

Photodetector using MoO₃ nanoparticle interlayer for High detectivity

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we report the effects of MoO₃ nanoparticles (NPs) capped with surfactant to improving interfacial contact between the active layer and MoO₃ Nanoparticle layer for achieving high performance photo diode. For this purpose, MoO₃ NPs capped with various surfactants such as sodium dodecyl sulfate (SDS), polyethylene glycol dodecyl ether, Polyethylene glycol oleyl ether, polyoxyethylene(10) oleyletherb and polyethylene glycol hexadecyl ether were synthesized. By constructing electron blocking layer with surfactant-capped MoO₃ NPs, we show improved morphology and low dark current density, to achieve high detectivity without reducing the photocurrent. The origin of such enhanced performances of organic photodiodes is fully discussed together with various characterization results.