



US 20240215288A1

(19) **United States**

(12) **Patent Application Publication**
JO et al.

(10) **Pub. No.: US 2024/0215288 A1**

(43) **Pub. Date: Jun. 27, 2024**

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

H10K 77/10 (2006.01)

H10K 85/60 (2006.01)

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

(52) **U.S. Cl.**

CPC *H10K 50/125* (2023.02); *H10K 50/814*
(2023.02); *H10K 50/82* (2023.02); *H10K*
77/10 (2023.02); *H10K 85/622* (2023.02);
H10K 85/653 (2023.02); *H10K 2102/101*
(2023.02)

(72) Inventors: **Sung-Min JO**, Paju-si (KR);
Hong-Seok CHOI, Paju-si (KR);
Sun-Hee LEE, Paju-si (KR)

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

(57)

ABSTRACT

An organic light emitting diode (OLED) is described, where a red emitting material layer, a first blue emitting material layer and a second blue emitting material layer are disposed sequentially between two electrodes. A first blue host in the first blue emitting material layer has a hole mobility faster than a hole mobility of a second blue host in the second blue emitting material layer. Holes and electrons are injected into an emitting material layer in balance so that an exciton recombination zone is formed within the emitting material layer. Red and blue emission efficiencies are controlled in balance so that an OLED with beneficial blue emission efficiency and high red emission lifetime can be realized. An organic light emitting device includes the organic light emitting diode, and can be a display device or a lighting device.

(21) Appl. No.: **18/229,358**

(22) Filed: **Aug. 2, 2023**

(30) **Foreign Application Priority Data**

Dec. 9, 2022 (KR) 10-2022-0171069

Publication Classification

(51) **Int. Cl.**

H10K 50/125 (2006.01)

H10K 50/814 (2006.01)

H10K 50/82 (2006.01)

100

