

TITLE

Flexible Transparent Membrane Light Emitting Diode Array

CASE NUMBER

C15180

VALUE PROPOSITION

- » The inventors can fabricate CQD LEDs on flexible substrates or curved glass surfaces.
- » These CQD LEDs would be suited for building a flexible and transparent membrane-based LED arrays with an emission wavelength tunability between 800-2000 nm, flexibility with a thickness of under 1 micrometer allowing them to be ultra-lightweight.

UNMET NEED

- » Conventional LEDs are made from materials that absorb strongly in the visible wavelength range, which makes transparency impossible to achieve.
- » Current LEDs are not flexible.
- » There is a need for a different material in LEDs that would allow it to be transparent, lightweight, and have improved effectiveness over conventional LEDs.

TECHNICAL OVERVIEW

- » The inventors have proposed a methodology that uses colloidal quantum dots (CQDs) as the active layer in the construction of a multi-layer structured, thin-film, flexible, and transparent membrane of LED arrays.
- » This is done in tandem with other solution-processed materials, allowing for a flexible and transparent membrane-based light-emitting diode (LED) array.
- » This invention takes advantage of the fact that the band gap energy of CQDs can be tuned easily during the material synthesis based on the size of the nanocrystals created.

STAGE OF DEVELOPMENT

- » The inventors have developed a flexible transparent membrane light emitting diode array.

ASSOCIATED INVENTORS

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TECHNOLOGY CLASSIFICATION

- » Electrical Engineering
- » Engineering

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JOHNS HOPKINS
TECHNOLOGY VENTURES

ASSOCIATED REPORTS OF INVENTION (ROIs) AND INTELLECTUAL PROPERTY (IP) FILING NUMBERS

ROI#	TITLE	STATUS	PRIORITY DATE	IP FILING NUMBERS
C15180	Flexible Transparent Membrane Light Emitting Diode Array	Pending	4/3/2019	<u>US Publ. US</u> <u>2022/0187904</u>