

ISOS-8 '15



International Summit on

# HOPV Stability



SEP 29 – OCT 01, 2015 – RIO DE JANEIRO, BRAZIL

**Conference chairs:**

- Dr Fernando Araujo de Castro (NPL, UK)
- Prof Lucimara Stolz Roman (UFPR, Brazil)
- Anderson Silva (ICN2, Spain)
- Dr Dana Olson (NREL, USA)

**Scientific committee:**

- Dr David Ginley (NREL, USA)
- Dr James Blakesley (NPL, UK)
- Dr Monica Lira-Cantu (ICN2, Spain)
- Dr Suren Gevorgyan (DTU, Denmark)
- Prof Carlos F.O. Graeff (UNESP, Brazil)
- Dr Chang-Qi Ma (PERC, China)
- Dr Toni Müller (Heliatek, Germany)
- Dr Eszter Vorashazi (IMEC, Belgium)

**Location:**

“SulAmérica” Convention Center  
 (Centro de Convenções “SulAmérica”)  
 Rio de Janeiro – Brazil

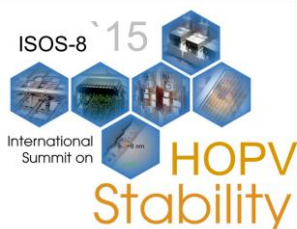


For further information visit:

<http://www.isos-solar.org/>

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September 27 to October 01

## ISOS-08 Programme

### Tuesday, 29<sup>th</sup> September (DAY 1)

#### MORNING SESSION – Room 11

##### Session 1: Understanding degradation of OPVs

Session Chair: **Tony Müller (Heliatek, Germany)**

Time	Presenting Author	Paper Title
8:00-17:00	REGISTRATION	
8:30-8:40	Fernando A. Castro	Welcome from the Organizers
8:40-9:05 (Invited)	Thomas Heumueller (Univ Erlangen, Germany)	Classification of degradation mechanisms in printed PV - from photodegradation to microstructure ageing to interface failure
9:05-9:30 (Invited)	Antonio Guerrero (UJI, Spain)	Impact of morphology evolution on contact selectivity of organic photovoltaics
9:30-9:55 (Invited)	Nikos Kopidakis (NREL, USA)	Intrinsic photostability of polymer-based OPV: dependence on polymer structure and the presence of additives
9:55-10:20 (Invited)	Monica Lira-Cantu (ICN, Spain)	Full-solution processed organic solar cells applying semiconductor oxides as interlayers: stability issues at interfaces
10:20-10:35	Gisele Benatto (DTU, Denmark)	Accelerated stability tests of large-scale fast manufactured vacuum- and ITO-free devices with different electrodes
10:35-10:50	Christine Vidélot-Ackermann (Univ. Marseille, France)	Slowing down thermal degradation of high-efficiency polymer-fullerene solar cells using ZnO interfacial layers
10:50-11:20	Coffee Break	

##### Session 2: Data Analysis

Session Chair: **Monica Lira-Cantu (ICN2, Spain)**

Time	Presenting Author	Paper Title
11:20-11:45 (Invited)	Sjoerd Veenstra (ECN, Netherlands)	Generic, accurate annual yield calculation for PV modules based on fingerprint method
11:45-12:10 (Invited)	Philip Sandwell (Imperial College, UK)	Economic and environmental assessment of OPV technology: impact of module lifetime
12:10-12:35 (Invited)	Suren Gevorgyan (DTU, Denmark)	Lifetime of Organic Photovoltaics: Status and Predictions
12:35-14:10	Lunch	

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# ISOS-08 Programme

## Tuesday, 29<sup>th</sup> September (DAY 1)

### AFTERNOON SESSION – Room 11

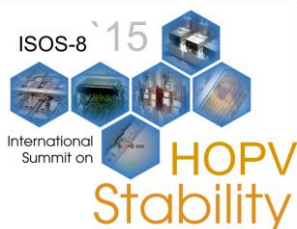
#### Session 3: **Advances in OPV stability**

