

## NYSP21 Performs Organic LED (OLED) Emitter Material and Device Evaluation for R-Display and Lighting

Located in Rochester, New York R-Display & Lighting, LLC's (RDL) mission is to leverage core expertise in Organic Light Emitting Diode (OLED) technology which has penetrated smart phone/mobile device markets with great success. RDL's foundation is built on team members with broad experience in OLED research, development and manufacturing operations.

Advantages of OLED displays include low power consumption and increased energy efficiency with improved product performance. RDL has developed a novel class of emitter materials for use in OLED products that are designed to provide high energy efficiency, superior color tuning and improved material stability.

### CHALLENGE

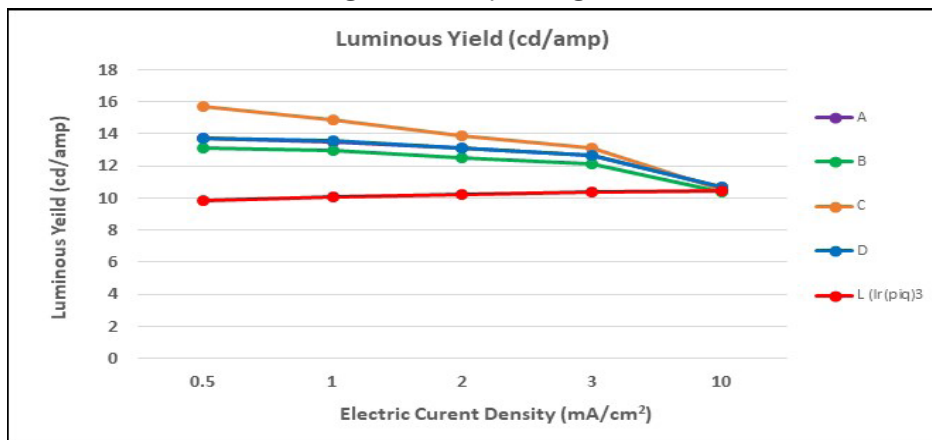
RDL requested assistance from New York State Pollution Prevention Institute (NYSP21) in providing a third party evaluation of their emitter materials to support RDL's claims of improved energy efficiency and product performance.

### SOLUTION

NYSP21 collaborated with Kodak Analytical Services and OLED Works to perform a third-party evaluation of RDL's green and red emitter materials for use in OLED devices. The work performed provides a comparative efficiency evaluation of RDL's emitter materials and OLED devices using RDL's emitter materials to the industry benchmark OLED technology.

### RESULTS

The work performed by NYSP21 resulted in key findings that will assist RDL with further developing and commercializing energy efficient emitter materials. The project results support RDL's position of achieving higher efficiencies vs. conventional OLED technologies, when operating at lower current densities.



RDL Device Luminous Efficacy Results. Note: A-D are devices containing RDL emitters. (Ir(piq)3) is the reference emitter which is representative of conventional technology.

### CHALLENGE

- RDL requested an evaluation of their emitter materials to help validate their position of improved energy efficiency and product performance

### SOLUTION

- NYSP21 collaborated with Kodak Analytical Services and OLED Works to perform a third-party evaluation of RDL's green and red emitter materials for use in OLED devices

### RESULTS

- Results support RDL's claim of achieving higher efficiencies vs. conventional OLED technologies, when operating at lower current densities
- Success of this product line is forecasted to help create 6 New York State jobs over a three year period



## TESTIMONIAL

### Emitter Material Analytical Testing

- Quantum efficiencies (QE) for RDL's green and red emitter materials were 78% and 45%, respectively, consistent with the industry benchmark reference material.

### OLED Device Performance Testing

- Results of the device performance testing indicate consistently higher efficiencies at lower electric current densities for the devices containing the RDL emitter materials.
- RDL's devices were found to be more sensitive to electric current density over the range tested than the reference device.
- At electric current densities at or below 2mA/cm<sup>2</sup>, devices containing RDL emitters demonstrated consistently higher Luminous Yield and Luminous Efficacy, and comparable External Quantum Efficiencies, as compared to a device containing the reference emitter.

Success of this product line is forecasted to help create 6 New York State jobs over a three year period.

"I found working with NYP2I to be a valuable and pleasurable experience. The team operated very professionally and established a structured task oriented process that was beneficial to R-Display & Lighting. I would recommend other energy technology focused companies to consider testing and marketing opportunities through NYP2I."

- Tommie Royster, Jr., Ph.D., CEO  
R-Display & Lighting, LLC.

## NYSP2I PARTNERS



New York Manufacturing Extension Partnership

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