



US 20240237524A1

(19) **United States**

(12) **Patent Application Publication**

LEE et al.

(10) **Pub. No.: US 2024/0237524 A1**

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

(54) **ORGANIC LIGHT EMITTING DIODE**

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

(72) Inventors: **Yo-Sub LEE**, Paju-si (KR); **Jeong-Eun WON**, Paju-si (KR); **Chun-Ki KIM**, Paju-si (KR)

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

(21) Appl. No.: **18/381,049**

(22) Filed: **Oct. 17, 2023**

(30) **Foreign Application Priority Data**  
Dec. 27, 2022 (KR) ..... 10-2022-0186243

**Publication Classification**

(51) **Int. Cl.**  
**H10K 85/60** (2006.01)  
**H10K 50/11** (2006.01)

(52) **U.S. Cl.**  
**CPC** ..... **H10K 85/6572** (2023.02); **H10K 50/11** (2023.02); **H10K 50/15** (2023.02); **H10K 50/16** (2023.02); **H10K 85/633** (2023.02); **H10K 85/6574** (2023.02)

(57) **ABSTRACT**  
An organic light emitting diode (OLED) and an organic light emitting device comprising the OLED (e.g., a display device or a lighting device) are described. An emissive layer disposed between two electrodes comprises an exciton control layer between a red emitting material layer and a green emitting material layer. Exciton recombination zone is distributed uniformly within the entire area of an emitting material layer and holes and electrons can be injected into the emitting material layer in balance. The degradations of the luminous materials and/or charge transporting materials caused by quenched excitons as non-emission can be minimized. The luminous lifespan of the OLED can be improved, while maintaining luminous efficiency.