



US 20240251585A1

(19) **United States**

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

(10) **Pub. No.: US 2024/0251585 A1**

(43) **Pub. Date: Jul. 25, 2024**

(54) **ORGANIC ELECTROLUMINESCENT
ELEMENT, ORGANIC
ELECTROLUMINESCENT DISPLAY
APPARATUS, AND ELECTRONIC DEVICE**

Publication Classification

(51) **Int. Cl.**

H10K 50/13 (2006.01)

H10K 50/15 (2006.01)

H10K 59/35 (2006.01)

H10K 101/60 (2006.01)

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

CPC **H10K 50/131** (2023.02); **H10K 50/156**
(2023.02); **H10K 59/35** (2023.02); **H10K**
2101/60 (2023.02)

(71) Applicant: **IDEMITSU KOSAN CO.,LTD.**, Tokyo
(JP)

(72) Inventors: **Tetsuya MASUDA**, Tokyo (JP);
Satomi TASAKI, Tokyo (JP); **Hiroaki**
TOYOSHIMA, Tokyo (JP); **Masato**
NAKAMURA, Tokyo (JP); **Kazuki**
NISHIMURA, Tokyo (JP); **Hiroaki**
ITOI, Tokyo (JP); **Emiko KAMBE**,
Tokyo (JP)

(73) Assignee: **IDEMITSU KOSAN CO.,LTD.**, Tokyo
(JP)

(21) Appl. No.: **18/288,147**

(22) PCT Filed: **Apr. 26, 2022**

(86) PCT No.: **PCT/JP2022/018803**

§ 371 (c)(1),

(2) Date: **Feb. 26, 2024**

(30) **Foreign Application Priority Data**

Apr. 26, 2021 (JP) 2021-074498

(57)

ABSTRACT

An organic EL device includes: an anode; a cathode; an emitting region; and a hole transporting zone, in which the emitting region includes a first emitting layer containing a first host material and a second emitting layer containing a second host material, at least one organic layer in the hole transporting zone is a first organic layer, the first organic layer contains a hole transporting zone material, the first emitting layer is disposed close to the anode, and a triplet energy of the first host material $T_1(H1)$ and a triplet energy of the second host material $T_1(H2)$ satisfy Numerical Formula 1, and a dipole of the first host material is 0.4 D or more,

$T_1(H1) > T_1(H2)$

(Numerical Formula 1).

