ENERGY HARVESTING IN CITIES WITH TRANSPARENT AND HIGHLY EFFICIENT WINDOW-INTEGRATED MULTI-JUNCTION SOLAR CELLS

Results

Project Information

CITYSOLAR

Grant agreement ID: 101007084

Project website

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10.3030/101007084

Project closed

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3 November 2020

Start date
1 December 2020

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30 April 2024

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€ 4 765 768,75

EU contribution
€ 3 779 242,00

Coordinated by
CONSIGLIO NAZIONALE DELLE RICERCHE
Italy

CORDIS provides links to public deliverables and publications of HORIZON projects.

Links to deliverables and publications from FP7 projects, as well as links to some specific result types such as dataset and software, are dynamically retrieved from OpenAIRE.

Deliverables

Documents, reports (2)

Final report on communication & dissemination activities (related to task 7.4).

The report will present the communication and dissemination activities performed by the CITYSOLAR consortium in the last 18 months of the project and a general overview of the main communication and dissemination results of the entire project. A comparison between the activities foreseen in the CDEP and the activity made in the last 18 months will be performed and analysed.

Intermediary report on communication and dissemination activities (related to task 7.4).

The report will present the communication and dissemination activities performed by the CITYSOLAR consortium in the first 18 months of the project A comparison between the activities foreseen in the CDEP and the activity made till the 18 months will be performed and analysed

Websites, patent fillings, videos etc. (1)

Presentation of the CITYSOLAR multijunction TPV in BIPV presented at sector conferences and exhibitions (related to task 7.3).

Press and media actions will present the CITYSOLAR TPV used for BIPV applications. These actions will be performed mainly at the main conferences and exhibition in the field of BIPV such as Glasstech, PVSEC

Demonstrators, pilots, prototypes (1)

Integration of CITYSOLAR module into the BIPV prototype (related to task 6.5).

Fabrication of a solar window embedding the tandem device in its structure. The aim is to deliver a prototype in order to bring the technology close to a real product application.

Open Research Data Pilot (1)

Data Management Plan (DMP): In this document the consortium will point out, for all datasets generated in this project, whether or not and under which conditions the consortium plans to make them publicly available (related to task 8.2).

The DPM will include the handling of research data during after the end of the project what data will be collected processed andor generated which methodology standards will be appliedwhether data will be sharedmade open access and how data will be curated preserved including after the end of the project

Publications

Peer reviewed articles (54)

CO2 snow jet cleaning as a roll-to-roll compatible method for deburring IMI substrates after laser patterning

Author(s): M Wagner, A Distler, H-D Schmidt, A Classen, T Stubhan, M Koegl, J Illg, C J Brabec and H-J Egelhaaf
Published in: Flexible and Printed Electronics, Issue 8, 2023, Page(s) 015007, ISSN 2058-8585
Publisher: IOP Publishing
DOI: 10.1088/2058-8585/acb0e0

18.9% Efficient Organic Solar Cells Based on n-Doped Bulk-Heterojunction and Halogen-Substituted Self-Assembled Monolayers as Hole Extracting Interlayers

Author(s): Yuanbao Lin, Yadong Zhang, Junxiang Zhang, Mantas Marcinskas, Tadas Malinauskas, Artiom Magomedov, Mohamad Insan Nugraha, Dimitris Kaltsas, Dipti R. Naphade, George T. Harrison, Abdulrahman El-Labban, Stephen Barlow, Stefaan De Wolf, Ergang Wang, Iain McCulloch, Leonidas Tsetseris, Vytautas Getautis, Seth R. Marder, Thomas D. Anthopoulos
Published in: Advanced Energy Material, Issue 45, 2022, Page(s) 2202503, ISSN 1614-6832
Publisher: Wiley-VCH Verlag
DOI: 10.1002/aenm.202202503

A modular organic neuromorphic spiking circuit for retina-inspired sensory coding and neurotransmitter-mediated neural pathways

Author(s): Giovanni Maria Matrone, Eveline R. W. van Doremaele, Abhijith Surendran, Zachary Laswick, Sophie Griggs, Gang Ye, Iain McCulloch, Francesca Santoro, Jonathan Rivnay, Yoeri van de Burgt
Published in: Nature Communications, Issue 15, 2024, ISSN 2041-1723
Publisher: Nature Publishing Group
DOI: 10.1038/s41467-024-47226-3

