying a fixture.

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**Wed, March 14 | 10:30am – 11:30am | Room: Murray Hill East**

## **Power-over-Ethernet (PoE) Lighting - Enabling Integrated, Automated Buildings**

Randy Jones, Engineering Manager, H.E. Williams, Inc.

This session will present how PoE lighting can be a fundamental platform for smart environments. Well-planned building integration allows a flexible, scalable lighting system to collect the data that ultimately brings more value to the building owner. Discussions will include, the relationship between Division 25 Integrated Automation and PoE Lighting, how a PoE lighting system is a scalable and adaptable building connectivity platform, the differences between full interoperability protocols and APIs and how each facilitates building system integration, and how the end-user can realize additional value propositions through data collection.

*\*Please note this seminar replaced Circadian Lighting in the Workplace: A Case Study by Joe Vose, Light Bureau*

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**Wed, March 14 | 11:00am – 12:30pm | Room: Nassau**

PANEL DISCUSSION

## **The Presidents Get Connected - A Smithsonian Case Study in Connected Lighting**

Alexander Cooper, National Portrait Gallery The Smithsonian; Ken Kane, Lighting Services, Inc.; Ron Steen, Xicato

The deluge of wireless, connected, IoT ready devices are here but how a designer can actually deploy them and the determination of any real benefit are still question marks. Do these technologies actually add value or do they create complexity? This presentation will describe a live case study in the implementation of Smart Lighting Technologies at one of the most prestigious institutions in the USA. This gallery has recently opened with a full refurbishment which included all new lighting. Running new control wires through the space would have been challenging and costly and wireless control technology has developed to a level of maturity where this step can be avoided but still with its own set of issues. The desired color changing technology carried a Zigbee protocol while the fixed white utilized a Bluetooth Low Energy (BLE) platform. Additionally, the building lighting and other AV systems are being controlled by a networked building control system. The talk will touch on each of the technologies utilized, how they were integrated into light fixtures, how and where each of the devices were integrated into the space, problems encountered along the way and the actual outcome. Finally, the presentation will address the ability of system upgrades and the addition of sensors to conserve lux hours on heritage paintings.

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**Wed, March 14 | 11:30am – 12:30pm | Room: Murray Hill West**

## **Implementing Scientific Research in the Built Environment**

Gayathri Unnikrishnan, Intl WELL Building Standard

Light profoundly influences our well-being. The lighting within spaces not only impacts our ability to perform visual tasks, it also affects our comfort, moods and biological processes. Over the last few years, we have learned how important light, both natural and electric light, is for human health. Scientific research has been pointing to the importance of light on health for many decades; however, the implementation of this research in the built environment has been slow. Understanding the main highlights of existing scientific research is integral to creating lighting environments that optimizes the productivity and improves the well-being of occupants. This session will highlight key research that can be utilized to develop lighting solutions that have a positive impact on occupant's mental and physical health. Attendees will also be taken through guidelines and strategies that may be used for the implementation of the aforementioned scientific research. The WELL Building Standard (WELL) provides guidelines for lighting design that minimize disruption to the body's circadian system, enhance productivity, support good sleep quality and provide appropriate visual acuity as part of the Light concept. WELL is the leading tool for advancing health and well-being in buildings globally.

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**Wed, March 14 | 12:00pm - 1:00pm | Room: Murray Hill East**

## **Designing with OLEDs and Integration Components**

Giana Phelan, OLEDWorks LLC, and Michael Fusco, LED Specialists

Organic Light Emitting Diodes (OLED) produce a light quality that designers have called the first pure light. The light draws people in and they want to engage in a light that feels good to them. Naturally broad spectrum and diffuse, OLED delivers a unique and superb lighting experience. As OLED blurs the line of luminaire and lighting engines, contractors are considering custom installations of OLEDs as a tile or building material. This talk will introduce the basic principles of OLED devices and both the current and forthcoming performance attributes. With this foundation, participants will explore design considerations and simplicity of OLED light engines. As a low voltage, slim profile, solid-state lighting technology OLEDs provide a direct view solution that breaks paradigms and inspires specifiers. Design elements, both pragmatic and experiential, will reveal integration opportunities through real installation examples. This seminar is for lighting designers, specifiers, architects, contractors and luminaire manufacturers.

