

Electronic Supporting Information (ESI) for

The ISOS-3 inter-laboratory collaboration focused on the stability of a variety of organic photovoltaic devices

David M. Tanenbaum^{a,b}, Martin Hermenau^c, Eszter Voroshazi^d, Matthew T. Lloyd^e, Yulia Galagan^f, Birger Zimmermann^g, Markus Hösel^h, Henrik F. Damⁱ, Mikkel Jørgensen^j, Suren A. Gevorgyan^k, Suleyman Kudret^l, Wouter Maes^l, Laurence Lutsen^m, Dirk Vanderzandeⁿ, Uli Würfel^o, Ronn Andriessen^p, Roland Rösch^q, Harald Hoppe^r, Monica Lira-Cantu^s, Agnès Rivaton^t, Gülşah Y. Uzunoğlu^u, David Germack^v, Birgitta Andreassen^w, Morten V. Madsen^x, Kion Norrman^y, and Frederik C. Krebs^{*,z}

e-mail: frkr@risoe.dtu.dk

^a Solar Energy Programme, Risø National Laboratory for Sustainable Energy, Technical University of Denmark, Frederiksborgvej 399, DK-4000 Roskilde, Denmark.

^b Department of Physics and Astronomy, Pomona College, Claremont, CA 91711, USA. Fax: 01 909 621 8463; Tel: 01 909 621 8722; E-mail: dtanenbaum@pomona.edu

^c Arbeitsgruppe Organische Solarzellen (OSOL), Institut für Angewandte Photophysik, Technische Universität Dresden, 01062 Dresden, Germany, Fax: 49 351 4633 7065; Tel: 49 351 4634 2374 E-mail: martin.hermenau@iapp.de

^d imec, Kapeldreef 75, 3000 Leuven, Belgium and Katholieke Universiteit Leuven, ESAT, Kasteelpark Arenberg 10, 3000 Leuven, Belgium, Tel: +32-1628-7864, E-mail: eszter.voroshazi@imec.be

^e National Renewable Energy Laboratory, Golden, CO 80401, USA. E-mail: Matthew.Lloyd@nrel.gov

^f Holst Centre, High Tech Campus 31, 5656 AE Eindhoven, The Netherlands. Fax: +31 40 4020699; Tel: +31 40 4020447; E-mail: yulia.galagan@tno.nl

^g Fraunhofer Institute for Solar Energy Systems ISE, Heidenhofstrasse 2, D-79110 Freiburg, Germany. E-mail: Birger.Zimmermann@ise.fraunhofer.de

^h Solar Energy Programme, Risø National Laboratory for Sustainable Energy, Technical University of Denmark, Frederiksborgvej 399, DK-4000 Roskilde, Denmark. Tel: 45 4677 5494; E-mail: mhqs@risoe.dtu.dk

ⁱ Solar Energy Programme, Risø National Laboratory for Sustainable Energy, Technical University of Denmark, Frederiksborgvej 399, DK-4000 Roskilde, Denmark. E-mail: hfd@risoe.dtu.dk

^j Solar Energy Programme, Risø National Laboratory for Sustainable Energy, Technical University of Denmark, Frederiksborgvej 399, DK-4000 Roskilde, Denmark. Tel: 45 4677 4717; E-mail: mijq@risoe.dtu.dk

^k Solar Energy Programme, Risø National Laboratory for Sustainable Energy, Technical University of Denmark, Frederiksborgvej 399, DK-4000 Roskilde, Denmark. E-mail: surg@risoe.dtu.dk

^l Hasselt University, Campus, Agoralaan 1, Building D, WET/OBPC, B-3590 Diepenbeek, Belgium.

^m IMEC, IMOMEC associated laboratory, Campus University of Hasselt, Wetenschapspark 1, B-3590 Diepenbeek, Belgium. Fax: +32 (0)11268301; Tel: +32 (0)11268314; E-mail: laurence.lutsen@imec.be

ⁿ Hasselt University, Campus, Agoralaan 1, Building D, WET/OBPC, B-3590 Diepenbeek, Belgium. Fax: +32(0)11 268301; Tel: +32 (0)11268321; E-mail: dirk.vanderzande@uhasselt.be

^o Fraunhofer Institute for Solar Energy Systems ISE, Heidenhofstrasse 2, D-79110 Freiburg, Germany. E-mail: uli.wuerfel@ise.fraunhofer.de

^p Holst Centre, High Tech Campus 31, 5656 AE Eindhoven, The Netherlands. Fax: +31 40 4020699; Tel: +31 40 4020407; E-mail: ronn.andriessen@tno.nl

^q Institute of Physics, Ilmenau University of Technology, Weimarer Str. 32, 98693 Ilmenau, Germany. E-mail: roland.roesch@tu-ilmenau.de

^r Institute of Physics, Ilmenau University of Technology, Weimarer Str. 32, 98693 Ilmenau, Germany. E-mail: harald.hoppe@tu-ilmenau.de

