Controlling morphology of PCPDTBT:PCBM organic solar cells in mixed solvent of chlorobenzene and carbon disulfide

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Bulk-heterojunction PCPDTBT:PCBM organic solar cells were fabricated by using a mixed solvent of carbon disulfide and chlorobenzene instead of conventional chlorobenzene solvent. Optical microscope images showed that morphology of PCPDTBT:PCBM active layer film can be controled by varying the volume of carbon disulfide. No significant peaks of carbon disulfide appeared after drying PCPDTBT:PCBM film in vacuum (~10−3 Torr) for 30 min at room temperature as confirmed by FTIR. Devices with structure glass/ITO/PEDOT:PSS/PCPDTBT:PCBM/Al prepared from mixed solvent exhibited better optoelectronic properties than in corresponding standard devices.