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## Improvement in Viewing Angle Properties of Top-emitting Organic Light-emitting Devices

Liou, Bo-Ting; Tsai, Miao-Chan; Huang, Yi-Hsiang; Chen, Fang-Ming; Lin,  
Yu-Rui; Kuo, Yen-Kuang

### Abstract

The blue shift of viewing angle in the top-emitting organic light-emitting devices is discussed in this study. For the single-mode cavity, the device of anode metal/ m-MTDATA (40 nm)/  $\alpha$ -NPD (10 nm)/ Alq3 (47.6 nm)/ LiF (1 nm)/ Ag (20 nm) with the metal phase difference of  $1.30\pi$  has the minimum blue shift of viewing angle. For the double-mode cavity, the recombination area must be away from the cathode for the device with better performance. However, the double-mode cavity with only one recombination area still has worse FWHM and gets more serious the blue shift of viewing angle than the single-mode cavity. Therefore, the double-mode cavity with a recombination area at each antinode is performed, and the results prove that the blue shift of viewing angle and the FWHM are improved. Finally, we replace the emission layer with Alq3:DCM (0.01%) and adjust the main peak wavelength in the double-mode cavity by adjusting the thicknesses of the cavity. The results show that the FWHM and the blue shift of viewing angle obtain further improvement for the double-mode cavity with a recombination area at each antinode.