Session Chair: **Suren Gevorgyan (DTU, Denmark)**

Time	Presenting Author	Paper Title
14:10-14:35 (Invited)	Kwanghee Lee (GIST, South Korea)	Highly Efficient, Stable, and Printable Polymer Solar Cell Modules
14:35-15:00 (Invited)	Yulia Galagan (Holst, Netherlands)	Solution processing of the electrodes for Organic and Hybrid solar cells
15:00-15:25 (Invited)	Ji-Seon Kim (Imperial College, UK)	Identifying the Natures of Optical Transitions in Donor-Acceptor Copolymers and Their Impact on Photostability
15:25-15:50 (Invited)	Ellen Moons (Karstad Univ, Sweden)	Photodegradation of PCBM and its impact on polymer-based solar cells
15:50-16:15 (Invited)	Maria Luiza Rocco (UFRJ, Brazil)	Electronic Structure, Molecular Orientation, Charge Transfer Dynamics and Solar Cells Performance in Donor/Acceptor Copolymers and Fullerene
16:00-17:00	Coffee Break	
17:00-19:00	Poster session	
19:00	Networking Dinner	

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## ISOS-08 Programme

### Wednesday, 30<sup>th</sup> September (DAY 2)

#### MORNING SESSION – Room 11

##### Session 4: OPV industrial development

Session Chair: **Ji-Seon Kim (Imperial College London, UK)**

Time	Presenting Author	Paper Title
8:30-13:00	REGISTRATION	
08:30-08:55 (Invited)	Takeshi Gotanda (Toshiba, Japan)	Development and durability testing of organic photovoltaic modules
08:55-09:20 (Invited)	Toni Müller (Heliatek, Germany)	Efficiency and Lifetime of Small-Molecules OPV from Lab to Fab
09:20-09:45 (Invited)	David James (CSEM Brasil)	Stability of large-area, roll-to-roll printed OPV
09:45-10:10 (Invited)	Nico Seidler (Merck, UK)	High efficiency polymer semiconductors for organic photovoltaics with improved stability
10:10-10:35 (Invited)	Beat Ruhstaller (Fluxim, Switzerland)	Insights from Advanced Characterization and Modeling of Organic and Perovskite Solar Cells
10:35-10:50	Michael Beliatz (DTU, Denmark)	The impact of different organic solar cell architectures on the stability of encapsulation-less devices. An inside to intrinsic stability of polymers
10:50-11:20	Coffee break	

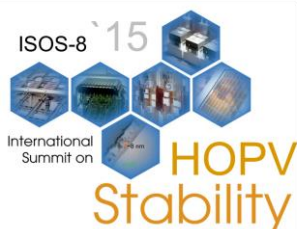
##### Session 5: Advances in Perovskite solar cell stability

Session Chair: **Thomas Brown (Uniroma2, Italy)**

Time	Presenting Author	Paper Title
11:20-12:10 (Keynote)	David Ginley (NREL, USA)	HOIP Solar Cells: Where are we, What do we need to do, What are alternatives?
12:10-12:35 (Invited)	Trystan Watson (SPECIFIC, UK)	The effect of continuous manufacturing processes on the stability of perovskite solar cells
12:35-12:40	Fernando Castro (NPL, UK)	Presentation of Round Table Topics Round Table 1: Suren Gevorgyan (DTU) Round Table 2: Diego Bagnis (CSEM Brasil)
12:40-14:00	Lunch	

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# ISOS-08 Programme

## Wednesday, 30<sup>th</sup> September (DAY 2)

### AFTERNOON SESSION – Room 11

Session 6: **Advances in organic and hybrid solar cell stability**

Session Chair: **Trystan Watson (SPECIFIC, UK)**

Time	Presenting Author	Paper Title
14:00-14:25 (Invited)	Thomas Brown (Uniroma2, Italy)	Stability issues pertaining large area dye-sensitized and perovskite photovoltaic devices
14:25-14:50 (Invited)	Michael Toney (Univ Stanford, USA)	Operando X-ray Diffraction of CH <sub>3</sub> NH <sub>3</sub> PbI <sub>3</sub> Solar Cells
14:50-15:15 (Invited)	Benjamin Robotham (FOM, Denmark)	How to prevent PEDOT:PSS shorts in entirely slot-die coated organic solar cells
15:15-15:30	Ravi Silva (Univ. Surrey, UK)	Effect of Ambient Humidity on Structure and Performance of Large-Area Perovskite Solar Cells Produced Using the Mixed Halide Method
15:30-16:30	<b>Round Table 1</b> FP7 Cheetah Round Table: Reduction of the encapsulation cost versus improvement of intrinsic stability Chair: Suren Gevorgyan (DTU)	<b>Round Table 2</b> VAMAS Round Robin: Characterization challenges towards commercialization of organic and hybrid solar cells Chair: Diego Bagnis (CSEM Brasil)
16.30-17:00	Coffee Break	
17:00-19:00	Poster Session	
19:00	Free Night	