Polymer-acid-metal quasi-ohmic contact for stable perovskite solar cells beyond a 20,000-hour extrapolated lifetime

Author(s): Junsheng Luo, Bowen Liu, Haomiao Yin, Xin Zhou, Mingjian Wu, Hongyang Shi, Jiyun Zhang, Jack Elia, Kaicheng Zhang, Jianchang Wu, Zhiqiang Xie, Chao Liu, Junyu Yuan, Zhongquan Wan, Thomas Heumueller, Larry Lüer, Erdmann Spiecker, Ning Li, Chunyang Jia, Christoph J. Brabec & Yicheng Zhao
Published in: Nature Communications, Issue 15, 2024, Page(s) 2002, ISSN 2041-1723
Publisher: Nature Publishing Group
DOI: 10.1038/s41467-024-46145-7

A single n-type semiconducting polymer-based photo-electrochemical transistor

Author(s): Victor Druet, David Ohayon, Christopher E. Petoukhoff, Yizhou Zhong, Nisreen Alshehri, Anil Koklu, Prem D. Nayak, Luca Salvigni, Latifah Almulla, Jokubas Surgailis, Sophie Griggs, Iain McCulloch, Frédéric Laquai & Sahika Inal
Published in: Nature Communications, Issue 14, 2023, Page(s) 5481, ISSN 2041-1723
Publisher: Nature Publishing Group
DOI: 10.1038/s41467-023-41313-7

Physical and chemical properties and degradation of MAPbBr₃ films on transparent substrates

Author(s): Valentina Carpenella, Fabrizio Messina, Jessica Barichello, Fabio Matteocci, Paolo Postorino, Caterina Petrillo, Alessandro Nucara, Danilo Dini, Claudia Fasolato
Published in: Physical Chemistry Chemical Physics, Issue 26, 2024, Page(s) 18898-18906, ISSN 1463-9076
Publisher: Royal Society of Chemistry
DOI: 10.1039/d4cp01509f

Observation of reversible light degradation in organic photovoltaics induced by long-persistent radicals

Author(s): Zhang, Difei; Liu, Chao; Zhang, Kaicheng; Jia, Yanhua; Zhong, Wenkai; Qiu, Weidong; Li, Yuanfeng; Heumüller, Thomas; Forberich, Karen; Le Corre, Vincent M.; Lüer, Larry; Li, Ning; Huang, Fei; Brabec, Christoph; Ying, Lei
Published in: Energy & environmental science, Issue 16, 2023, Page(s) 5339-5349, ISSN 1754-5692
Publisher: Royal Society of Chemistry
DOI: 10.1039/d3ee02540c

Revealing Photodegradation Pathways of Organic Solar Cells by Spectrally Resolved Accelerated Lifetime Analysis

Author(s): Paul Weitz, Vincent Marc Le Corre, Xiaoyan Du, Karen Forberich, Carsten Deibel, Christoph J. Brabec, Thomas Heumüller
Published in: Advanced Energy Materials, Issue 13, 2022, Page(s) 2202564, ISSN 1614-6832
Publisher: Wiley-VCH Verlag
DOI: 10.1002/aenm.202202564

Guidelines for Material Design in Semitransparent Organic Solar Cells
Author(s): Karen Forberich, Alessandro Troisi, Chao Liu, Michael Wagner, Christoph J. Brabec, Hans-Joachim Egelhaaf
Published in: Advanced Functional Materials, Issue 2314116, 2024, ISSN 1616-301X
Publisher: John Wiley & Sons Ltd.
DOI: 10.1002/adfm.202314116

A 19% efficient and stable organic photovoltaic device enabled by a guest nonfullerene acceptor with fibril-like morphology
Author(s): Hu Chen, Sang Young Jeong, Junfu Tian, Yadong Zhang, Dipti R. Naphade, Maryam Alsufyani, Weimin Zhang, Sophie Griggs,d Hanlin Hu, Stephen Barlow, Han Young Woo, Seth R Marder,e Thomas D. Anthopoulos, Iain McCullochbd and Yuanbao Lin
Published in: Energy & Environmental Science, Issue 16, 2023, Page(s) 1062-1070, ISSN 1754-5692
Publisher: Royal Society of Chemistry
DOI: 10.1039/d2ee03483b