^s Centre d'Investigació en Nanociència i Nanotecnologia (CIN2, CSIC), Laboratory of Nanostructured Materials for Photovoltaic Energy, ETSE, Campus UAB, Edifici Q, 2nd Floor, E-08193, Bellaterra (Barcelona), Spain. Fax: 34 93 581 3797; Tel: 34 93 586 8011; E-mail: Monica.lira@cin2.es

^t Clermont Université, Université Blaise Pascal, Laboratoire de Photochimie, Moléculaire et Macromoléculaire (LPMM), BP10448 Clermont-Ferrand, France and CNRS, UMR6505, LPMM, F-63177 Aubière, France. Fax: 33 4 7340 7700; Tel: 33 4 7340 7743; E-mail: agnes.rivaton@univ-bpclermont.fr

^u TÜBİTAK National Metrology Institute (UME), Photonic and Electronic Sensors Laboratory, P.O. Box 54, 41470, Gebze, Kocaeli, TURKEY. Fax: 90 262 679 5001; Tel: 90 262 679 5000; E-mail: gulsah.uzunoglu@ume.tubitak.gov.tr

^v Condensed Matter Physics, Brookhaven National Lab, Building 510B

Upton, NY 11973. E-mail: dsgermack@gmail.com

^w Solar Energy Programme, Risø National Laboratory for Sustainable Energy, Technical University of Denmark, Frederiksborgvej 399, DK-4000 Roskilde, Denmark. E-mail: baan@risoe.dtu.dk

^x Solar Energy Programme, Risø National Laboratory for Sustainable Energy, Technical University of Denmark, Frederiksborgvej 399, DK-4000 Roskilde, Denmark. E-mail: mves@risoe.dtu.dk

^y Solar Energy Programme, Risø National Laboratory for Sustainable Energy, Technical University of Denmark, Frederiksborgvej 399, DK-4000 Roskilde, Denmark. Tel: 45 4677 4793; E-mail: kino@risoe.dtu.dk

^z Solar Energy Programme, Risø National Laboratory for Sustainable Energy, Technical University of Denmark, Frederiksborgvej 399, DK-4000 Roskilde, Denmark. Tel: 45 4677 4799; E-mail: frkr@risoe.dtu.dk

Table of contents

Page 3.....	Figure S1
Page 4.....	Figure S2
Page 5.....	Figure S3
Page 6.....	Figure S4
Page 7.....	Figure S5
Page 8.....	Figure S6
Page 9.....	Figure S7
Page 10.....	Figure S8
Page 11.....	Figure S9

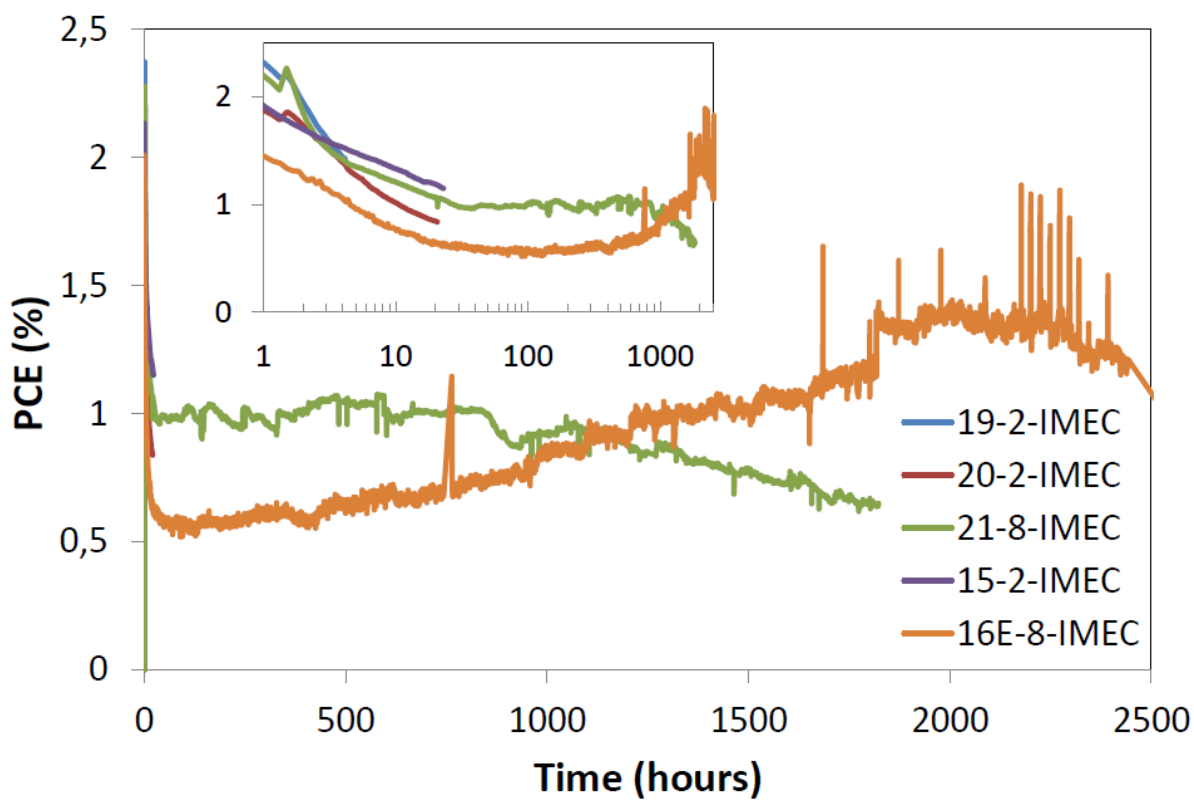


Figure S1. Long term stability studies for IMEC devices with and without encapsulation. The encapsulated devices show a rapid decrease in performance followed by a slow improvement over 2000 hours.

