Oral Presentation

[OLED3]OLED Display

Chair: Taishi Tsuji (NIPPON STEEL Chemical &Material)
Co-Chair: Masaya Adachi (Japan Display Inc)
Wed. Nov 27, 2019 5:00 PM - 6:25 PM Room 204 (2F)

6:10 PM - 6:25 PM

[OLED3-6L]Significance of Energy-Level Alignment in 3D Perovskite ELs Significance of Energy-Level Alignment in 3D Perovskite ELs

*KIHYUNG SIM[1], HAYATO KAMIOKA[2], JUNGHWAN KIM[1], HIDEO HOSONO[1] (1. Materials Research Center for Element Strategy, Tokyo Institute of Technology, (Japan), 2. Department of Physics, College of Humanities and Sciences, Nihon University (Japan))
Keywords:Metal Halide Perovskite, Perovskite light-emitting diode (PeLED), Electron Transport layer (ETL), Exciton Confinement Effect, Charge Balance

In this study, we report a significant phenomenon that EL performances for 3D materials, such as $CsPbX_3$, are governed by adjacent charge transport layers, which is possibly due to nonradiative recombination resulting from the small exciton binding energy. To overcome this issue, we developed a new electron transport layer (ETL) that enhances exciton confinement effect in 3D $CsPbX_3$. Consequently, we achieved ultra-high brightness of 500,000 cd/m^2 at a very small operating voltage of 5V.