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Single Crystalline TiO_2 Nanorod grown on Transparent Conducting Substrates for Dye-Sensitized Solar Cells XIAOYAN PENG, University of Puerto Rico, BOQIAN YANG, University of Massachusetts Amherst, PETER FENG, University of Puerto Rico — Single crystalline TiO_2 nanorods have been synthesized by pulse laser deposition technique on indium tin oxide glass substrates. During the deposition, oxygen pressures were kept under 100, 200 and 500mTorr, respectively. Scanning Electron Microscopy images show vertical nanorod arrays with the same diameters of 200-300 nm were obtained under different oxygen pressures, but with various density of the arrays. The TiO_2 nanorods growth under 200 mTorr oxygen pressures were pure highly crystalline anatase according to X-ray diffraction measurement. The highly crystalline and vertical TiO_2 nanorod arrays contributed to the achievement of the high conversion efficiency of lightto-electricity. High conversion efficiency was obtained with the vertically aligned TiO_2 single crystalline nanorod cell.

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