



US 20240237398A9

(19) **United States**
(12) **Patent Application Publication**
Kim et al.

(10) **Pub. No.: US 2024/0237398 A9**
(48) **Pub. Date: Jul. 11, 2024**
CORRECTED PUBLICATION

(54) **DISPLAY APPARATUS AND METHOD OF MANUFACTURING THE SAME**

Publication Classification

(71) Applicant: **Samsung Display Co., Ltd.**, Yongin-Si (KR)

(51) **Int. Cl.**

H10K 59/121 (2006.01)
H10K 50/844 (2006.01)
H10K 59/65 (2006.01)
H10K 71/00 (2006.01)

(72) Inventors: **Jaybum Kim**, Yongin-si (KR);
Myeongho Kim, Yongin-si (KR);
Yeonhong Kim, Yongin-si (KR);
Kyoungseok Son, Yongin-si (KR);
Sunhee Lee, Yongin-si (KR); **Seungjun Lee**, Yongin-si (KR); **Seunghun Lee**, Yongin-si (KR)

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

CPC **H10K 59/121** (2023.02); **H10K 50/844** (2023.02); **H10K 59/1213** (2023.02); **H10K 59/1216** (2023.02); **H10K 59/65** (2023.02); **H10K 71/00** (2023.02); **H01L 27/1255** (2013.01)

(21) Appl. No.: **18/544,515**

(57)

ABSTRACT

(22) Filed: **Dec. 19, 2023**

Prior Publication Data

(15) Correction of US 2024/0138184 A1 Apr. 25, 2024
See (30) Foreign Application Data

(65) US 2024/0138184 A1 Apr. 25, 2024

Related U.S. Application Data

(62) Division of application No. 17/401,368, filed on Aug. 13, 2021, now Pat. No. 11,889,720.

Foreign Application Priority Data

Aug. 31, 2020 (KR) 10-2020-0110597

A display apparatus includes a substrate including a transmission area having a first through hole, a display area surrounding the transmission area, and a middle area disposed between the transmission area and the display area, a pixel circuit disposed on the display area, the pixel circuit including a first thin film transistor including a first semiconductor layer having polycrystalline silicon, and a second thin film transistor including a second semiconductor layer including an oxide semiconductor, a display element including a pixel electrode electrically connected to the pixel circuit, an opposite electrode disposed on the pixel electrode, and an intermediate layer disposed between the pixel electrode and the opposite electrode and including an emission layer, and a groove disposed in the middle area while surrounding the first through hole.

