The Solar Energy Society

13th Photovoltaic Science, Applications & Technology

Conference C98

PVSAT-13

Bangor University

Bangor, Wales

Wed 5th to Fri 7th April 2017

Provisional PROGRAMME

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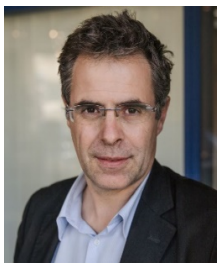
PRINCIPLE GUEST SPEAKER



Prof Christophe Ballif is the Director of the PV laboratory at Ecole Polytechnique Fédérale de Lausanne (EPFL) and Director of PV Development at Centre Suisse d' Electronique et de Microtechnique (CSEM) in Neuchâtel. Christophe won the Becqurel Prize in 2016 for scientific, technical or managerial accomplishments in the development of solar energy

GUEST SPEAKERS

Prof Hongwei Han is based at Huazhong University of Science & Technology and Wuhan National Laboratory for Optoelectronics, China. In 2015 his group fabricated 7m^2 fully printable mesoscopic perovskite solar module. He will present a key-note lecture at the Sêr Solar workshop on Printed Photovoltaics.

Dr Karsten Walzer is Senior Research Scientist and Project Manager at Heliatek GmbH, a company that is commercialising the roll-to-roll production of solar cells based on organic oligomers. Karsten will talk on the success and challenges of OPV technology scale-up from the lab to industrial production.

Dr Jeff Kettle based at the School of Electronic Engineering at the University of Bangor. His research interests cover semiconductor device fabrication, characterisation and modelling. Jeff will give the host lecture and present aspects of PV research at University of Bangor.

Dr Marco Raugei is Senior Research Fellow in the Department of Mechanical Engineering and Mathematical Sciences at Oxford Brookes University and currently visiting scientist at the Centre of Life Cycle Analysis at Columbia University (USA). Marco will present his work on the Energy Return on Investment Analysis (EROI) for PV Systems.

Dr Ian Forbes is Reader in Photovoltaic in the Department of Physics and Electrical Engineering Research at Northumbria University. Ian will present the latest developments, performance and prospects for the CZTS family of solar cells.

Prof Paul Meredith is Senior Research Fellow in the School of Mathematics and Physics and director of the Centre for Organic Photonics and Electronics at The University of Queensland. He is a member of The Queensland Governments Climate Change Council and co-founder of Xerocoat Pty Ltd. Paul will present a key-note lecture at the Sêr Solar workshop on Printed Photovoltaics.

DYDD MERCHER / WEDNESDAY

09:00	Visit to Dinorwig pumped hydro storage power station (pre-registration required)	
12:00	Lunch	
13:00	Opening Session	Chair: Nigel Mason, PV Consulting Ltd

Welcome	Professor John G Hughes *Bangor University*	Welcome to Bangor University by The Vice-Chancellor
	Nigel Mason *PV Consulting*	Conference chair welcome
	Alex Cole *Centre for Process Innovation*	Programme chair welcome
Invited	Jeff Kettle *Bangor University*	Stability of Organic PVs
Invited	Marco Raugei *Oxford Brookes University*	Net Energy Analysis of Photovoltaics: potential, limits and ideas for improvement

14:30	Poster Session A	Chair: Ralph Gottschalg, Loughborough University
15:30	Coffee break	
16:00	Session 1	Chair: Ian Forbes (TBC), Northumbria University

Invited	Karsten Walzer Heliatek GmbH	Organic solar films: From the lab to vacuum roll-to-roll manufacturing for building-integrated photovoltaics
Contributory	Simone Meroni Swansea University	Novel deposition method to print binder-free inks on large scale perovskite solar cell modules
	Silvia Mariotti Liverpool University	Reversible water catalysed $CsPbI_2Br$ perovskite phase change and device performances
	Exhibitor	Exhibitor Presentations

17:05	Short Break	
17:20	Session 2	Chair: Jeff Kettle, Bangor University

Contributory	Tom Baines Liverpool University	Development of Cu-free back contact structures for CdTe substrate cells
	Luke Wright Loughborough University	Fabrication of CZTS thin films via ultrasonic spray deposition
	James McGettrick Swansea University	Understanding the Photoelectron Spectroscopy of Perovskites for Photovoltaics
	Liyang Yue Bangor University	Light absorption in perovskite solar cell: Fundamentals and plasmonic enhancement of infrared band absorption
	Michael Owen-Belini Loughborough University	Thermo-mechanical stresses of Silicon Photovoltaic Modules