Degradation and Self-Healing of FAPbBr3 Perovskite under Soft-X-Ray Irradiation
Author(s): Valeria Milotti, Stefania Cacovich, Davide Raffaele Ceratti, Daniel Ory, Jessica Barichello, Fabio Matteocci, Aldo Di Carlo, Polina M. Sheverdyaeva, Philip Schulz, Paolo Moras
Published in: Small Methods, Issue 7 (9), 2023, Page(s) 2300222, ISSN 2366-9608
Publisher: Wiley
DOI: 10.1002/smtd.202300222

Impact of 2D Ligands on Lattice Strain and Energy Losses in Narrow-Bandgap Lead–Tin Perovskite Solar Cells
Author(s): Kaicheng Zhang, Andrej Vincze, Ezzeldin Metwalli, Jiyun Zhang, Chao Liu, Wei Meng, Boxue Zhang, Jingjing Tian, Thomas Heumueller, Zhiqiang Xie, Junsheng Luo, Andres Osvet, Tobias Unruh, Larry Lüer, Ning Li, Christoph J. Brabec
Published in: Advanced Functional Materials, Issue 33, 2023, Page(s) 2303455, ISSN 1616-301X

Publisher: John Wiley & Sons Ltd.
DOI: 10.1002/adfm.202303455

The effect of residual palladium on the performance of organic electrochemical transistors
Author(s): Griggs, Sophie; Marks, Adam; Meli, Dilara; Rebetez, Gonzague; Bardagot, Olivier; Paulsen, Bryan D; Chen, Hu; Weaver, Karrie; Nugraha, Mohamad I; Schafer, Emily A; Tropp, Joshua; Aitchison, Catherine M; Anthopoulos, Thomas D; Banerji, Natalie; Rivnay, Jonathan; McCulloch, Iain
Published in: Nature Communications, Issue 13, 2022, Page(s) 1-11, ISSN 2041-1723
Publisher: Nature Publishing Group
DOI: 10.1038/s41467-022-35573-y

Flexible, Transparent, and Bifacial Perovskite Solar Cells and Modules Using the Wide-Band Gap FAPbBr3 Perovskite Absorber
Author(s): Farshad Jafarzadeh, Luigi Angelo Castriotta, Marie Legrand, Daniel Ory, Stefania Cacovich, Zeynab Skafi, Jessica Barichello, Francesca De Rossi, Francesco Di Giacomo, Aldo Di Carlo, Thomas Brown, Francesca Brunetti, and Fabio Matteocci
Published in: ACS Applied Materials & Interfaces, Issue 16, 2024, Page(s) 17607–17616, ISSN 1944-8244
Publisher: American Chemical Society
DOI: 10.1021/acsami.4c01071

Maximizing Performance and Stability of Organic Solar Cells at Low Driving Force for Charge Separation
Author(s): Larry Lüer, Rong Wang, Chao Liu, Henry Dube, Thomas Heumüller, Jens Hauch, Christoph J. Brabec
Published in: Advanced Science, Issue 9, 2023, Page(s) 2305948, ISSN 2198-3844
Publisher: Weinheim Wiley-VCH
DOI: 10.1002/advs.202305948

2D MXene-Based Electron Transport Layers for Nonhalogenated Solvent-Processed Stable Organic Solar Cells
Author(s): Um Kanta Aryal, Hanna Pazniak, Tanya Kumari, Matthieu Weber, Fredrik O. L. Johansson, Noemi Vannucchi, Nadine Witkowski, Vida Turkovic, Aldo Di Carlo, and Morten Madsen
Published in: ACS Applied Materials & Interfaces, Issue 6, 2023, Page(s) 4549–4558, ISSN 1944-8244
Publisher: American Chemical Society
DOI: 10.1021/acsaem.2c03789

Efficiency-Enhanced Scalable Organic Photovoltaics Using Roll-to-Roll Nanoimprint Lithography

Author(s): Mohammed A. Yakoob, Jani Lamminaho, Karlis Petersons, Ashish Prajapati, Elodie Destouesse, Bhushan R. Patil, Horst-Günter Rubahn, Gil Shalev, Jan Stensborg, Morten Madsen
Published in: ChemSusChem, Issue 15, 2021, Page(s) e202101611, ISSN 1864-5631
Publisher: Wiley - V C H Verlag GmbbH & Co.
DOI: 10.1002/cssc.202101611

