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Spin Response in Organic Light Emitting Diodes[1] FUJIAN WANG, CUNGENG YANG, TOMER DRORI, Z. VALY VARDENY, Department of Physics, University of Utah — To understand the origin of the magnetic field effect in OLEDs, we studied the large magnetoresistance (MR) and magnto-electroluminescence (MEL) of OLEDs based on pristine MEH-PPV polymer, as well as MEH-PPV doped with various concentrations of radical impurities and C_{60} molecules. In contrast to OLED based on pristine MEH-PPV that show MR and MEL up to 12% at room temperature, we found in MEH-PPV:C_{60} based OLED the MR and MEL decrease substantially with increasing C_{60} molecule concentration. For MEH-PPV:C_{60} devices with C_{60} concentration of 50%, the MR effect is less than 0.3% at room temperature. In MEH-PPV: radical devices the MR and MEL effects again differ substantially from those found in pristine and C_{60} doped MEH-PPV devices. At 50% radical concentration the MR and MEL effects are about 1% and 3.5%, respectively. The results are discussed with existing models for the magnetic field effects in OLEDs.

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Fujian Wang

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