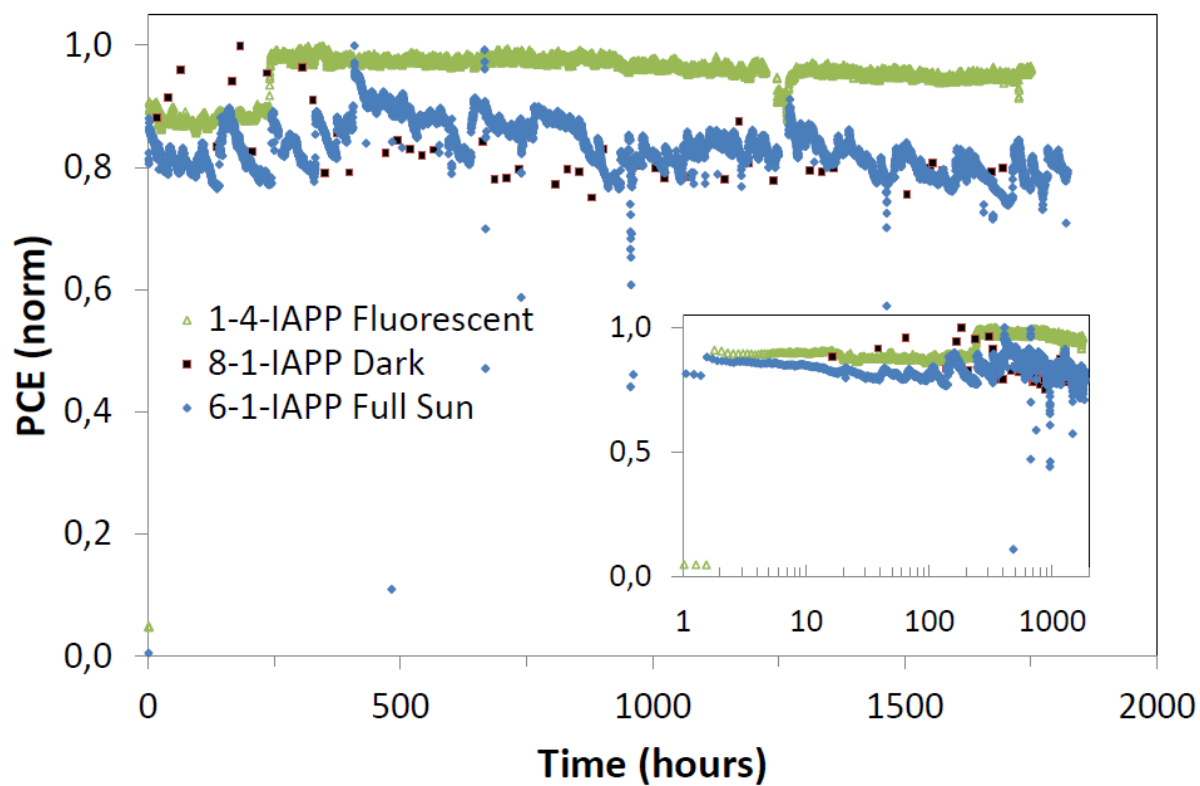


Figure S2. Normalized stability data for the IAPP devices under accelerated full sun conditions, under low light and dark storage conditions. The inset shows the degradation on a log-timescale.