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## ISOS-08 Programme

### Thursday, 31<sup>st</sup> September (DAY 3)

#### MORNING SESSION – Room 11

##### Session 7: **Advances in OPV stability 2**

Session Chair: **Sjoerd Veenstra (ECN, Netherlands)**

Time	Presenting Author	Paper Title
08:30-08:55 (Invited)	Stergios Logothetidis (Univ. Thessaloniki)	Large Scale Manufacturing and Process of Printed OPVs Optimized by In-Line Optical Monitoring
08:55-09:20 (Invited)	Jordi Martorell (ICFO, Spain)	Performance and stability in semi-transparent low band gap polymer cells
09:20-09:35	Grzegorz A Potoczny (CSEM Brasil)	Mechanical and environmental stability of OPV modules fabricated via R2R process
09:35-09:50	Jessica Wade (Imperial College, UK)	Operational Electrochemical Stability of New Thiophene-Thiazole Copolymers
09:50-10:05	Christine Dagron-Lartigau (PAU, France)	Testing Delamination in OPV Devices: A Study of Materials influence on Mechanical Properties
10:05-10:20	Michael Corazza (DTU, Denmark)	Degradation and mechanical properties of interfaces in organic photovoltaics
10:20-10:45 (Invited)	Roberto Faria (USP, Brazil)	Effects of temperature and oxygen on P3HT:PCBM solar cells
10:45-11:15	Coffee break	

##### Session 8: **Understanding degradation**

Session Chair: **David James (CSEM Brasil)**

11:15-11:30	Ana Flavia Nogueira (Unicamp, Brazil)	The effect of adding DMSO in the two-step method applied to perovskite solar cells
11:30-11:45	Vida Engmann (Univ South Denmark)	Long-Term Stabilization of Organic Solar Cells by ternary blends with additives
11:45-12:00	Jeff Kettle (Univ. Bangor, UK)	Chemical changes in PCPDTBT:PCBM solar cells using XPS and TOF-SIMS and use of inverted device structure for improving lifetime performance
12:00-12:15	Summary of the Round Tables Round Table 1: Intrinsic vs extrinsic stability Round Table 2: Characterization challenges	
12:15-12:30	Closing remarks and announcement of ISOS-9 Fernando A. Castro (NPL, UK)	

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**ISOS-08 Programme - Posters**  
**Tuesday, 29<sup>th</sup> September (DAY 1) 17:00-19:00**

