

Development of OLED Materials at Merck

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Two examples of OLED material development at Merck are shown in this presentation.

Firstly, the development of electron transport materials for evaporated blue fluorescent OLEDs is presented. The crucial impact of charge balance is discussed. It is shown that voltage, efficiency and lifetime cannot be optimized independently of each other. With novel ETMs, any desired trade-off between the three can be obtained.

Secondly, the development of highly efficient triplet emitters and their application in ink-jet printed OLEDs is presented. It is shown that the main challenge for deep red is to achieve high quantum efficiency and a good compromise between eye sensitivity and luminous efficiency, while the main challenge for green is to achieve very narrow spectral width for good colour purity. New emitters with high performance in ink-jet printed devices with excellent uniformity are demonstrated.