An ordered, self-assembled nanocomposite with efficient electronic and ionic transport
Author(s): Tyler J. Quill, Garrett LeCroy, David M. Halat, Rajendar Sheelamanthula, Adam Marks, Lorena S. Grundy, Iain McCulloch, Jeffrey A. Reimer, Nitash P. Balsara, Alexander Giovannitti, Alberto Salleo, Christopher J. Takacs
Published in: Nature Materials, Issue 22, 2023, Page(s) 362-368, ISSN 1476-1122
Publisher: Nature Publishing Group
DOI: 10.1038/s41563-023-01476-6

Organic Photovoltaic Materials for Solar Fuel Applications: A Perfect Match?
Author(s): Catherine M. Aitchison, Iain McCulloch
Published in: Chemistry of Materials, Issue 36, 2024, Page(s) 1781−1792, ISSN 0897-4756
Publisher: American Chemical Society
DOI: 10.1021/acs.chemmater.3c02286

Electron-hole liquid formation in formamidinium lead bromide perovskite PbBr3
Author(s): Giuseppe Ammirati, Daniele Catone, Patrick O'Keeffe, Francesco Toschi, Stefano Turchini, Fabio Matteocci, Jessica Barichello, Aldo Di Carlo, and Faustino Martelli
Published in: PHYSICAL REVIEW B, Issue 108, 2023, Page(s) 195201, ISSN 2469-9969
Publisher: Americal Physical Society
DOI: 10.1103/physrevb.108.195201

Semitransparent Organic Photovoltaic Devices: Interface/Bulk Properties and Stability Issues
Author(s): Barbara Paci, Flavia Righi Riva, Amanda Generosi, Marco Guaragno, Emanuela Mangiacapre, Sergio Brutti, Michael Wagner, Andreas Distler and Hans-Joachim Egelhaaf
Published in: Nanomaterials, Issue 14 (3), 2024, Page(s) 269, ISSN 2079-4991
Publisher: MDPI
DOI: 10.3390/nano14030269

High Performing Solid-State Organic Electrochemical Transistors Enabled by Glycolated Polythiophene and Ion-Gel Electrolyte with a Wide Operation Temperature Range from −50 to 110 °C

Author(s): Xihu Wu, Shuai Chen, Maximilian Moser, Akshay Moudgil, Sophie Griggs, Adam Marks, Ting Li, Iain McCulloch, Wei Lin Leong
Published in: Advanced Functional Material, Issue 16, 2022, Page(s) 2209354, ISSN 1616-301X
Publisher: John Wiley & Sons Ltd.
DOI: 10.1002/adfm.202209354

Predicting layer thicknesses by numerical simulation for meniscus-guided coating of organic photovoltaics

Author(s): Fabian Gumpert,Annika Janßen,Christoph J. Brabec,Hans-Joachim Egelhaaf,Jan Lohbreier &Andreas Distler
Published in: Engineering Applications of Computational Fluid Mechanics, Issue 17, 2023, ISSN 1994-2060
Publisher: Department of Civil and Environmental Engineering, The Hong Kong Polytechnic University
DOI: 10.1080/19942060.2023.2242455

Semi-Transparent Blade-Coated FAPbBr3 Perovskite Solar Cells: A Scalable Low-Temperature Manufacturing Process under Ambient Condition

Author(s): Jessica Barichello, Diego Di Girolamo, Elisa Nonni, Barbara Paci, Amanda Generosi, Minjin Kim, Alexandra Levtchenko, Stefania Cacovich, Aldo Di Carlo, Fabio Matteocci
Published in: Solar RRL, Issue 7 (3), 2023, Page(s) 2200739, ISSN 2367-198X
Publisher: Wiley
DOI: 10.1002/solr.202200739

Vitamin C for Photo-Stable Non-fullerene-acceptor-Based Organic Solar Cells

Author(s): Sambathkumar Balasubramanian*, Miguel Ángel León-Luna, Beatriz Romero, Morten Madsen, and Vida Turkovic
Published in: ACS Applied Materials & Interfaces, Issue 15, 2023, Page(s) 39647−39656, ISSN 1944-8244
Publisher: American Chemical Society
DOI: 10.1021/acsami.3c06321