Poster number	Authors	Title
R.P1.1	Yu-Ching Huang <sup>1</sup> , Hou-Chin Cha <sup>1</sup> , De-Han Lu <sup>1</sup> , Cheng-Wei Chou <sup>1</sup> , Chia-Te Yen <sup>1</sup> , Chih-Min Chuang <sup>1</sup> , Charn-Ying Chen <sup>1</sup> , Cheng-Si Tsao <sup>1</sup> ; <sup>1</sup> Institute of Nuclear Energy Research	Stability Study of Spray- and Slot-die-coated Polymer Solar Cells and Modules
R.P1.2	Maurício Sousa Pereira <sup>1</sup> , Francisco Anderson de Sousa Lima <sup>1,2</sup> , Thiago Soares Ribeiro <sup>1</sup> , Eduardo Bedê Barros <sup>1</sup> , Rodrigo Queiros Almeida <sup>1</sup> , Igor Frota de Vasconcelos <sup>1</sup> ; <sup>1</sup> Universidade Federal do Ceará, <sup>2</sup> Universitat Autònoma de Barcelona	Application of Fe-doped SnO <sub>2</sub> nanoparticles in organic solar cells with enhanced stability
R.P1.3	James C. Blakesley <sup>1</sup> , George F. A. Dibb <sup>1</sup> , Fernando A. Castro <sup>1</sup> ; <sup>1</sup> National Physical Laboratory	Advanced characterisation of stability of organic photovoltaics under well controlled atmospheres
R.P1.4	Shogo Yamane <sup>1</sup> , Junji Mizukado <sup>1</sup> , Liang Chen <sup>1</sup> , Tadafumi Uchimaru <sup>1</sup> , Yasumasa Suzuki <sup>1</sup> , Hiroyuki Suda <sup>1</sup> ; <sup>1</sup> National Institute of Advanced Industrial Science and Technology	Photo-oxidation studies on materials in the active layer of organic photovoltaic cells
R.P1.5	Sadok Ben Dkhil <sup>1</sup> , Martin Pfannmöller <sup>2</sup> , Maria Ilenia Saba <sup>3</sup> , Yahia Didane <sup>1</sup> , Christine Videlot-Ackermann <sup>1</sup> , Olivier Margeat <sup>1</sup> , Antonio Guerrero <sup>4</sup> , Juan Bisquert <sup>4</sup> , Germà Garcia-Belmonte <sup>4</sup> , Sara Bals <sup>2</sup> , Alessandro Mattoni, Jörg Ackermann <sup>1</sup> ; <sup>1</sup> Aix-Marseille University, <sup>2</sup> University of Antwerp, <sup>3</sup> Istituto per l'Officina dei Materiali (CNR-IOM), <sup>4</sup> Universitat Jaume I	Role of interfacial buffer layers and fullerenes in high-temperature ultra-stable high-efficiency polymer-fullerene solar cells
R.P1.6	Andrey Marcos Pinho da Silva, Raimundo Ribeiro Passos, Walter Ricardo Brito; Universidade Federal do Amazonas	Dye Sensitized Solar Cells (DSSC) employing vegetal Amazon pigments

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**ISOS-08 Programme - Posters**  
**Wednesday, 30<sup>th</sup> September (DAY 2) 17:00-19:00**

Poster number	Authors	Title
R.P2.7	Fernando A. Castro, George F. A. Dibb, Tony Maxwell, Daniel Milano; National Physical Laboratory	In-situ mechanical/electrical testing of transparent electrodes and operating flexible photovoltaics
R.P2.8	Cleber Fabiano Marchiori, Marlus Koehler; Federal University of Paraná	Density functional theory study of the dipole across the a polymer:fullerene complex and fullerene anchored structure
R.P2.9	Cleber Fabiano Marchiori <sup>1</sup> , Natasha D.A. Yamamoto <sup>1</sup> , Carolina Ferreira de Matos <sup>1</sup> , Jiri Kujala <sup>2</sup> , Filip Tuomisto <sup>2</sup> , Aldo J.G. Zarbin <sup>1</sup> , Marlus Koehler <sup>1</sup> , Lucimara Stolz Roman <sup>1</sup> ; <sup>1</sup> Federal University of Paraná, <sup>2</sup> Aalto University	Morphological characterization of donor-acceptor heterojunction based on PSiF-DBT copolymer and C60
R.P2.10	Hasina H. Ramanitra, Simon Dowland, Hugo Santos Silva, Aurelien Tournebize, Graham Morse, Didier Bégué, Luc Gardette, Heiko Peisert, Agnès Rivaton, Thomas Chassé, Andreas Distler, Roger C. Hiorns; Univ de Pau et des Pays de L'Ardour	Polyfullerenes for organic photovoltaic cells
R.P2.11	Natasha Ariane Diniz Yamamoto <sup>1</sup> , Cleber Fabiano Marchiori <sup>1</sup> , Maria Luiza Miranda Rocco <sup>2</sup> , Marlus Koehler <sup>1</sup> , Lucimara Stolz Roman <sup>1</sup> ; <sup>1</sup> Federal University of Paraná, <sup>2</sup> Universidade Federal do Rio de Janeiro	Morphological Stability of organic bulk heterojunction devices: from donor-acceptor nanoparticles to fullerene anchored structures
R.P2.12	Mirna Denisse Barreiro, Gabriel Ramos, José Luis Maldonado, Enrique Perez; Centro de Investigaciones en Óptica A. C.	Lifetime studies of OPV cells using the eutectic alloy Field's metal as cathode and PTB7:PC71BM as active layer

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