

University of Groningen

## Device physics of colloidal quantum dot solar cells

Speirs, Mark Jonathan

**IMPORTANT NOTE: You are advised to consult the publisher's version (publisher's PDF) if you wish to cite from it. Please check the document version below.**

*Document Version*

Publisher's PDF, also known as Version of record

*Publication date:*

2017

[Link to publication in University of Groningen/UMCG research database](#)

*Citation for published version (APA):*

Speirs, M. J. (2017). *Device physics of colloidal quantum dot solar cells*. [Thesis fully internal (DIV), University of Groningen]. University of Groningen.

### Copyright

Other than for strictly personal use, it is not permitted to download or to forward/distribute the text or part of it without the consent of the author(s) and/or copyright holder(s), unless the work is under an open content license (like Creative Commons).

The publication may also be distributed here under the terms of Article 25fa of the Dutch Copyright Act, indicated by the "Taverne" license. More information can be found on the University of Groningen website: <https://www.rug.nl/library/open-access/self-archiving-pure/taverne-amendment>.

### Take-down policy

If you believe that this document breaches copyright please contact us providing details, and we will remove access to the work immediately and investigate your claim.

Downloaded from the University of Groningen/UMCG research database (Pure): <http://www.rug.nl/research/portal>. For technical reasons the number of authors shown on this cover page is limited to 10 maximum.

**Stellingen**  
behorende bij het proefschrift  
**Device physics of**  
**colloidal quantum dot solar cells**  
van  
**Mark Jonathan Speirs**

1. Building tandem solar cells is very challenging, but there is great potential for efficient solar cells. (Ch. 2).
2. Despite introducing an extra interface, adding a shell of CdS to quantum dots reduces the amount of surface trap states. (Ch. 3)
3. Temperature dependent measurements are a valuable tool in understanding the working mechanisms of solar cells. (Ch. 4)
4. There is still much room for improvement of PbS QD solar cells featuring a pn-junction by optimisation of the doping concentrations. (Ch. 4&5)
5. Alternatives to layer-by-layer deposition will have to be found if PbS QD solar cells are to become a viable technology.
6. Statements of scientists aren't necessarily statements of science.

- John Lennox

7. I feel like one of the reasons we are struggling inadequately today is because we reckon our costs on too shortsighted a basis and are later overwhelmed with the unexpected costs brought about by our shortsightedness.

- Sir R. Buckminster "Bucky" Fuller

8. There is a fine line between the Einstein's (incorrectly attributed) definition of insanity, and admirable perseverance.
9. Faith can offer little to science. To the scientist, much.
10. A good scientist must have enough humility to admit when he is wrong, and to ask questions about what he doesn't understand.