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Device physics of colloidal quantum dot solar cells

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List of Publications

1. K. Szendrei, **M. J. Speirs**, W. Gomulya, D. Jarzab, M. Manca, O. V. Mikhnenko, M. Yarema, B. J Kooi, W. Heiss, M. A. Loi, Exploring the origin of the temperature-dependent behavior of PbS nanocrystal thin films and solar cells. *Adv. Funct. Mater.* (2012), 22, 1598.
2. **M. J. Speirs**, B. G. H. M. Groeneveld, L. Protesescu, C. Piliago, M. V. Kovalenko, M. A. Loi, Hybrid inorganic-organic tandem solar cells for broad absorption of the solar spectrum. *Phys. Chem. Chem. Phys.* (2014), 16(17), 7672-7676
3. **M. J. Speirs**, D. M. Balazs, M. A. Loi. Colloidal Inorganic-Organic Hybrid Solar Cells, In: H. Huang, J. Huang eds, Organic and Hybrid Solar Cells, *Springer International Publishing*, Cham, Switzerland, 2014.
4. I. Lignos, L. Protesescu, S. Stavrakis, L. Piveteau, **M. J. Speirs**, M. A. Loi, M. V. Kovalenko, A. J. deMello, Facile droplet-based microfluidic synthesis of monodisperse IV-VI semiconductor nanocrystals with coupled in-line NIR fluorescence detection, *Chem. Mater.* (2014), 26(9), 2975
5. **M. J. Speirs**, D. M. Balazs, H.-H. Fang, L.-H. Lai, L. Protesescu, M. V. Kovalenko, Maria A. Loi. Origin of the increased open circuit voltage in PbS-CdS core-shell quantum dot solar cells. *J. Mat. Chem. A* 2015, 3(4), 1451-1457
6. L.-H. Lai, **M. J. Speirs**, F.-K. Chang, L. Piveteau, M. V. Kovalenko, J.-S. Chen, J.-J. Wu, M. A. Loi. Increasing photon absorption and stability

of PbS quantum dot solar cells using a ZnO interlayer, *Appl. Phys. Lett.* (2015), 107(18), 183901

7. **M. J. Speirs**, D. N. Dirin, M. Abdu-Aguye, D. M. Balazs, M. V. Kovalenko, M. A. Loi, Temperature dependent behaviour of lead sulfide quantum dot solar cells and films, *Energy Environ. Sci.* **2016**, 9, 2916-2924
8. **M. J. Speirs**, D. M. Balazs, D. Dirin, M. Kovalenko, M. A. Loi, Increased efficiency in pn-junction PbS QD solar cells via NaHS treatment of the p-type layer, *Appl. Phys. Lett.*, *submitted*