Solid-state lighting’s key promise is in its ability to save energy, reduce maintenance, connect lighting with other building systems, transmit data, and essentially change our entire lighting infrastructure. Solid-state lighting has evolved to a point where the LED is now the preferred light source for many lighting applications. The LED lighting system is a mostly mature technology, and LED market transformation is estimated to approach 50% by 2025. Organic light-emitting diodes (OLED) for lighting applications are also on the horizon. Research and development work is now moving toward exploring how solid-state lighting can be customized and how to use lighting to gather information that provides greater value to both producers and users.

The Lighting Research Center’s Solid-State Lighting Program is expanding its scope of research and educational programs to enhance this technology, overcome barriers, and show benefits beyond energy savings.

In 2015, the Solid-State Lighting Program at Rensselaer’s Lighting Research Center set a new course to support the industry through research that shows the value of lighting. Embracing the trends toward customization and data analytics, solid-state lighting research is now evolving to include new developments such as the Internet of Things (IoT) and 3-D printing – areas where the lighting industry can both find and add value. The Solid-State Lighting Program’s multidisciplinary staff will be focusing its efforts in the areas of lighting systems and components research, data analytics, field demonstration and market transformation activities, education, and industry collaboration. Research areas and activities undertaken include:

- LED Systems and Components
- OLED Systems
- IoT and Connected Lighting
- 3-D Printing for SSL
- Applications Demonstration
- Human Factors Study
- Industry Collaboration
- Professional and Graduate Education
Education

Education plays an important role in the successful implementation of solid-state lighting for general illumination. The LRC conducts seminars and workshops to educate and train lighting fixture designers and manufacturers, lighting specifiers, architects and other professionals interested in learning more about LEDs, OLEDs, lighting controls, and how to successfully integrate these technologies into fixtures and applications.

Industry Collaboration

The Alliance for Solid-State Illumination Systems and Technologies (ASSIST) was established in 2002 by the Lighting Research Center as a collaboration between researchers, manufacturers, and government organizations. ASSIST’s mission is to enable the broad adoption of solid-state lighting by providing factual information based on applied research and by visualizing future applications. On behalf of ASSIST, the LRC conducts research, demonstration and educational activities. Sponsors include Amerlux; BAE Systems; Crystal IS; Current, Powered by GE; Dow Corning; Eaton; Finelite; Hubbell Lighting; NYSERDA; OSRAM; Philips Lighting; Seoul Semiconductor; U.S. Environmental Protection Agency.

About the Lighting Research Center

Rensselaer’s Lighting Research Center is the world’s leading university-based research and educational institution devoted to lighting. Based in Troy, New York, the LRC’s faculty and staff of nearly 40 experts is working to advance the effective use of lighting to create a legacy of positive change for society and the environment. The multidisciplinary team includes physicists, architects, engineers, designers, psychologists, biophysicists and communications specialists. Since 1988, the LRC has collaborated with industry, government, academia, and public advocacy groups to make a positive impact on lighting manufacturing, design, specification, installation, and use through research, application, education, and market transformation. LRC facilities include a fully equipped photometry laboratory, climate-controlled lamp and electrical testing laboratories, a human factors laboratory, and an engineering workshop to produce fully functional prototypes and models.

For More Information

Visit the LRC Solid-State Lighting Program Web site for details on research projects, publications, ASSIST, and other activities:  www.lrc.rpi.edu/programs/solidstate

For more information about project sponsorship or the ASSIST program, contact:
N. Narendran, Ph.D., LRC Director of Research
tel: (518) 687-7100 e-mail: narenn2@rpi.edu