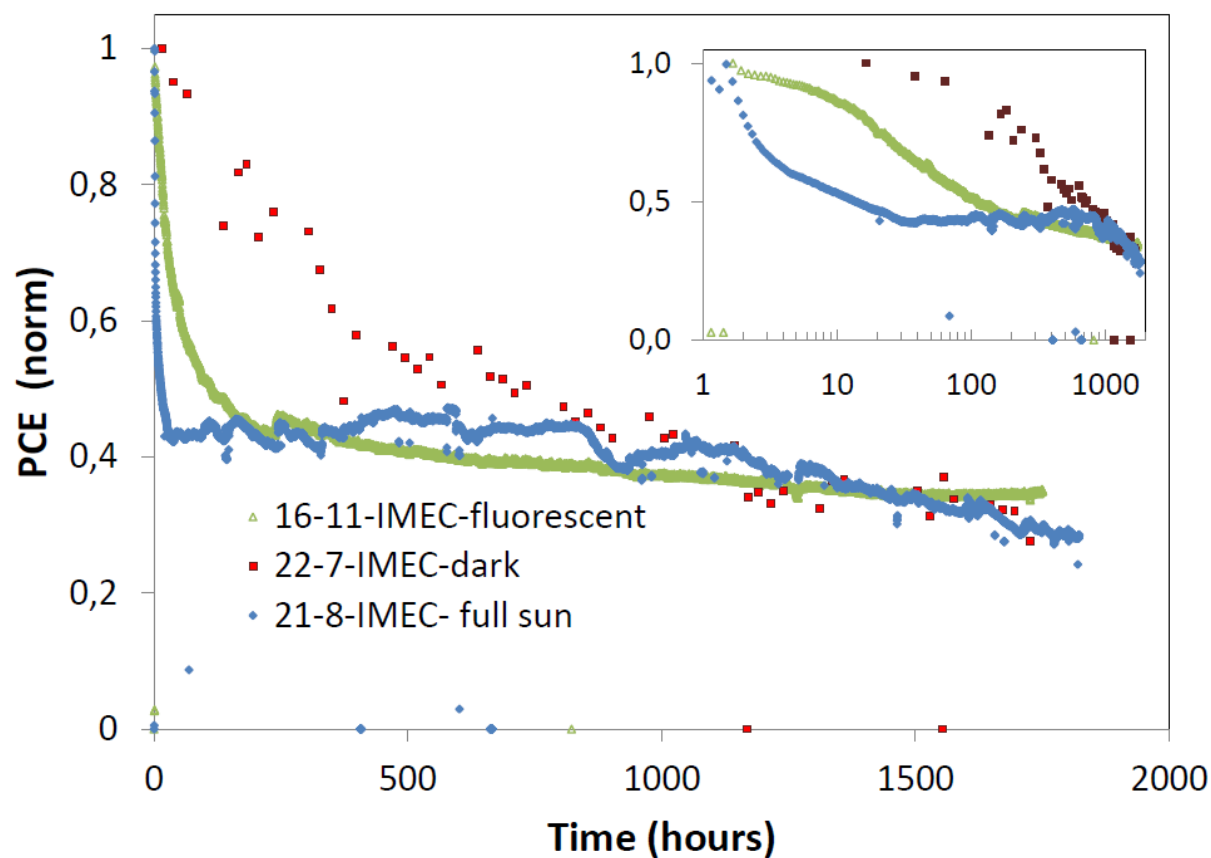


Figure S3. Normalized stability data for the IMEC devices under accelerated full sun conditions, under low light and dark storage conditions. The inset shows the degradation on a log-timescale.