18:40 Time to check-in at your accommodation

19:30 Reception Drinks at Bangor University followed by dinner

DYDD IAU / THURSDAY

09:00 Session 3 Chair: Trystan Watson, Swansea University

Contributory	Matthew Carnie Swansea University	Perovskite-silicon tandem cells utilizing a semitransparent silver nanowire composite electrode
	Souray Khanna Exeter University	Optimization of PV-PCM systems for South-West UK climate
	Laurie Phillips University of Liverpool	CuSCN interlayer for high efficiency CdTe solar cells with improved back-contacts
	Stuart Irvine Swansea University	New mechanism in proton irradiated CdTe solar cells revealed by SCAPS modelling
	Husyira Alhusna Loughborough University	Influence of Spectral Variations on Photovoltaic Module Energy Rating
	Arunima Sethi Trinity College Dublin	Synthesis of single crystalline Au and Ag nanorods for plasmonic luminescent devices in PV application

10:30 Coffee Break

11:00 Session 4 Chair: Alex Cole, Centre for Process Innovation

Contributory	Dan Lamb Swansea University	First Flight Test of a Thin Film Cadmium Telluride Solar Cell on Cover Glass in Space
	Steve Ransome SCRL	Optimum Use of The Loss Factors Model (LFM) for Improved PV Performance Modelling
	John Hodgkinson University of Salford	Highly Effective TiO_2-x Electron Transport Layers via Atmospheric Pressure Plasma Enhanced CVD
	Katherine Hooper Swansea University	Characterisation and optimisation of processing time for perovskite solar cells
	Chris Kershaw Bangor University	Understanding and controlling electron transfer between sensitizer and electrolyte

12:15 Lunch

13:15 Poster Session B Chair: Ian Forbes, Northumbria University

14:15 Session 5 Chair: Dame Mary Archer, UK-ISES

Invited	Ian Forbes Northumbria University	tbd
Contributory	Phoebe Pearce Imperial College London	SiGeSn as a 1.0eV component sub-cell in III-V multi-junction solar cells
	Petar Igic Seansea University	Advanced Magnetic Sensors Dedicated to Gavanic Current Monitoring of Power Devices in PV Inverters
	Rolf Crook University of Leeds	Impact of stratospheric aerosol geoengineering on PV and CPV output

15:30 Coffee Break

DYDD IAU / THURSDAY

Sêr Solar Symposium – Printed Photovoltaics

16:00 Session 6 Chair: Stuart Irvine, Swansea University

Invited	Hongwei Han Huazhang University	Stable fully printable mesoscopic perovskite solar cells
	Paul Meredith University of Queensland	Scaling Physics of Thin Film Solar Cells
Contributory	Trystan Watson Swansea University	Designing the fabrication route for perovskite solar cells: From spin-coating to slot die
	James Bishop Sheffield University	Spray-cast multilayer perovskite solar cells with an active-area of 1.5 cm^2
	Matt Klug Oxford University	tba

GALA DINNER & AWARDS

18:30 Buses leave for Anglesey

19:00 Reception Chateau Rhianfa

20:00 Gala Dinner Chateau Rhianfa

23:00 Buses depart for return to Bangor

DYDD GWENER / FRIDAY

09:00 Session 7 Chair: Rolf Crook, Leeds University

Contributory	Martin Bliss Loughborough University	Uncertainty Contributions in Photocurrent Linearity Measurements of PV Devices using a Flash Solar Simulator
	PJ Yates University of Liverpool	Antimony Selenide – Microstructure and Photovoltaic Devices
	Xinya Xu Northumbria University	Flexible $Cu_2ZnSn(S,Se)_4$ solar cells made from nanoparticle inks
	Elana Koubli Loughborough University	Remote monitoring and failure detection for distributed small-scale PV systems
	Joel Troughton Swansea University	Very high humidity fabrication of planar perovskite solar cells and modules

10:30 Coffee Break

11:00 Session8 Chair: Steve Ransome, SRCL

Invited	Christophe Ballif CSEM, EPFL	On sea, in the air and on land: when will everything become solar?
Contributory	Diane Palmer Loughborough University	Satellite or Ground-based Irradiation Data: Which is closer to reality?
	Phoebe Pearce Imperial College London	Agent-based modelling of the effect of government policy on the adoption of domestic photovoltaic systems in Great Britain
	Giray Kartopu Swansea University	Development of ZnO/CdS/CdTe core-shell nanorod-based solar cells with an extremely thin absorber
	Ross Hatton University of Warwick	Enhanced Efficiency and Stability in Tin Perovskite Photovoltaics

