RGB OLED의 전기적 특성 분석

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Electrical characteristics of RGB OLED

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Abstract : Electrical analysis of red, green and blue (RGB) organic light emitting diode (OLED), which were measured at various temperatures from 230K to 370K by steps of 20K, were investigated using current-voltage(I-V) characteristics. Ideality factor and series resistance were obtained from the thermionic emission theory. Experimental results showed that the ideality factors were 2.12 for red, 3.80 for green, and 6.03 for blue OLED at 290K, respectively. The series resistance were 1960, 2190, 2630Ω for red, green and blue OLED at the same temperature. It was found that the OLED ideality factors were much higher than near unity for well-behaved silicon diodes, because of the organic material and multi-layer fabrication diode. In addition, the series resistance was near 2kΩ range. More researches are required to reduce both ideality factors and series resistance to increase the efficiency of OLEDs.

Key Words : RGB OLED, Ideality factor, Series resistance

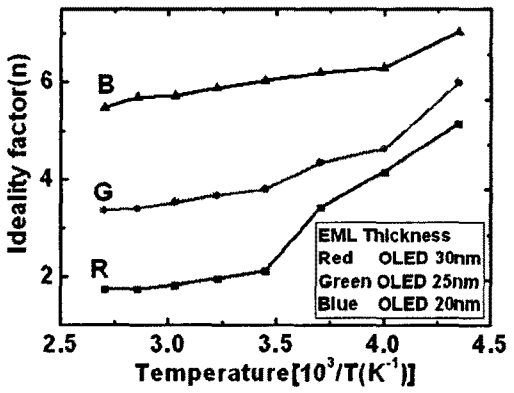

Fig.1. Temperature dependence of the ideality factor

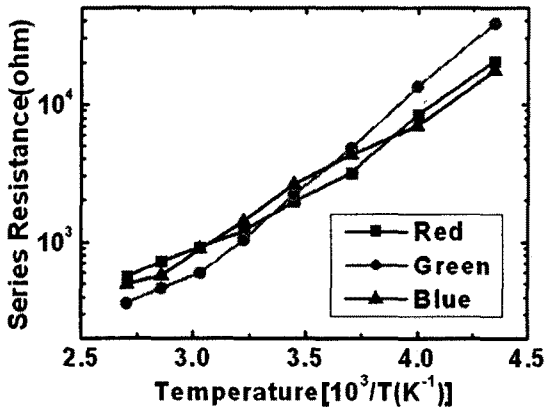

Fig.2. Temperature dependence of the series resistance

References

[1] Ő.Faruk Yüksel, Physica B (2009)
[2] N. Tuğluoğlu, S. Karadeniz, Ş. Altindal, Appl. Surf. Sci. 239 (2005) 481-489
[3] F.E. Cimilli, M.Sağlam, H. Efeoğlu, A. Türüt, Physica B 404 (2009) 1558-1562