Vacuum-Deposited Donors for Low-Voltage-Loss Nonfullerene Organic Solar Cells

Author(s): Pascal Kaienburg, Helen Bristow, Anna Jungbluth, Irfan Habib, Iain McCulloch, David Beljonne, and Moritz Riede
Published in: ACS Applied Materials & Interfaces, Issue 15, 2023, Page(s) 31684−31691, ISSN 1944-8244
Publisher: American Chemical Society
DOI: 10.1021/acsami.3c04282

Quasi-1D Polymer Semiconductor–Diarylethene Blends: High Performance Optically Switchable Transistors

Author(s): Yusheng Chen, Hanlin Wang, Hu Chen, Weimin Zhang, Shunqi Xu, Michael Pätzel, Chun Ma, Cang Wang, Iain McCulloch, Stefan Hecht, Paolo Samorì
Published in: Advanced Functional Materials, Issue 33, 2023, Page(s) 2305494, ISSN 1616-301X
Publisher: John Wiley & Sons Ltd.
DOI: 10.1002/adfm.202305494

Matching the Photocurrent of 2-Terminal Mechanically-Stacked Perovskite/Organic Tandem Solar Modules by Varying the Cell Width

Author(s): García Cerrillo, José; Distler, Andreas; Matteocci, Fabio; Forberich, Karen; Wagner, Michael; Basu, Robin; Castriotta, Luigi Angelo; Jafarzadeh, Farshad; Brunetti, Francesca; Yang, Fu; Li, Ning; Corpus-Mendoza, Asiel Neftalí; Di Carlo, Aldo; Brabec, Christoph; Egelhaaf, Hans-Joachim
Published in: Solar RRL, Issue 8 (6), 2024, Page(s) 2300767, ISSN 2367-198X
Publisher: Wiley
DOI: 10.1002/solr.202300767

Breaking 1.7V open circuit voltage in large area transparent perovskite solar cells using bulk and interfaces passivation.

Author(s): Fabio Matteocci; Diego Di Girolamo; Guillame Vidon; Jessica Barichello; Francesco Di Giacomo; Farshad Jafarzadeh; Barbara Paci; Amanda Generosi; Minjin Kim; Luigi Angelo Castriotta; Mathieu Frégnaux; Jean-François Guillemoles; Philip Schulz; Daniel Ory; Stefania Cacovich; Aldo Di Carlo
Published in: Advanced Energy materials, Issue 14, 2024, Page(s) 2400663, ISSN 1614-6840
Publisher: Wiley
DOI: 10.1002/aenm.202400663

Understanding Causalities in Organic Photovoltaics Device Degradation in a Machine-Learning-Driven High-Throughput Platform

Author(s): Chao Liu, Larry Lüer, Vincent M. Le Corre, Karen Forberich, Paul Weitz, Thomas Heumüller, Xiaoyan Du, Jonas Wortmann, Jiyun Zhang, Jerrit Wagner, Lei Ying, Jens Hauch, Ning Li, Christoph J. Brabec
Published in: Advanced Materials, Issue 36, 2023, Page(s) 2300259, ISSN 1521-4095
Publisher: Wiley
DOI: 10.1002/adma.202300259

Templated 2D Polymer Heterojunctions for Improved Photocatalytic Hydrogen Production

Author(s): Catherine M. Aitchison, Soranyel Gonzalez-Carrero, Shilin Yao, Max Benkert, Zhiyuan Ding, Neil P. Young, Benjamin Willner, Floriana Moruzzi,

Yuanbao Lin, Junfu Tian, Peter D. Nellist, James R. Durrant, Iain McCulloch
Published in: Advanced Materials, Issue 36, 2023, Page(s) 2300037, ISSN 1521-4095
Publisher: Wiley
DOI: 10.1002/adma.202300037

Enhancing Hole Transfer in Perovskite Solar Cell with Self-Assembled Monolayer by Introducing [1]Benzothieno [3,2-b][1]Benzothiophene Interlayer
Author(s): Daimiota Takhellambam, Luigi Angelo Castriotta, Gloria Zanotti, Laura Mancini, Venanzio Raglione, Giuseppe Mattioli, Barbara Paci, Amanda Generosi, Marco Guaragno, Valerio Campanari, Giuseppe Ammirati, Faustino Martelli, Emanuele Calabrò, Antonio Cricenti, Marco Luce, Narges Yaghoobi Nia, Francesco Di Giacomo, Aldo Di Carlo
Published in: Solar RRL, Issue 7 (24), 2023, Page(s) 2300658, ISSN 2367-198X
Publisher: Wiley
DOI: 10.1002/solr.202300658

