

Nanowire Quantum-Dot Solar Cells

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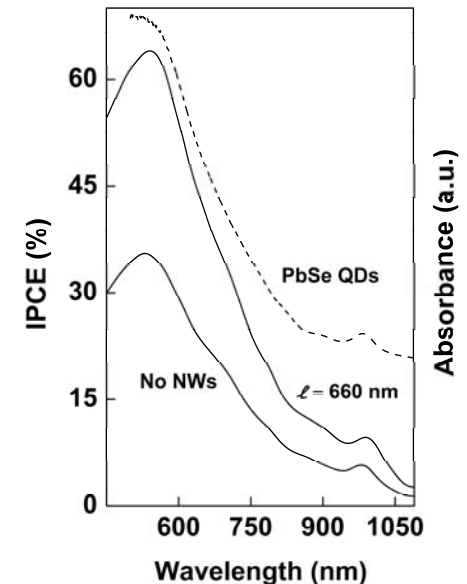
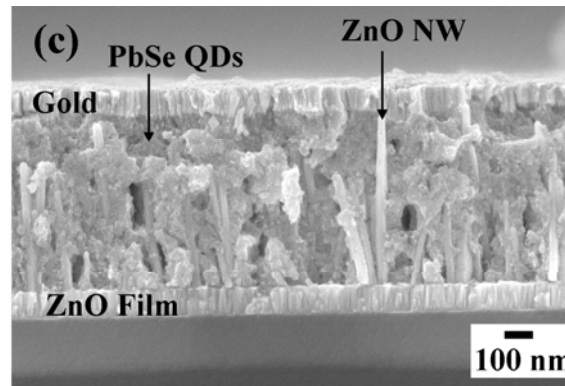
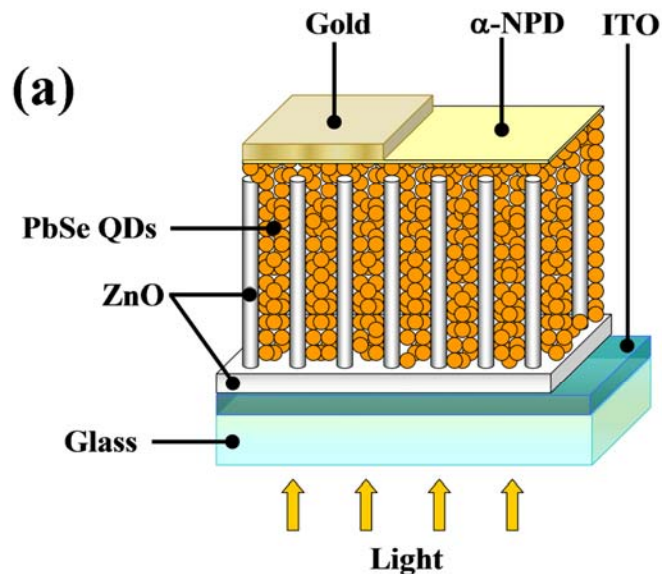
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DESCRIPTION OF WORK

- ◆ Efficiency of solar cells based on PbSe quantum dots (QDs) and ZnO films is increased by replacing the ZnO films with a vertically oriented array of single-crystalline ZnO nanowires, and infiltrating this array with QDs.

MAJOR ACHIEVEMENTS & OBSERVATIONS

- ◆ Demonstrated a new type of solar cell based on PbSe QDs and ZnO nanowires.
- ◆ With 100 mW/cm² illumination these solar cells exhibit efficiencies of up to 2%.
- ◆ Demonstrated that nanowires improve exciton collection efficiency in QD solar cells.



Publications

- ◆ K. S. Leschkie, A. G. Jacobs, D. J. Norris, and E. S. Aydil, *Appl. Phys. Lett.* **95**, 193103 (2009).
- ◆ Acknowledgements: NSF-NIRT program (CBET-0506672)