13:00 Closing Remarks

13:15 Lunch

14:00 Conference Close

POSTER A PVSAT-13

Poster Session A: Wednesday 5th April 13:30 – 14:30 Chair: Ralph Gottschalg, U Loughborough

Ref. No	Paper Title	Authors	Affiliation
D1-1	MOCVD of SnS with large grains and stoichiometry control for thin film photovoltaics	Andrew J. Clayton, Stuart J. C. Irvine, Peter Siderfin and Cecile M. E. Charbonneau	Swansea University
D1-2	Degradation mechanisms of perovskite solar cells based on a triple all-printable mesoporous stack	F. De Rossi, J. Baker, K. Hooper and T.M. Watson	Swansea University
D1-3	A Novel Concentrated Photovoltaic-Phase Change Material (CPV-PCM) Water Heating System for Buildings in Hot Climate of UAE	Ahmed Hassan, Ali Shah and Hamza Alnoman	United Arab Emirates University
D1-4	A Simple Optical Setup for Current Mapping of Small Area PV Devices Using Different Sampling Strategies	G. Koutsourakis, M. Cashmore, S. R. G. Hall and R. Gottschalg	Loughborough University
D1-5	Degradation analysis of Perovskite Absorber Layers and Solar Cells using Spectral Filtration, Encapsulation and Concentrated Sunlight	Vasil Stoichkov, Dr Jeff Kettle, Dr Ashwin Ambrose, Dr Iris Visoly-Fisher and Prof Eugene Katz	Bangor University
D1-6	Accelerated weathering test study of series of different “encapsulants on steel substrate” and their potential application in building integrated PV	Sanjay Ghosh, Vasil Stoickov, Luke Haponow, Jeff Kettle, Ana L. Martínez, David Gómez and Pascal Sánchez	Bangor University
D1-7	Sr4Al14O25: Eu, Dy as a potential downconverter for crystalline-silicon solar cells	Joseph Day, S. Senthilarasu and Tapas K Mallick	University of Exeter
D1-8	The effect of annealing time and ambient pressure on the formation of Cu_2ZnSnS_4 (CZTS) thin films based on mixed powder precursors	Mehrnoush Mokhtarimehr, Ian Forbes and Nicola Pearsall	Northumbria University
D1-9	Water Vapour Transmission Rate of Ethylene Vinyl Acetate (EVA) Encapsulant with different Curing Levels	Jiang Zhu, Christina Ng, Daniel Montiel-Chicharro, Thomas R. Betts and Ralph Gottschalg	Loughborough University
D1-10	Outdoor degradation, performance analysis and software modelling of Organic Photovoltaics (OPVs) fixed to a building prototype	Vasil Stoichkov, Jeff Kettle, Tracy Sweet and Eugene Katz	Bangor University
D1-11	Dye sensitized Schottky barrier devices on steel	N. Ryall, R. Crook and J. Weinstein	University of Leeds
D1-12	Evaluation of Charge Carrier Lifetime of Thin Film Solar Cells using Transient Photovoltage Decay Measurements	V. Tsai, G. Koutsourakis, M. Bliss, T.R. Betts and R. Gottschalg	Loughborough University

POSTER B PVSAT-13

Poster Session A: Thursday 6th April 13:15 – 14:15 Chair: Ian Forbes, Northumbria University