Improved Air Processability of Organic Photovoltaics Using a Stabilizing Antioxidant to Prevent Thermal Oxidation
Author(s): Marc Steinberger; Andreas Distler; Christoph J. Brabec; Hans-Joachim Egelhaaf
Published in: J. Phys. Chem. C, Issue 126, 2021, Page(s) 22, ISSN 1932-7447
Publisher: American Chemical Society
DOI: 10.1021/acs.jpcc.1c07050

Fully solution-processed, light-weight, and ultraflexible organic solar cells
Author(s): Ezgi Nur Güler, Andreas Distler, Robin Basu, Christoph J Brabec, Hans-Joachim Egelhaaf
Published in: Flexible and Printed Electronics, Issue 7, 2022, Page(s) 025003, ISSN 2058-8585
Publisher: Institute of Physics
DOI: 10.1088/2058-8585/ac66ae

Design of Highly Efficient Semitransparent Perovskite/Organic Tandem Solar Cells ,Hans-Joachim Egelhaaf,Christoph J. Brabec,Aldo Di Carlo
Author(s): Rossi Daniele; Forberich Karen; Matteocci Fabio; Auf der Maur Matthias; Egelhaaf Hans-Joachim; Brabec Christoph J.; Di Carlo Aldo
Published in: Rapid Research Letters Solar, Issue 1, 2022, Page(s) 2200242, ISSN 1862-6254
Publisher: Wiley - VCH Verlag GmbH & CO. KGaA
DOI: 10.1002/solr.202200242

Enhancing the Backbone Coplanarity of n-Type Copolymers for Higher Electron Mobility and Stability in Organic Electrochemical Transistors

Author(s): Iuliana P. Maria, Sophie Griggs, Reem B. Rashid, Bryan D. Paulsen, Jokubas Surgailis, Karl Thorley, Vianna N. Le, George T. Harrison, Craig Combe, Rawad Hallani, Alexander Giovannitti, Alexandra F. Paterson, Sahika Inal, Jonathan Rivnay, and Iain McCulloch
Published in: Chemistry of Materials, Issue 34, 2022, Page(s) 8593–8602, ISSN 0897-4756
Publisher: American Chemical Society
DOI: 10.1021/acs.chemmater.2c01552

2D Materials for Organic and Perovskite Photovoltaics

Author(s): Um Kanta Aryal; Mehrad Ahmadpour; Vida Turkovic; Horst-Günter Rubahn; Aldo Di Carlo; Morten Madsen
Published in: Nano Energy, Issue 94, 106833, 2022, Page(s) 24, ISSN 2211-2855
Publisher: Elsevier BV
DOI: 10.1016/j.nanoen.2021.106833

Photocatalytic CO2 reduction by topologically matched polymer–polymer heterojunction nanosheets

Author(s): Catherine M. Aitchison, Yu Zhang, Wanpeng Lu and Iain McCulloch
Published in: Faraday Discussion, Issue 250, 2023, Page(s) 251-262, ISSN 1359-6640
Publisher: Royal Society of Chemistry
DOI: 10.1039/d3fd00143a

Fully Printed and Industrially Scalable Semitransparent Organic Photovoltaic Modules: Navigating through Material and Processing Constraints

Author(s): Josua Wachsmuth, Andreas Distler, Chao Liu, Thomas Heumüller, Yang Liu, Catherine M. Aitchison, Alina Hauser, Michael Rossier, Amélie Robitaille, Marc-Antoine Llobel, Pierre-Olivier Morin, Anaïs Thepaut, Charline Arrive, Iain McCulloch, Yinhua Zhou, Christoph J. Brabec, Hans-Joachim Egelhaaf
Published in: Solar RRL, Issue 21 (7), 2023, Page(s) 2300602, ISSN 2367-198X
Publisher: Wiley
DOI: 10.1002/solr.202300602

Hole-limited electrochemical doping in conjugated polymers

Author(s): Scott T. Keene, Joonatan E. M. Laulainen, Raj Pandya, Maximilian Moser, Christoph Schnedermann, Paul A. Midgley, Iain McCulloch, Akshay Rao, George G. Malliaras
Published in: Nature Materials, Issue 22, 2023, Page(s) pages1121–1127,

