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**PL enhancement in MEH-PPV stretched films by suppression non-radiative relaxations** JUI-HUNG HSU, Dept. of Materials & Opt-electronic Science, National Sun Yat-sen University, JONATHON DAVID WHITE, Dept. of Photonics Engineering, Yuan Ze University, ARNOLD C.-M. YANG, Dept. of Materials Science & Engineering, National Tsing-Hua University — Due to the strong electro-phonon coupling, excitation in conjugated polymer is easily relaxed through non-radiative decay channels, and the luminescence yield is lowering. It would be crucial to reduce the non-radiative relaxations for the high performance light-emitting applications. We report the study of stretched MEH-PPV blending films by fluorescence lifetime imaging microscopy. Polymer in the stretched region is fully aligned, and the emission yield is improved by 40%. The improvement is well-agreed with the lifetime studies. Our results indicate that the PL enhancement is due to the suppression of non-radiative relaxations while stretching. Comparing the lifetime imaging and the morphology by AFM, molecular strain distribution is provided. The investigation would be useful in the device application and the basic understanding of electronic excitation relaxation in conjugated polymers.

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