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Doping Poly(p-phenylene vinylene) with Phosphomolybdate through Layer-by-Layer Fabrication for Optoelectronic Applications CHRIS NELSON, BIN WANG, Lamar University — Poly(p-phenylene vinylene) (PPV) mulilayers have been prepared from its cationic precursor via the layer-by-layer deposition. The photoluminescence (PL) and film thickness of the multilayers have been examined via fluorimetry and atomic force microscopy. The PL of the multilayers has been observed that is consistent with the literature results. When phosphomolybdate PMo12 is incorporated into the multilayer structure, PL quenching is detected that is proportional to the amount of PMo12 used. The quenching is interpreted as exciton diffusion through the polymer multilayers, followed by exciton dissociation at the polymer/PMo12 interface. We show that the modeling used for calculating the PL intensities derived from inorganic semiconductors is also applicable to conjugated polymers. According to the model, an exciton diffusion length is found to be 11.5±0.4 nm.

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