

February 5, 2015

## Some Thoughts on the San Francisco Workshop

Question: What do a graduate student, a biologist, and a Nobel Prize-winning physicist have in common? Answer: They each participated in DOE's [12<sup>th</sup> annual Solid-State Lighting R&D Workshop](#), which was held last week in San Francisco and drew some 300 diverse attendees – despite the fact that a major snowstorm in the Northeast had wreaked havoc with flight schedules throughout the country. The workshop crowd spanned a wide spectrum – from large lighting manufacturers to small startups, and from scientists and engineers to lighting designers and CEOs. On the first day alone, we heard from two legends in the lighting industry – SSL pioneers George Craford and Nobelist Shuji Nakamura – as well as two visionary grad students who are part of the next wave of lighting leaders.



Some of the talks we heard in San Francisco offered a mind-blowing glimpse of what lighting in the future may be like, as it expands beyond the traditional function of illuminating a space. For example, Shuji envisioned that laser diodes – which aren't subject to droop – will eventually play a role in lighting. Robert Spivock of GE Lighting described how LEDs are being used to address the issue of how to feed the world's soaring populations by enabling the efficient growth of food crops in huge indoor facilities in regions where sufficient outdoor fields are unavailable. Neil Joseph of Stack Lighting exhibited his company's responsive Alba lightbulb, which includes integrated sensors and controls that allow it to respond to ambient conditions; while George Yianni of Philips talked about his company's color-tunable Hue bulb, which already has 230 apps that have been created by users to allow them to interact with and use light in novel ways.

Pim Groen of the Holst Centre in the Netherlands described a vision of lighting using OLEDs, in which large, flexible sheets of light allow for revolutionary methods and designs. Biologist Andreas Wojtysiak of OSRAM explained the biological

effects of lighting, citing studies that have shown that the right use of lighting, enabled by LED technology, has done everything from improving attention and performance in schoolchildren, to decreasing the amount of psychotherapy required in patients suffering from depression, to heightening the comfort and wellbeing of airline passengers. Dan Ryan of Bytelight described the use of LED lighting to track customers in retail stores and noted that half of the country's top 100 stores are currently experimenting with it.

Peter Alstone, a graduate student in energy research at the University of California/Berkeley, talked about the inexpensive solar-powered portable LED lights that are being provided at a very low cost through the nonprofit Lighting Global to low-income people who have no access to electricity. Another grad student, Nan Zhao of the Massachusetts Institute of Technology's Media Lab, talked about the research she and her colleagues are doing on using sensor networks for lighting control – for example, developing a wristband that enables a person to control the lights by means of gestures, and modifying Google Glass to detect light levels right at the eye.

As you can see, these ideas are, quite literally, reinventing lighting. While that was a recurrent theme throughout the workshop, many other speakers got tactical to consider just how we can take this technology to the next level of performance. And the use of controls as the next piece of the puzzle – not only to save energy, but also to tailor lighting to our needs and preferences – came up often, in addition to being the focus of a plenary panel and two topic tables in the LED breakout session.

The OLED breakout sessions were so packed they were bursting at the seams, with more attendees than ever before – ranging from materials suppliers, to equipment makers, to luminaire manufacturers – and a plethora of speakers, including a lighting designer to provide some perspective. The result was not only many good discussions, but also a growing sense of community that was reinforced by a parallel meeting of the recently formed OLED Coalition.

The workshop's poster session/networking reception was so crowded that it was difficult to move at times, and so humming with animated conversations that it was sometimes hard to hear. Collaborations and partnerships are born at these workshops, and this one was abuzz with many such discussions. It was obvious that everyone came to learn, share, and participate – industry legends and grad students, newcomers and veterans, lighting folks and those from related industries, and researchers of all stripes.

Our thanks to all who participated. If you want to provide input but were unable to attend, or if you didn't get a chance to turn in your input forms, you can find them [online](#). The input from the workshop will help us update the [DOE SSL R&D Plan](#), a revised version of which will be published later this year. Meanwhile, the workshop presentations will be posted soon on the [DOE website](#), with a summary to follow shortly afterwards.

As always, if you have questions or comments, you can reach us at [postings@akoyaonline.com](mailto:postings@akoyaonline.com).