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Interface-controlled thin film growth of conjugated polymers via pulsed laser deposition[1] R.K. GUPTA, K. GHOSH, Missouri State University, SUCHI GUHA, University of Missouri-Columbia — Matrix-assisted pulsed laser evaporation, a derivative of pulsed laser deposition (PLD), is an alternative method of depositing polymer and biomaterial films that allows homogenous film coverage of high molecular weight organic materials for a layer-by-layer growth without any laser induced damage. Polyfluorene (PF) -based conjugated polymers have attracted considerable attention in blue-emitting displays. Di-octyl substituted polyfluorene (PF8), its copolymers, and thiophene- based polymers were deposited as thin films using matrix- assisted PLD by employing a KrF excimer laser. The optical and structural properties of these films are compared with spincoated films via Raman spectroscopy, absorption and photoluminescence. The Raman spectra of both PLD and spincoated films are similar indicating that the polymer films deposited via PLD maintain their molecular structure. We further discuss the application of interface-controlled PLD grown films in metal-insulator-semiconductor diodes and field-effect transistors.

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Suchi Guha
University of Missouri-Columbia

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