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ENHANCING EFFICIENCY OF ORGANIC LIGHT EMITTING DIODES THROUGH DOPING OF CADMIUM SULPHIDE NANOCRYSTALS

DEEPTI SHRIVASTAVA[1] & M. M. MALIK[2]

[1]Research Scholar, Department of Physics, Maulana Azad National Institute of Technology, Bhopal, Madhya Pradesh, India

[2]Professor, Department of Physics, Maulana Azad National Institute of Technology, Bhopal, Madhya Pradesh, India

ABSTRACT

CdS nanocrystals are synthesized by wet chemical deposition technique without using any capping agent. Next a hybrid optoelectronic structure is presented, where a monolayer of CdS quantum dots is sandwiched between PEDOT: PSS and MEHPPV organic layers. The cells that were doped with CdS quantum dots and undoped ones were compared for performance thereafter. Since CdS has 2.42 eV (515 nm) band gap, so it is most promising candidate among II-VI compounds for detecting visible radiation. As CdS has wide band gap, it is used as window material for hetero junction solar cells and OLEDs to avoid the recombination of photo generated carriers, which improves the cells efficiency. It has also application in photo detectors, Sensors, address decoders and electrically driven lasers.

KEYWORDS: OLEDs, CdS Nanoparticles, Nanocomposites, Doping, Organic Polymers