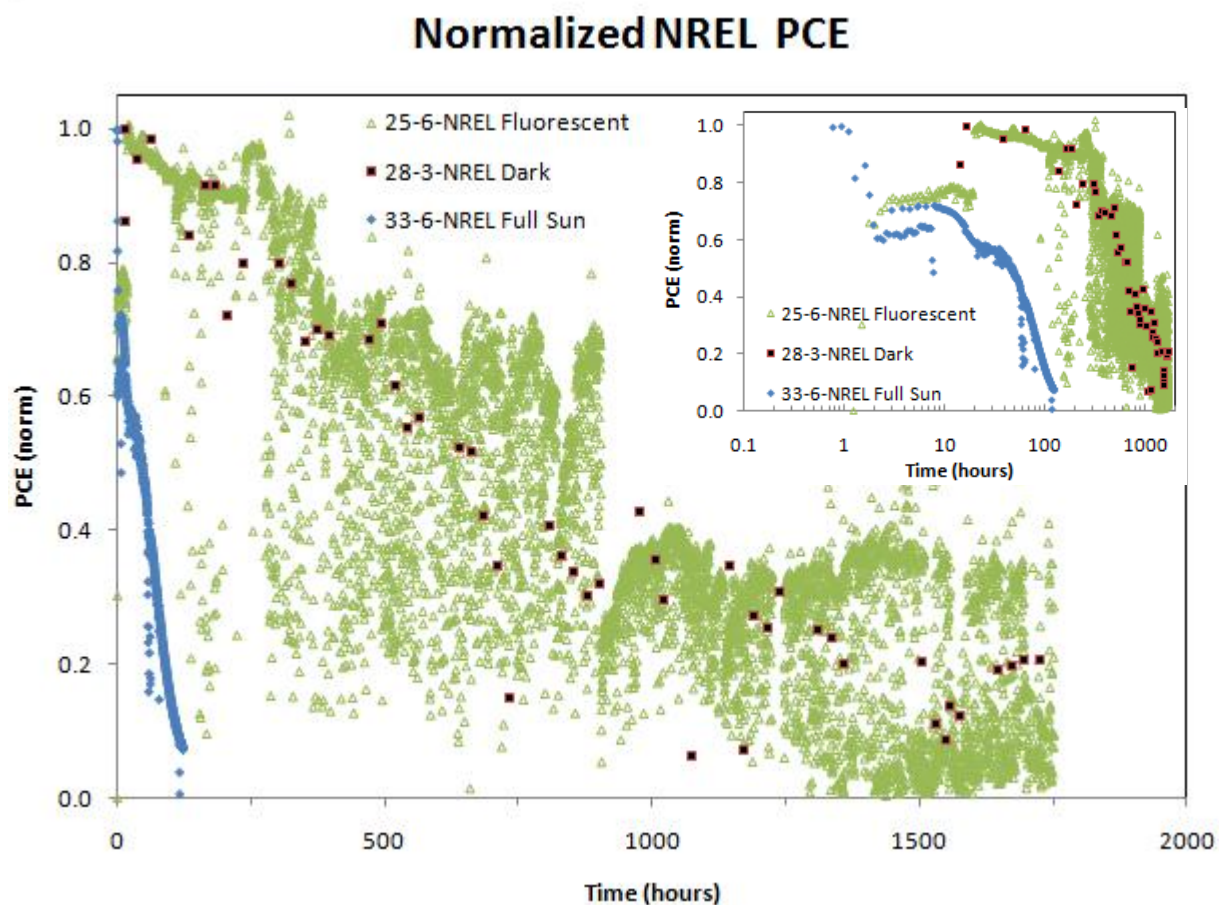


Figure S4. Normalized stability data for the NREL devices under accelerated full sun conditions, under low light and dark storage conditions. The inset shows the degradation on a log-timescale.

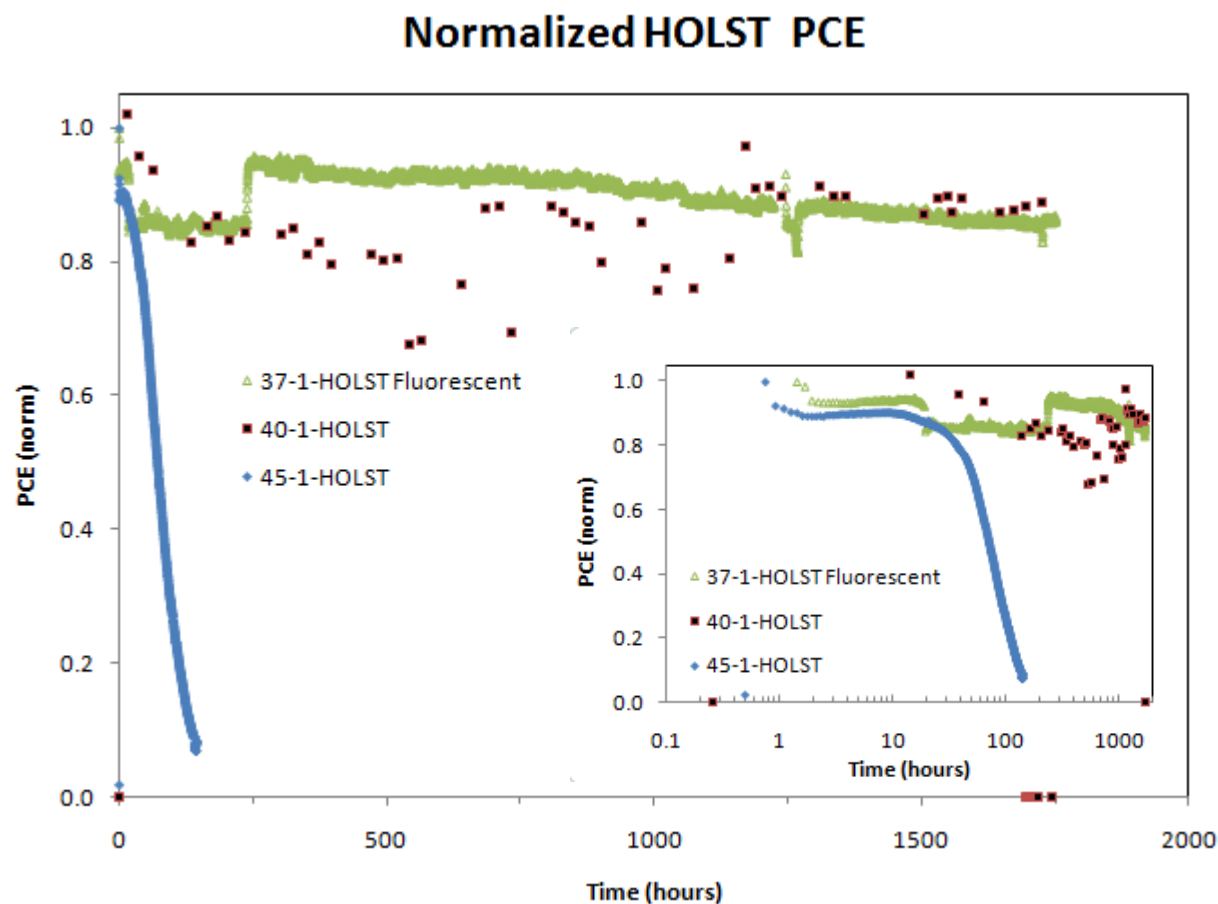


Figure S5. Normalized stability data for the HOLST devices under accelerated full sun conditions, under low light and dark storage conditions. The inset shows the degradation on a log-timescale.

