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Fabrication of Conducting Polymer Thin Films Using Molecular Layer Deposition

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The conducting polymer thin films were deposited using the gas phase method which known as molecular layer deposition (MLD). Terephthalaldehyde (TPA) and p-phenylenediamine (PD) were used as monomers to deposit conducting polymer. Self-terminating nature of TPA and PD reaction were demonstrated by growth rate saturation versus precursors dosing time. Infrared spectroscopic and X-ray photoelectron spectroscopy were employed to determine the chemical composition and state of conducting polymer thin films. Layer by layer growth and polymerization of thin films can be showed by shifting of absorption edge using UV-VIS spectroscopy. This conducting polymer fabricated by using MLD method gives the opportunity to develop new hybrid materials by combining inorganic materials in nanoscale.

Keywords: MLD, Organic thin films, Conducting polymer