LESA Researchers awarded US Patent for High-Speed LED Assembly Process

Troy, NY, September 26, 2016 - Inventors from the Center for Lighting Enabled Systems & Applications (LESA) at Rensselaer Polytechnic Institute were recently awarded a U.S. Patent entitled, “Light Emitting Diodes and a Method of Packaging the Same”. The patent (US 9,245,875) describes how magnets can be used to arrange arrays of LED dies in a desired pattern and connect them to their substrate. According to Professor Robert Karlicek, the Director of LESA, “Assisted LED self-assembly technology has the potential to radically reduce the cost of manufacturing large LED assemblies.”

The research that led to this patent is part of a portfolio of advanced LED assembly technologies developed at LESA. A new company, SelfArray, Inc., located in Troy, NY, was formed as a result of this development, to commercialize advanced versions of the technology. To get started, SelfArray applied for and received a National Science Foundation Phase 1 Small Business Innovation Research (SBIR) award for making the assembly of high resolution LED displays more efficient and cost effective.

Current display manufacturing technology uses expensive ‘pick and place’ tools, requiring separate handling of each LED to insure its accurate placement in the display. This problem is further compounded by manufacturers demands to make higher quality video displays, which require larger numbers of LEDs. Today, some display manufacturers are attempting to address this issue with large OLED display panels, but these systems have high manufacturing costs and are less energy efficient.

SelfArray’s technology addresses this problem by using patented and patent pending technologies to have the LEDs “assemble themselves in the just the right place, and at high speed”, according to Professor James Lu, a member of LESA and founder of SelfArray, who adds, “This massive parallel process will make the fast-moving “pick-and-place” robots obsolete.” The SelfArray approach will drastically reduce manufacturing costs while allowing for the production of even higher resolution displays than are currently available today.

About the Center for Lighting Enabled Systems & Applications (LESA)
The Center for Lighting Enabled Systems & Applications is an Engineering Research Center funded primarily by the National Science Foundation. The LESA Center is an interdisciplinary, multi-university center developing “Smart Lighting Systems that See and Think™”. LESA is developing lighting systems with new applications in healthcare, building management, horticulture, communications, and autonomous lighting control. The Center is headquartered at Rensselaer Polytechnic Institute in Troy, NY, and partners with Boston University, The University of New Mexico, and Thomas Jefferson University to achieve its objectives. http://LESA.rpi.edu/

About Rensselaer Polytechnic Institute
Rensselaer Polytechnic Institute, founded in 1824, is the nation’s oldest technological university. The university offers bachelors, masters, and doctoral degrees in engineering, the sciences, information technology, architecture, management, and the humanities and social
Institute programs serve undergraduates, graduate students, and working professionals around the world. Rensselaer faculty are known for pre-eminence in research conducted in a wide range of fields, with particular emphasis in biotechnology, nanotechnology, information technology, and the media arts and technology. The Institute is well known for its success in the transfer of technology from the laboratory to the marketplace so that new discoveries and inventions benefit human life, protect the environment, and strengthen economic development.

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Contacts
Lighting Enabled Systems & Applications Engineering Research Center (ERC)
Ann Seman Office: (518) 276-2041 | Email: seman2@rpi.edu