

## 3<sup>rd</sup> International Conference and Exhibition on Lasers, Optics & Photonics September 01-03, 2015 Valencia, Spain

## Can OLED light-quality be good enough to justify lighting renaissance?

**Jwo-Huei Jou** National Tsing Hua University, Taiwan

Hydrocarbon-burning lighting measures, such as candles, oil lamps or torches, provide pleasantly warm-sensation, but are energy-wasting with problems like burning, carbon-blacking, flickering, oxygen consumption, and carbon-dioxide emission etc. Whilst, electricity-driven light sources, such as fluorescent tubes and LEDs, are energy-saving, but may cause blue hazards, including discoloring the paintings of van Gogh and Cezanne, irreparable damage to the retina of human eyes, and suppression of melatonin secretion etc. Notably, "Electric light at night may explain a portion of the breast cancer"; as reported by Stevens et al. in 2014. Undoubtedly, there is an urgent need for a blue-hazard free lighting source to safeguard human health. However, challenges arise for such a lighting source as high light-quality is desired while meeting the power-saving trend. Could one have an energy-saving, healthy lighting source with high light-quality to initiate lighting renaissance? To demonstrate such a possibility, we employ OLED technique with a high band-number of candlelight emission complementary emitters to fabricate a high quality, energy-saving and blue-hazard free OLED. The candle light emitting OLED can exhibit an approaching 90 color rendering index or an above 90 natural light spectrum resemblance index (SRI), with a power-efficiency at least 300 times that of candles at colortemperature below 2,000K. Most importantly, it shows a much lower melatonin suppression impact than candles, based on the same luminance level. It is indicated that the candle light-style OLED is physiologically-safer than candles, and the safest among all electricity-driven lighting sources ever.

## Biography

Jwo-Huei Jou received his PhD in 1986 from University of Michigan, Ann Arbor, Michigan, USA, and worked as a Post-doctoral visiting scientist at IBM-Almaden Research Center, CA, USA, till 1988 before becoming a faculty in NTHU. He chaired the department from 2006 to 2009. He has published more than 120 journal papers and filed and/or been issued more than 60 patents, and has been serving as an Editor of Fluorescent Materials.

jjou@mx.nthu.edu.tw

Notes: