

(19) United States

(12) Patent Application Publication (10) Pub. No.: US 2024/0237517 A1 LEE et al.

Jul. 11, 2024 (43) **Pub. Date:**

(54) ORGANIC LIGHT EMITTING DIODE AND ORGANIC LIGHT EMITTING DEVICE

(71) Applicant: LG Display Co., Ltd., Seoul (KR)

(72) Inventors: Yu-Jeong LEE, Paju-si (KR);

Sang-Beom KIM, Paju-si (KR); Eun-Jung PARK, Paju-si (KR); Ju-Hyuk KWON, Paju-si (KR); Jang-Dae YOUN, Paju-si (KR): Shin-Young JEONG, Paju-si (KR); Hyun-Jin CHO, Paju-si (KR); Jun-Su

HA, Paju-si (KR)

(73) Assignee: LG Display Co., Ltd., Seoul (KR)

(21) Appl. No.: 18/242,851

(22)Filed: Sep. 6, 2023

Foreign Application Priority Data (30)

(KR) 10-2022-0184110 Dec. 26, 2022

Publication Classification

(51) Int. Cl.

H10K 85/60 (2006.01)H10K 50/13 (2006.01) (52) U.S. Cl.

CPC H10K 85/654 (2023.02); H10K 50/13 (2023.02); H10K 85/615 (2023.02); H10K 85/626 (2023.02); H10K 85/6572 (2023.02); H10K 50/166 (2023.02)

(57)ABSTRACT

An organic light emitting diode (OLED) is described, having an emissive layer with an emitting part including at least one emitting material layer, a first electron transport layer, and a second electron transport layer disposed sequentially between two facing electrodes. The first electron transport layer includes a first electron transporting material of an azine-containing compound and the second electron transport layer includes a second electron transporting material of a benzimidazole-containing compound. The first electron transport layer, with controlled electron transporting property and energy level, is disposed adjacently to the at least one emitting material layer and the second electron transporting layer is disposed adjacently to the second electrode or an electron injection layer so that the OLED can lower driving voltage and can maximize luminous efficiency and luminous lifespan. An organic light emitting device including the OLED can be a display device or a lighting device.