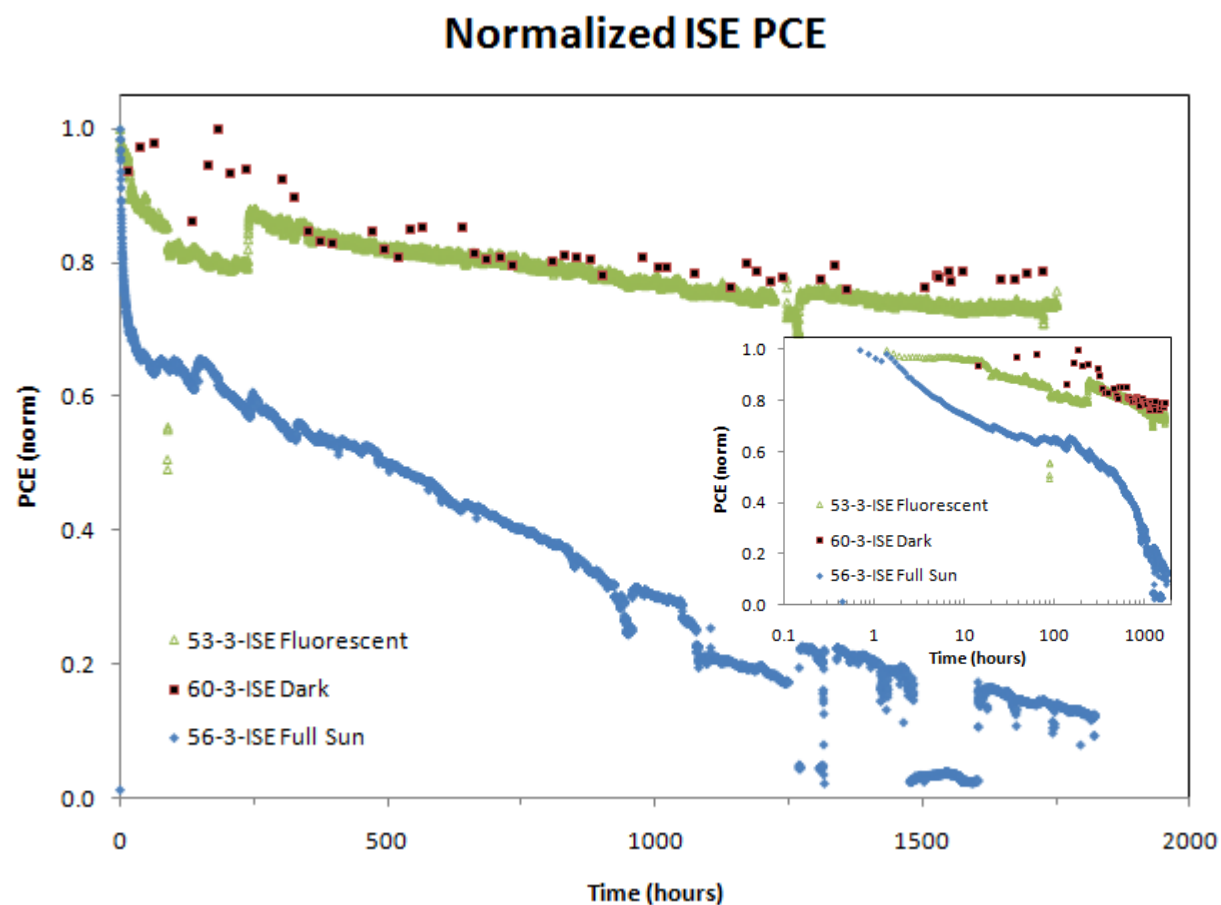


Figure S6. Normalized stability data for the ISE devices under accelerated full sun conditions, under low light and dark storage conditions. The inset shows the degradation on a log-timescale.

