

Transparent electrodes based on carbon nanomaterials for liquid crystal displays

Seung Won Shin, Yong Un Jung, Ki-Beom Kim, Suk-Won Choi, Seong Jun Kang*

Department of Advanced Materials Engineering for Information and Electronics, Kyung Hee University, 1 Seocheon-dong, Giheung-gu, Yongin-si, Gyeonggi-do 446-701, Republic of Korea

Abstract

We will report typical twisted nematic (TN) liquid crystal displays (LCDs) with carbon nanomaterials as a transparent electrode to fabricate ITO-free device. Graphene, multi-layered graphene, carbon nanotube, and hybrid film based on carbon nanomaterials with metal grid were prepared for transparent conductive films. We evaluated the properties and performance of LCD devices with the prepared transparent films by measuring the transmittance, sheet resistance, voltage-transmittance curve and voltage holding ratio. The result shows that the hybrid film of graphene and metal grid could be an alternative to ITO for the new-type of LCDs.

*Corresponding author: Tel/Fax: +82 31 201 3324/

E-mail address: junkang@khu.ac.kr (S.J. Kang),