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Electroluminescence Emission of Fully Conjugated Heterocyclic Aromatic Rigid-rod Polymer Doped in *Multi*-wall Carbon Nanotube JEN WEI HUANG, SHIH JUNG BAI, National Sun Yat-Sen University — Carbon nanotube and poly-*p*-phenylenebenzobisoxazole (PBO) contain fully conjugated rodlike backbone entailing excellent optoelectric properties and solvent resistance. Rigid-rod polymer PBO is only soluble in methanesulfonic acid or Lewis acid. *Multi*-wall carbon nanotube (*MWNT*) was dissolved in a Lewis acid solution of PBO for dispersion of nanotube, and then spun for thin film. *MWNT* concentration in the films was from zero up to 5 wt. %. Compared to that of pure PBO film, composite films of *MWNT* doped PBO showed same UV-Vis absorption peaks which were enhanced with *MWNT* concentration but without overlapping electron orbitals to effect their energy gaps. All films were excited by He-Cd laser with excite wavelength of 325 nm for photoluminescence (PL) response. All PL spectra had maximum wavelength peak at 540 nm indicative of yellow-green light emission. For light emitting diodes, *MWNT* doped PBO would decrease threshold voltage for about 2 V. At 0.1 wt. % of *MWNT*, the composite device emission current was increased up to two orders of magnitude than the PBO diodes without *MWNT*. Further increase of *MWNT* caused a successive decrease in electroluminescence emission intensity attributed to a quench effect form aggregation of *MWNT*s.

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