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Impedance analysis of MEHPPV-CNT organic electroluminescence devices SEGI YU, Dept. Physics, Hankuk University of Foreign Studies, BEOMHEE WON, Dept. Physics, Syungkyunkwan University — Recently, organic electroluminescence (EL) devices have been intensively researched due to successful commercialization of organic TVs. Polymers are focused as electroluminescent materials for roll-to-roll process. Carbon nanotubes (CNTs) have been used in organic-based devices producing high performance. However, there were few remarks on the current, hinting poor efficiency. [Nano Lett. 11, 966 (2011)] It was deduced from the large length of CNTs yielding unwanted leakage current paths within the devices. Consequently, it is necessary to control the properties of CNTs for this purpose. Here, CNT-incorporated AC-driving OLEDs were investigated with CNT-embedded MEH-PPV as an emitting material. CNT-incorporated OLEDs were brighter more than 50% and the turn-on voltages of the devices roughly reduced 50%. One of main reason for this reduction in the current is thought to be the micro-capacitor effects caused by CNT networking in MEHPPV. The impedance of the devices was analyzed by fitting the data with serial and parallel combination of two resistors and one capacitor, which explains the low current nature of the device. The detailed explanation of high bright and low current of CNT-incorporated OLEDs will be explained in the poster.

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