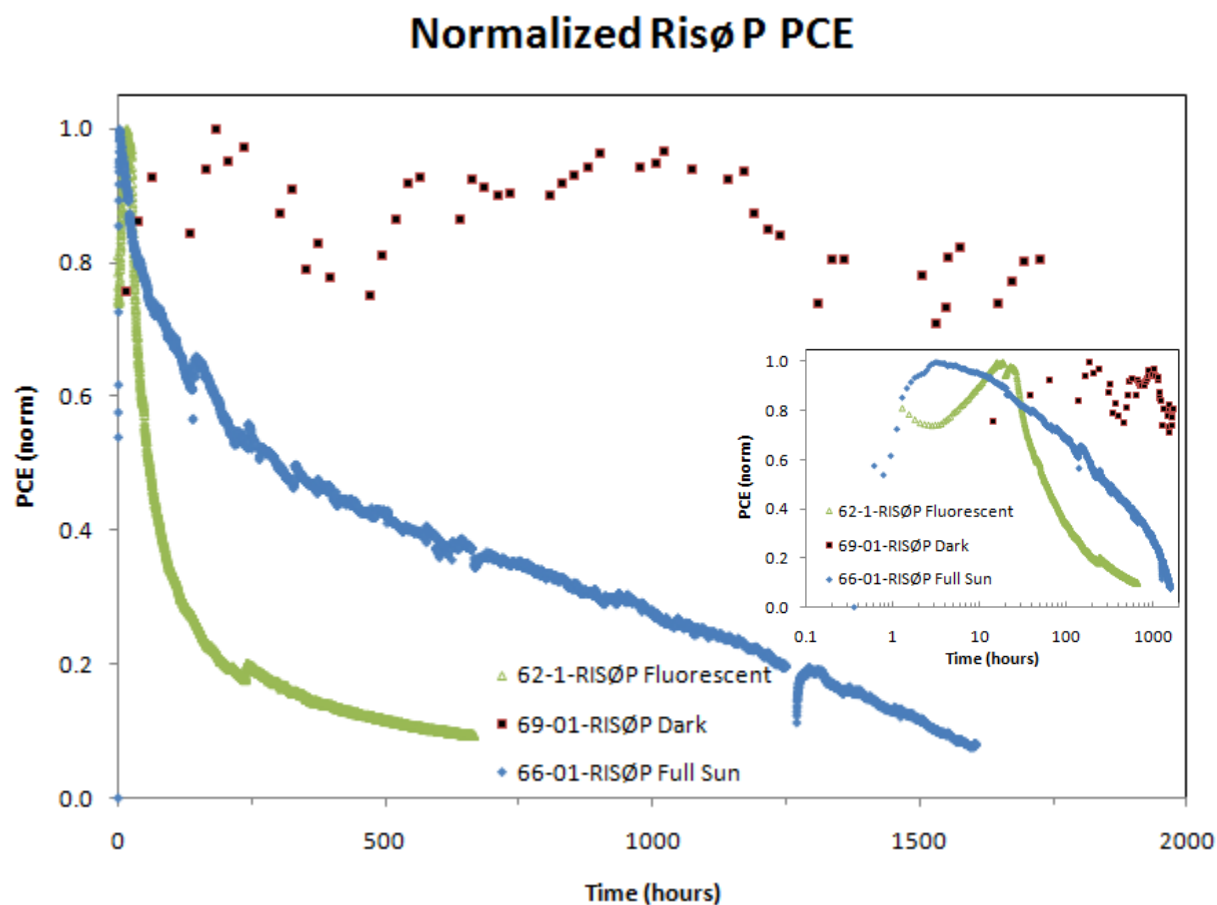
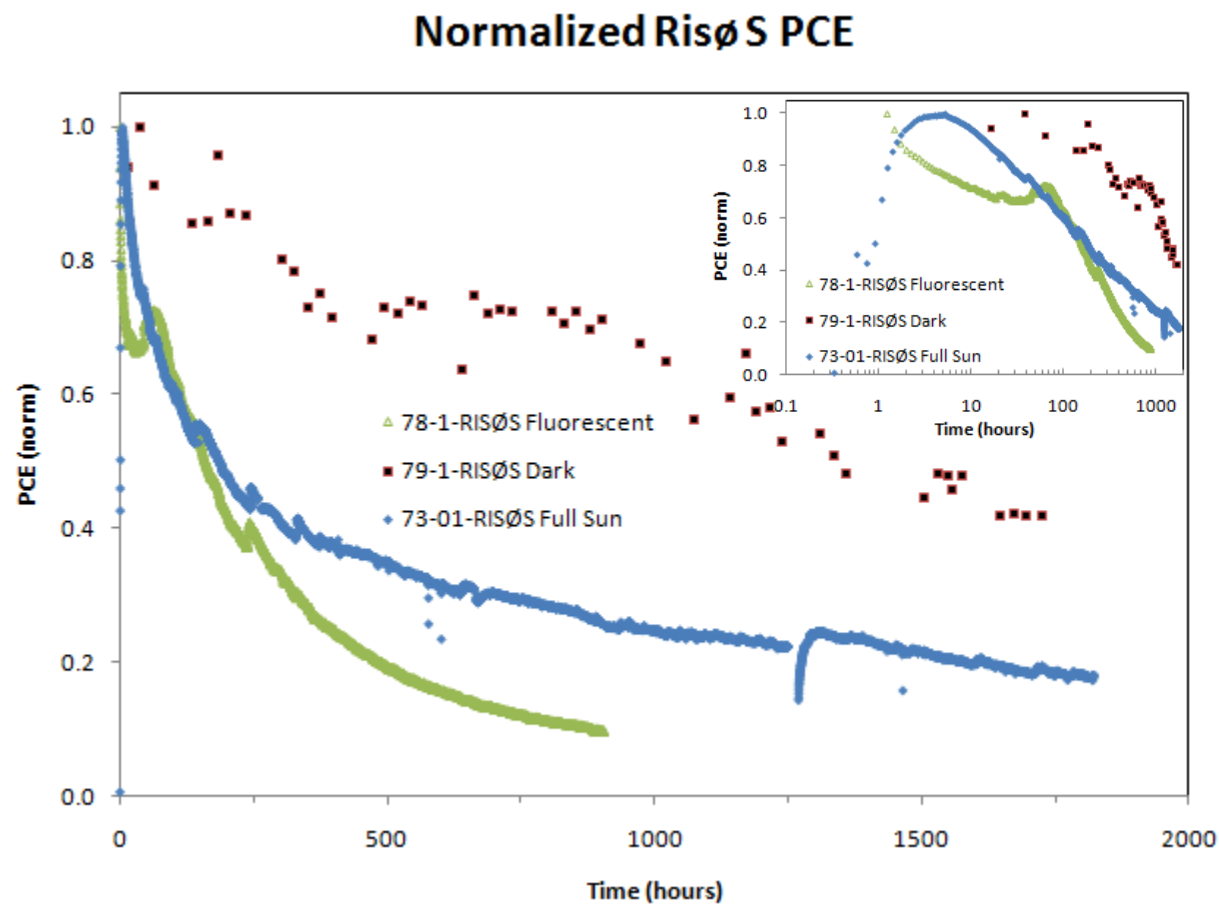