Ref. No	Paper Title	Authors	Affiliation
D2-1	Analysis of Luminescent Solar Concentrator Performance Using a Ray Tracing Algorithm: Modelling, Optimization and Validation	M. Rafiee, S. Chandra, H. Ahmed and S. J. McCormack	Trinity College Dublin
D2-2	Triple-Junction Concentrator Photovoltaic-Thermoelectric Hybrid Receivers: Robustness, Validation and Preliminary Reliability Studies	Matthew Rolley, Tracy Sweet, Vasil Stoichkov, Jeff Kettle and Gao Min	Cardiff University
D2-3	Influence of the S amount on the Cu_2ZnSnS_4 absorber on thin film solar cells	S. Mazzamuto, S. Dale, L.M. Peter, N.M. Pearsall and I. Forbes	Northumbria University
D2-4	In-situ metrology of solar cell processing and lifetime	Peter J. Holliman, Leo Furnell, Rosie Anthony, Arthur Connell, Eurig W. Jones and Christopher P. Kershaw	Bangor University
D2-5	A comparison of selenisation configurations for solution processed $Cu(In,Ga)(S,Se)_2$ solar cells	S. Uličná, P. Arnou, C. S. Cooper, L. D. Wright, A. V. Malkov, J. M. Walls and J. W. Bowers	Loughborough University
D2-6	U-value calculation of CdTe thin film PV glazing using indoor characterization	Hameed Alrashidi, Aritra Gosh, Walid Issa, Nazmi Sellamil, Sundaram Senthilarasu, Townley Stuart and Mallick Tapas	University of Exeter
D2-7	Mixed dimensions silver nanowire thin, flexible, transparent and conducting electrodes with improved optical and physical properties	D. Kumar, V. Stoichkov, S. Ghosh, G.C. Smith and J. Kettle	Bangor University
D2-8	Spray coated zinc oxide for solar cell applications	Tiago Carneiro Gomes, Neri Alves and Jeff Kettle	Bangor University
D2-9	Large Area Deposition of $CH_3NH_3PbI_3$ Films in a Single-Step Using Aerosol-Assisted Chemical Vapour Deposition	Heather M. Yates and Mohammad Afzaal	University of Salford
D2-10	Plasmon-active silver nanohole films as light-catching electrodes for organic photovoltaics	Jaemin Lee and Ross. A. Hatton	University of Warwick
D2-11	Thermal Cyclic Testing of Perovskite Photovoltaic Celle	S. Abdelbaqi, A. Hassan and A.H. Shah	UAE University
D2-12	Process Development of Sublimated Cu-free CdTe Solar Cells	C. Potamialis, F. Lisco, B. Maniscalco, M. Togay, J. W. Bowers and J. M. Walls	Loughborough University
Late News 1	Low-T crystalline TiO2 nano-structured materials for the fabrication of lead-halide perovskite solar device	Amrita Yasin, Anthony Lewis, Eifion Jewell, James McGettrick, Justin Searle, Joel Troughton, Trystan Watson, Dave Worsley, Cécile Charbonneau	Swansea University
Late News 2	A Conceptual Strategy to Control the Cell Temperature in a Concentrating Photovoltaic/Thermal Roof-top System	Li W, Baig H, Paul M. C.,, Mallick T. K. and Knox A. R.	University of Glasgow/Exeter
Late News 3	Materials for optical, Magnetic and Electronic Devices	D. K. Mohamada, B. G. Freestonea, R. Mastersb, M. Reinhardtc, S. Canningd, C. Rodenburgb and D. G. Lidzeya	Sheffield University

DELEGATE LIST

(as registered by [insert date of printing])

DELEGATE LIST cont.

OVERVIEW PVSAT-13

WEDNESDAY		THURSDAY		FRIDAY	
09:00	Dinorwig Power Station visit	09:00	Session 3	09:00	Session 7
09:15		09:15		09:15	
09:30		09:30		09:30	
09:45		09:45		09:45	
10:00		10:00		10:00	
10:15		10:15		10:15	
10:30		10:30	coffee break	10:30	coffee break
10:45		10:45		10:45	
11:00		11:00	Session 4	11:00	Session 8
11:15		11:15		11:15	
11:30		11:30		11:30	
11:45		11:45		11:45	
12:00	lunch	12:00		12:00	
12:15		12:15	lunch	12:15	
12:30		12:30		12:30	
12:45		12:45		12:45	closing remarks
13:00	Opening Session	13:00		13:00	lunch
13:15		13:15	Poster Session B	13:15	
13:30		13:30		13:30	
13:45		13:45		13:45	
14:00		14:00		14:00	CONFERENCE CLOSE
14:15		14:15	Session 5		
14:30	poster session A	14:30			
14:45		14:45			
15:00		15:00			
15:15		15:15			
15:30	coffee break	15:30	coffee break		
15:45		15:45			
16:00	Session 1	16:00	Session 6 Ser Solar Printed PV		
16:15		16:15			
16:30		16:30			
16:45		16:45			
17:00		17:00			
17:05	Short Break	17:15			
		17:30			
17:20	Session 2	17:45			
18:00		18:00			
18:15		18:15			
18:40	accommodation check-in	18:30	Buses to Chateau Rhianfa		
18:45		18:45			
19:00		19:00	Reception Drinks		
19:15		19:15			
19:30	Reception Drinks	19:30			
19:45		19:45			
20:00	Dinner	20:00	Gala Dinner		
20:15		20:15			
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		23:00	Buses return to University		
		23:30			