

Mini-workshop: Accurate measurement of perovskite solar cells

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Aims

1. Describe typical procedure at PVPL
2. Need for guidelines
3. Consult with interested parties
4. Record feedback

Typical procedure at PVPL

Perovskite solar cells

Report steady-state performance

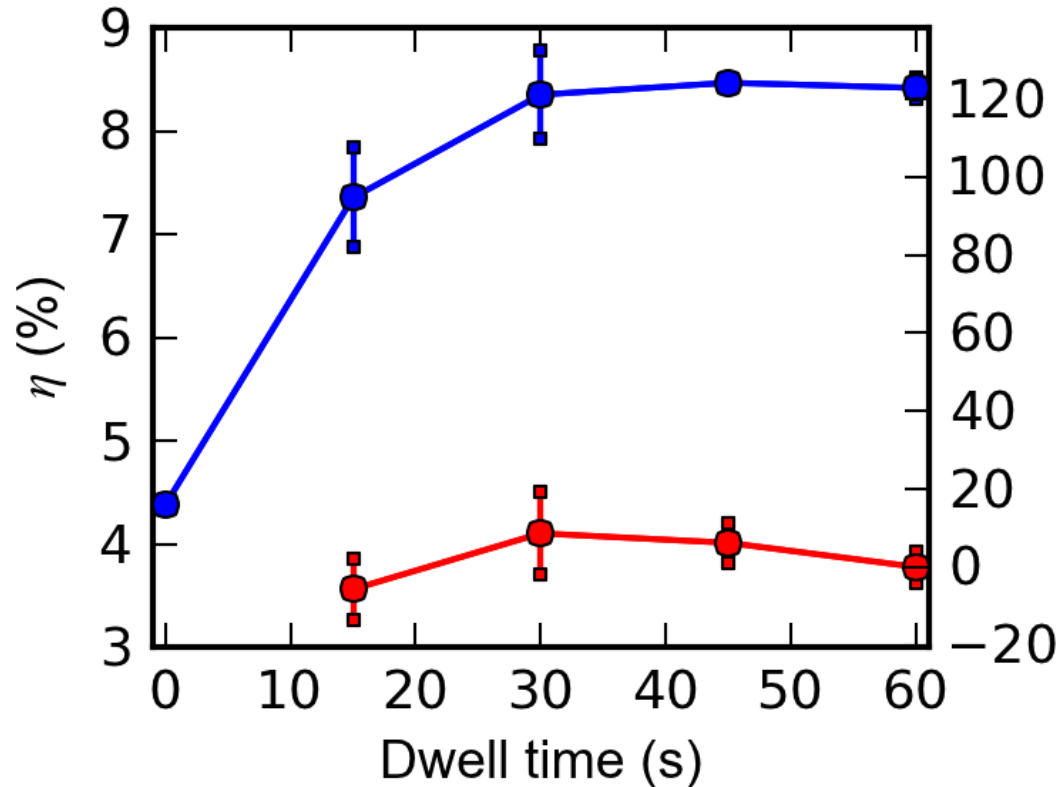
- Quick test
- Assess degradation rate
- Identify pre-conditioning
- Determine scan parameters for steady state
- Perform measurement

Total time

- (1) Dunbar, R. B., Jones, T. W., Anderson, K. F., Fell, C. J., & Wilson, G. J. Determining the steady-state temperature dependence of perovskite solar cells, submitted (2015) .
- (2) Dunbar, R. B., Jones, T. W., Anderson, K. F., Wilson, G. J. Fell, C. J., AN INVESTIGATION OF PEROVSKITE SOLAR CELL DEGRADATION AND I-V HYSTERESIS FOR IMPROVED ACCURACY OF EFFICIENCY MEASUREMENTS AT STANDARD TEST CONDITIONS Proceedings of the 31st European Photovoltaic Solar Energy Conference and Exhibition (2015) .

Need for guidelines

Lack of guidance in current standards - ambiguity



Perovskite measurement challenges

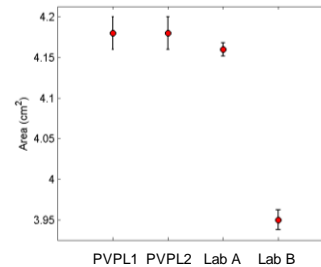
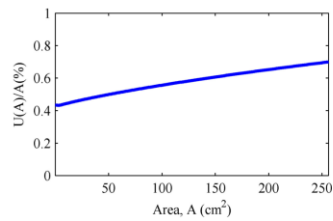
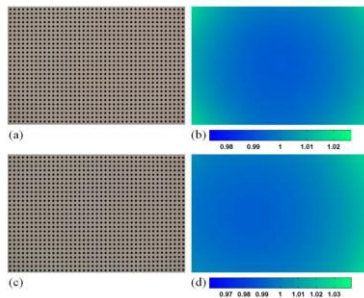
Method development

Technical development

Uncertainty assessment

Inter-comparison

ISO 17025 accredited



Dunbar, R. B.; Barbe, A.; Fell, C. J. An Optical Imaging Method for High-Accuracy Solar Cell Area Measurement. IEEE J. Photovoltaics 2015, 5 (5), 1422–1427.

Perovskite measurement challenges

Joint effort

1. Sample exchange
2. CSIRO to visit participating groups in April 2016
 - Inter-comparison with research labs, PVPL and other accredited labs.
 - Identify key architectures
3. International review panel
4. In-kind measurements for key results

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Project Leader

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Principal Research Scientist, PV Performance Laboratory

Project media release:

<http://arena.gov.au/media/shining-light-on-an-emerging-solar-technology/>

CSIRO:

<http://www.csiro.au/en/Do-business/Services/Testing-and-technical-services/Materials-infrastructure/Solar-cell-and-panel-testing>

NATA:

<http://www.nata.com.au/nata/scopeinfo/?key=22466>

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