Figure S7. Normalized stability data for the RISØ P devices under accelerated full sun conditions, under low light and dark storage conditions. The inset shows the degradation on a log-timescale.



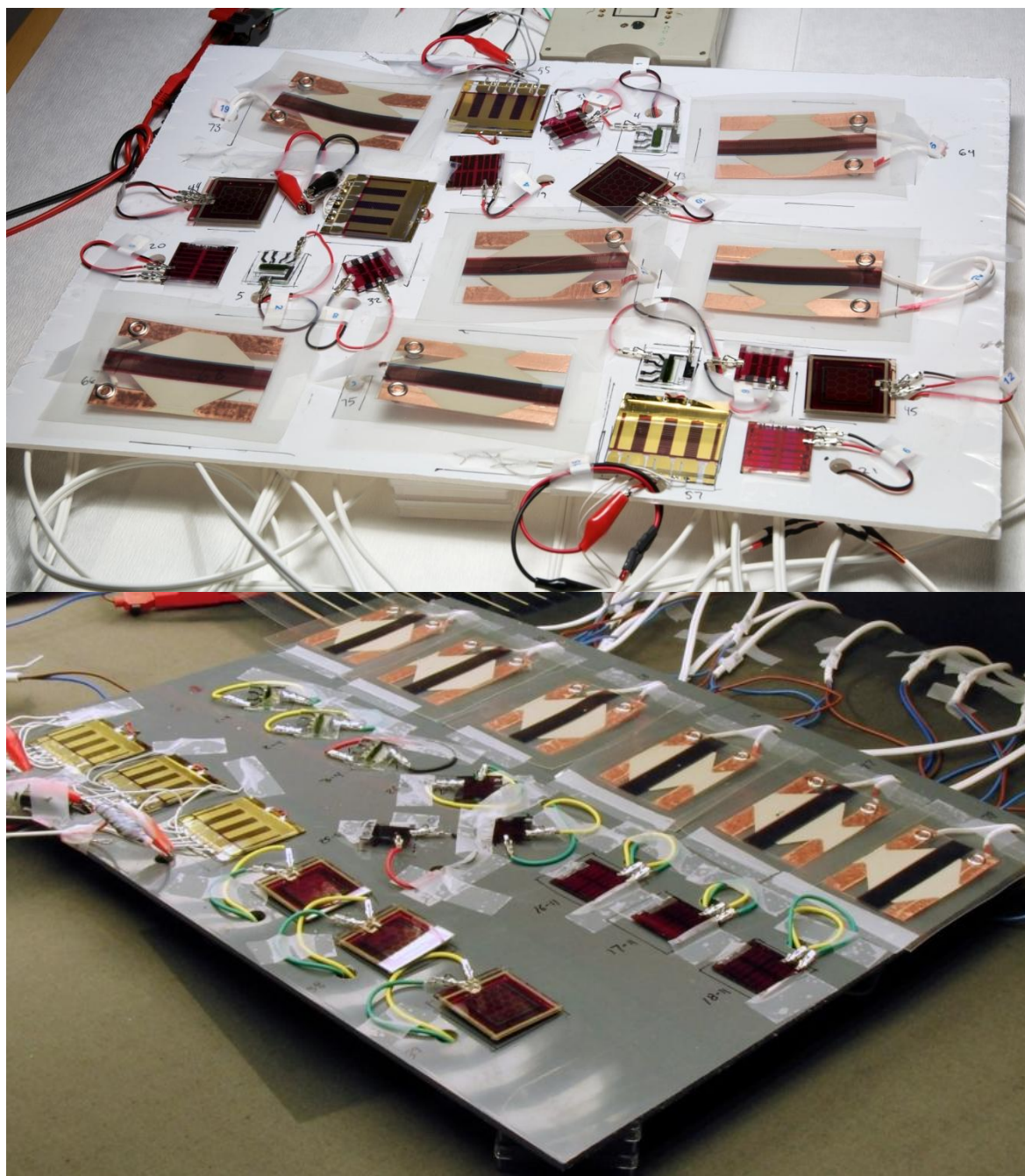


Figure S9. Images of devices under full sun (top) and fluorescent (bottom) illumination.