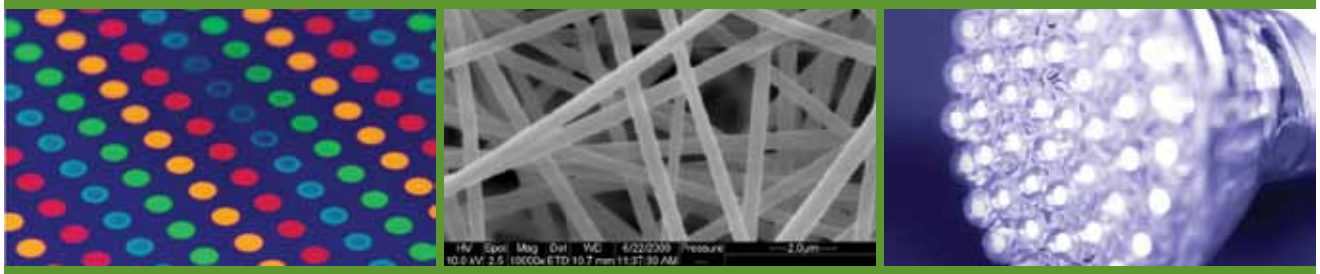


Nanofiber Light Improvement Technology (NLITe™)



NLITe™ is an innovative technology platform for the lighting industry that enables substantial energy savings and produces aesthetically pleasing light. The technology can be applied to any lighting fixture, from traditional fluorescents to energy-saving LEDs. NLITe™ was recognized with an R&D100 Award in 2011, identifying it as one of the most technologically significant products of the year.

NLITe is Based on Advanced Nanoscale Technology

NLITe™ is based on polymer nanofibers, which are nanoscale materials whose properties can be manipulated to improve lighting performance. By controlling the composition and structure of these nanofibers and carefully producing a technical fabric, it is possible to selectively alter the reflectivity performance and the light management properties of luminaires and lighting devices.

20% more light, 0% more energy. NLITe™ reflectors dramatically improve light output and energy efficiency. This allows builders, architects, lighting engineers, and designers to change their lighting designs in order to reduce installation costs while lowering operating and maintenance costs. NLITe™ also provides efficient light diffusion and improved glare resistance for overall better light quality.

The NLITe™ technology can be further modified to adjust the color palette of the light to match the desired application. The result is more aesthetically pleasing light with better color rendering properties. This is especially important in LED-based applications.

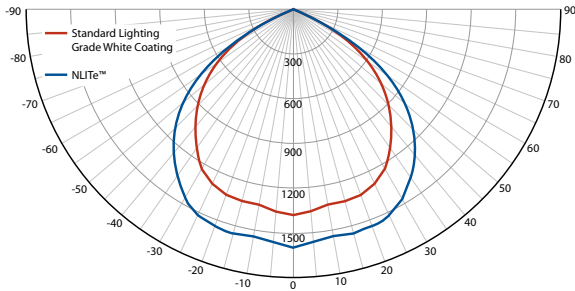
Features

- High reflectance (>95%)
- Efficient light diffusion
- Conformable materials platform
- Uniform reflectance of visible light from 400 to 750 nm
- Option for further modification to allow high quantum efficiency down-conversion of LED wavelengths to produce full-spectrum white light
- Color balancing

Benefits

- Improves lumen output by as much as 35%
- Improved energy efficiency
- Lower installation and operating costs (fewer fixtures, less energy demand, etc.)
- Can be easily adapted to various geometries imposed by light fixtures
- Conformability permits new lighting designs
- Improved glare resistance
- High color-rendering indices, with colors ranging from warm white to cool white

Nanofiber Light Improvement Technology (NLITe™)



Luminaires that use NLITe™ reflectors as a replacement for common reflective surfaces such as coatings, metals, or plastic yield as much as 35% greater light output. This figure demonstrates the increase in light output in a standard 2'x4' fluorescent troffer containing T8 bulbs.

Applications

NLITe™ can be used to increase the total illuminance of diffuse light from a luminaire and to improve the light mixing and color-rendering properties of phosphor-converted LEDs.

NLITe™ nanofiber reflectors have been developed that display high-diffuse reflectance with values well in excess of 95%. In contrast, traditional reflector materials such as aluminum and paint typically have reflectance values below 80%, reducing luminaire output efficiency through light absorption. The incorporation of NLITe™ technology into reflectors, troffers, and beam formers has been demonstrated to produce better light output than is possible with conventional materials.

NLITe™ nanofiber reflectors can be further modified through the select use of photoluminescent materials such as phosphors and quantum dots. High-efficiency white light with excellent color rendering properties can be achieved with a blue LED when coupled with NLITe™ nanofibers and the proper combination of luminescent materials. The incorporation of quantum dots can be particularly advantageous in LED applications, enabling the correction of color deficiencies in the light source without creating unnecessary radiation in the near-infrared part of the spectrum.

RTI is continuing to develop the NLITe™ technology platform in order to achieve even higher levels of performance.



Photo of the RTI logo patterned on a nanofiber substrate using proprietary NLITe™ technology.



Select tuning of the NLITe™ composition enables a standard blue (450 nm) LED to produce an intense white light source that can be used for general illumination. This lighting device has a correlated color temperature of 3850 K and a color rendering index of 92. Luminous efficacies of >60 lumens/watt have been measured at this color.



More Information

RTI International
3040 Cornwallis Road, PO Box 12194
Research Triangle Park, NC 27709-2194 USA
www.rti.org/NLITe

RTI 7268R3 0212



RTI International is one of the world's leading research institutes, dedicated to improving the human condition by turning knowledge into practice. Our staff of more than 2,800 provides research and technical services to governments and businesses in more than 40 countries in the areas of health and pharmaceuticals, education and training, surveys and statistics, advanced technology, international development, economic and social policy, energy and the environment, and laboratory testing and chemical analysis. For more information, visit www.rti.org.

RTI International is a trade name of Research Triangle Institute.