



Syntheses, Characterizations, and Applications of Heli-Viologens and Heli-Acenes

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Inventor:

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Patent Status:

Patent Pending

Description of Technology

Circularly polarized (CP) light is of interest in the fabrication of high efficiency electronic displays. The current method to generate CP light in these displays is to pass plane averaged emission through a series of filters. These filters generate unwanted bulk and reduce the throughput of the CP light. Direct emission of CP light from a circularly polarized organic light emitting diode (CP-OLED) would immediately solve the problem of bulkiness. Acenes, an organic compound and hydrocarbon, have been exploited in the fabrication of high efficiency OLEDs because of their remarkable electronic properties. Twisted acenes would be an ideal candidate for the fabrication of CP-OLEDs, but most twisted acenes synthesized to date have a half-life of a specific rotation decay of no greater than a few hours at room temperature. The short half-life makes them not viable for creating CP-OLEDs because they simply do not last long enough.

Researchers at the University of Wyoming have synthesized a heli-viologen helicene that has a significantly longer lifetime than what is currently produced. With this helicene, researchers have synthesized a heli-twisted-acene material with a much longer lifetime than what is currently available. The longer lifetime of the heli-twisted-acene makes it a good candidate to incorporate into high efficiency electronic displays and would solve many of the problems of obtaining direct emission of CP light.

Applications

The longer lifetime of the heli-twisted-acene makes it a good candidate for the fabrication of high efficiency electronic displays. It can directly emit circularly polarized light which can reduce the bulk of current CP-OLED displays.

Features & Benefits

- Longer lifetime than current twisted acenes
- Directly emits CP light
- Can create less bulk in CP-OLED displays

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