

Student Develops First Polarized LED

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In recent years, light emitting diodes (LEDs) have begun to change the way we see the world. Now, a Rensselaer Polytechnic Institute student has developed a new type of LED that could allow for their widespread use as light sources for liquid crystal displays (LCDs) on everything from televisions and computers to cell phones and cameras.

Martin Schubert, a doctoral student in electrical, computer, and systems engineering, has developed the first polarized LED, an innovation that could vastly improve LCD screens, conserve energy, and usher in the next generation of ultra-efficient LEDs. Schubert's innovation has

earned him the \$30,000 Lemelson-Rensselaer Student Prize.

Schubert's polarized LED advances current LED technology in its ability to better control the direction and polarization of the light being emitted. With better control over the light, less energy is wasted producing scattered light, allowing more light to reach its desired location. This makes the polarized LED perfectly suited as a backlighting unit for any kind of LCD, according to Schubert. Its focused light will produce images on the display that are more colorful, vibrant, and lifelike, with no motion artifacts.

Schubert first discovered that traditional LEDs actually produce polarized light, but existing LEDs did not capitalize on the light's polarization. Armed with this information, he devised an optics setup around the LED chip to enhance the polarization, creating the first polarized LED.

The invention could advance the effort to combine the power and environmental soundness of LEDs with the beauty and clarity of LCDs. Schubert expects that his polarized LED could quickly become commonplace in televisions and monitors around the world, replacing widely used fluorescent lights that are less efficient and laden with mercury. His innovation also could be used for street lighting, high-contrast imaging, sensing, and free-space optics, he said.

Source: Rensselaer Polytechnic Institute

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