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CdS/PbS(Quantum Dot) thin film solar cells KHAGENDRA BHANDARI, PAUL ROLAND, HASITHA MAHABADUGE, NEALE HAUGEN, COREY GRICE, University of Toledo, SOHEE JEONG, Korea Institute of Machinery & Material, TIENEKE DYKSTRA, University of Toledo, JIANBO GAO, National Renewable Energy Laboratory, RANDY ELLINGSON, University of Toledo
— We present results of studies of heterojunction PbS quantum dot (QD) solar cells deposited on n-type window layers consisting of RF magnetron sputtered CdS. Compared to previously reported PbS-QD solar cells, these solar cells exhibit large open circuit voltage. We report results of studies of the performance of the devices as a function of CdS film thickness of 70 nm and PbS QD diameter. Under simulated AM1.5G illumination, the best results show short circuit current as high as 12mA-cm^{-2}, an open circuit voltage of 0.65 volts, and efficiency as high as 3.3%.

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