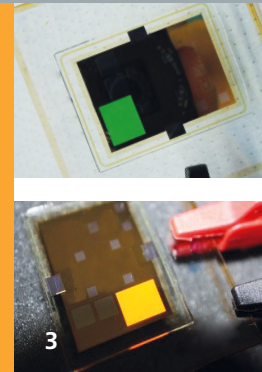


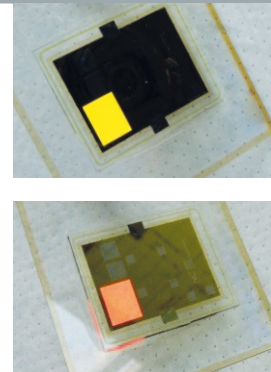
1



2



3



- 1 *Quantum Dot.*
- 2 *QD-LED printable materials.*
- 3 *QD-LED.*

QUANTUM DOTS IN DISPLAYS

FROM MATERIALS TO APPLICATION

Fraunhofer Institute for Applied Polymer Research IAP

Geiselbergstr. 69
14476 Potsdam
Germany

Contact

Dr. Armin Wedel

Phone +49 331 568-1910
Fax +49 331 568-3000
armin.wedel@iap.fraunhofer.de

Dr. André Geßner

Phone +49 331 568-3331
Fax +49 331 568-3000
andre.gessner@iap.fraunhofer.de

www.iap.fraunhofer.com

Quantum Dot Applications

Quantum dots (QDs) are semi-conductor nanoparticles in which the absorption properties and emission wavelength can be tuned by adjusting the particle size. In this way, the particle can be tailored to the requirements of the respective application. Therefore, QDs can be used for a broad range of applications in displays such as

- converting films for backlight units in LCD displays
- electroluminescent emitter in QD-LED device in displays and also for general lighting applications.

QD-LED

Developing high-performance QD-LEDs based on InP-based QDs is quite important to bring QD-LEDs into the future market. InP-based QDs have been identified as one of the most promising materials for green and red emission in displays. Optimizing charge carrier balance and the recombination zone in the multilayered device structure is key for the development of highly efficient and stable QD-LEDs. Starting from hole injection layers and crosslinked HTL the solution-based InP QDs of the three main colors of a RGB-display can be printed. Based on these printing processes, the way is paved to a fully ink-jet printed QD-LED displays.