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**PRESENTATION CANCELLED: Wed, March 14 | 1:00pm - 2:30pm**

**Seeing Light in a New Way: The Science, Impact and Technological Remedies of Flicker** | John K Roberts, Cree. Inc.

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**Wed, March 14 | 1:00pm - 2:30pm | Room: Nassau**

PANEL DISCUSSION

## **Connected Lighting Systems: How Easy is Easy?**

Daniel Blitzer, The Practical Lighting Workshop; Ruth Taylor, PNNL; Melanie Taylor, WSP

Many connected lighting systems of luminaires and controls are marketed as “easily installed and commissioned.” But how easy is easy? This presentation discusses the recently completed installation and evaluation of thirteen different connected lighting systems in New York City. Each system was designed to meet lighting and energy code requirements for power and control. Each was installed to fully light its own space, making this the most robust evaluation of its kind. The evaluated systems that will be covered in the presentation include troffers, pendants and conversion kits, with luminaire-integrated and external control approaches. Using evaluation notes, direct installer feedback, “action” photography, and video clips, members of the Next Generation Lighting Systems (NGLS) evaluation team discuss how easy it was for contractors to install and configure the systems and how well those systems actually performed once the process was completed. Panelists will also share thoughts for improving the specification and communication process.

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**Wed, March 14 | 1:30pm - 2:30pm | Room: Murray Hill East**

## **Spectral Design of Healthcare Environment**

Robert Soler, BIOS Lighting

Healthcare is a dynamic environment with multiple occupant types: shift workers, long stay patients, and short-stay patients. A lot of emphasis is put on circadian rhythms, but if not done right, it may hinder fundamental visual requirements for medical evaluation. This session will cover what is important, and how to accomplish it.

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**Wed, March 14 | 2:30pm - 3:30pm | Room: Murray Hill West**

## **Applying Wireless Technologies in Smart Buildings**

Michael Lunn, Eaton

This course is an HSW certified course that will explore how we use wireless controls to reduce energy waste and how wireless controls can provide a stepping stone into the connected world of the Internet of Things. We will look at the history that has brought lighting and controls to the point they are at today and discuss why wireless is now being seen as a leading solution for connected lighting applications. We will cover the most commonly used wireless control technologies and the basics of how they work in order to understand proper application of cyber security and design. We will look at triggers in our controls application that may require Information Technology (IT) personnel involvement as well as what information IT may need to assist with addressing access and security concerns. Finally we will discuss the role that wireless connected lighting is playing in the Internet of Things with real world examples of how it is being used today to improve occupant safety and welfare.

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**Wed, March 14 | 3:00pm - 4:00pm | Room: Murray Hill East**

**The Fish Was Thiiiiis BIG! The Realities of LM-80/TM - 21 and Setting False Lifetime Expectations**

Erik Swenson, Nichia Corporation

Lifetime claims within the lighting industry have spiraled out of control. TM-21 extrapolations, especially calculated values, DO NOT equal an LED's actual lifetime. LEDs actual lifetime DO NOT equal an LED Luminaire's actual lifetime. Therefore, TM-21 extrapolation calculations DO NOT equal an LED Luminaire's actual lifetime. The LED is not the weakest link in a system. Discussions will focus on the realities of how an LED's lifetime is calculated and estimated, including the benefits of LM-80 / TM-21, but also the flaws in the current standards for defining LED lifetime. Mr. Swenson will discuss other factors and tests that should be considered to further address lifetime, both at the LED level and Luminaire level, all with the goal of accurately setting expectations in the market and truly taking advantage of what solid state lighting can offer.

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**Wed, March 14 | 3:00pm - 4:30pm | Room: Nassau**

PANEL DISCUSSION

**Light for Improving Sleep, Treating Cancer Fatigue and Depression: A Field Study**

Mariana Figueiro, LRC Rensselaer Polytechnic Institute; William Redd, Icahn School of Medicine at Mount Sinai; Sandra Stashik, Acuity Brands Lighting

Light-dark patterns reaching the retina are the major synchronizers of our biological clock to the local time on earth. Circadian disruption resulting from too little light during the day or too much light in the evening has been associated with a series of maladies, including diabetes, obesity, and even cancer. Recent work of Redd and colleagues showed that 30 minutes of morning light significantly reduced fatigue in breast cancer patients who had completed treatment. This panel will present and discuss the development and testing of lighting fixtures designed to deliver a circadian-effective dose to cancer patients undergoing bone marrow transplant. Outcome measures collected included sleep, melatonin levels, depression and fatigue scores. Preliminary results will be discussed.

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