

Addendum

Tanabe, K. A Review of Ultrahigh Efficiency III-V Semiconductor Compound Solar Cells: Multijunction Tandem, Lower Dimensional, Photonic Up/Down Conversion and Plasmonic Nanometallic Structures. *Energies*, 2009, 2, 504-530.

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I have stated in my recent review article [1] that no direct observation of multiple exciton generation (MEG) in the shape of photocurrent extracted from a semiconductor had been made yet. However, there have been indeed a couple of reports on the photocurrent measurements for colloidal II-VI semiconductor compound quantum dot (QD) and polymer-QD composite solar cells and photodetectors to indicate MEG in the QDs, including demonstrations of over-100% external quantum efficiencies [2-4]. Particularly, Sukhovatkin *et al.* have presented a universal spectral quantum efficiency enhancement curve dependent only on bandgap-normalized photon energy consistent among photodetectors with varied PbS QD bandgap energies as a signature of MEG, eliminating potential artifactual explanations for the observed photocurrent enhancement represented by external trap states induced absorption or transitions [5].

References and Notes

1. Tanabe, K. A review of ultrahigh efficiency III-V semiconductor compound solar cells: multijunction tandem, lower dimensional, photonic up/down conversion and plasmonic nanometallic structures. *Energies* **2009**, *2*, 504–530.
2. Qi, D.; Fischbein, M.; Drndic, M.; Selmic, S. Efficient polymer-nanocrystal quantum-dot photodetectors. *Appl. Phys. Lett.* **2005**, *86*, 093103.
3. Kim, S.J.; Kim, W.J.; Sahoo, Y.; Cartwright, A.N.; Prasad, P.N. Multiple exciton generation and electrical extraction from a PbSe quantum dot photodetector. *Appl. Phys. Lett.* **2008**, *92*, 031107.
4. Kim, S.J.; Kim, W.J.; Cartwright, A.N.; Prasad, P.N. Carrier multiplication in a PbSe nanocrystal and P3HT/PCBM tandem cell. *Appl. Phys. Lett.* **2008**, *92*, 191107.

5. Sukhovatkin, V.; Hinds, S.; Brzozowski, L.; Sargent, E.H. Colloidal quantum-dot photodetectors exploiting multiexciton generation. *Science* **2009**, *324*, 1542–1544.

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