ISSN 1476-1122
Publisher: Nature Publishing Group
DOI: 10.1038/s41563-023-01601-5

Single-Layer Carbon Nitride as an Efficient Metal-Free Organic Electron-Transport Material with a Tunable Work Function
Author(s): Abdus Saboor, Oleksandr Stroyuk, Oleksandra Raievska, Chao Liu, Jens Hauch, Christoph J. Brabec
Published in: Advanced Functional Materials, Issue 2400453, 2024, ISSN 1616-301X
Publisher: John Wiley & Sons Ltd.
DOI: 10.1002/adfm.202400453

Air-stable bismuth sulfobromide (BiSBr) visible-light absorbers: optoelectronic properties and potential for energy harvesting
Author(s): Xiaoyu Guo, Yi-Teng Huang, Hugh Lohan, Junzhi Ye, Yuanbao Lin, Juhwan Lim, Nicolas Gauriot, Szymon J. Zelewski, Daniel Darvill, Huimin Zhu, Akshay Rao, Iain McCulloch and Robert L. Z. Hoye
Published in: Journal Material Chemistry A, Issue 11, 2023, Page(s) 22775-22785, ISSN 2050-7488
Publisher: Royal Society of Chemistry
DOI: 10.1039/d3ta04491b

Ferromagnetic Behavior and Magneto-Optical Properties of Semiconducting Co-Doped ZnO
Author(s): Antonio Di Trolio, Alberto M. Testa and Aldo Amore Bonapasta
Published in: Nanomaterials, Issue 12(9), 2022, Page(s) 1525, ISSN 2079-4991
Publisher: MDPI
DOI: 10.3390/nano12091525

Generation of long-lived charges in organic semiconductor heterojunction nanoparticles for efficient photocatalytic hydrogen evolution
Author(s): Jan Kosco, Soranyel Gonzalez-Carrero, Calvyn T. Howells, Teng Fei, Yifan Dong, Rachid Sougrat, George T. Harrison, Yuliar Firdaus, Rajendar Sheelamanthula, Balaji Purushothaman, Floriana Moruzzi, Weidong Xu, Lingyun Zhao, Aniruddha Basu, Stefaan De Wolf, Thomas D. Anthopoulos, James R. Durrant & Iain McCulloch
Published in: Nature Energy, 2022, ISSN 2058-7546
Publisher: Springer Nature
DOI: 10.1038/s41560-022-00990-2

On the theoretical framework for meniscus-guided manufacturing of large-area OPV modules
Author(s): Fabian Gumpert, Annika Janßen, Robin Basu, Christoph J. Brabec, Hans-Joachim Egelhaaf, Jan Lohbreier, Andreas Distler

Published in: Progress in Organic Coatings, Issue 192, 2024, Page(s) 108505, ISSN 0300-9440
Publisher: Elsevier BV
DOI: 10.1016/j.porgcoat.2024.108505

Solution-processable polymers of intrinsic microporosity for gas-phase carbon dioxide photoreduction

Author(s): Floriana Moruzzi, Weimin Zhang, Balaji Purushothaman, Soranyel Gonzalez-Carrero, Catherine M. Aitchison, Benjamin Willner, Fabien Ceugniet, Yuanbao Lin, Jan Kosco, Hu Chen, Junfu Tian, Maryam Alsufyani, Joshua S. Gibson, Ed Rattner, Yasmine Baghdadi, Salvador Eslava, Marios Neophytou, James R. Durrant, Ludmilla Steier & Iain McCulloch
Published in: Nature Communications, Issue 14, 2023, Page(s) 3443, ISSN 2041-1723
Publisher: Nature Publishing Group
DOI: 10.1038/s41467-023-39161-6

Uncovering the Electronic State Interplay at Metal Oxide Electron Transport Layer/Nonfullerene Acceptor Interfaces in Stable Organic Photovoltaic Devices

Author(s): Mariam Ahmad, Hervé Cruguel, Mehrad Ahmadpour, Noemi Vannucchi, Nahed Mohammad Samie, Céline Leuillet, Alexander Generalov, Zheshen Li, Morten Madsen, and Nadine Witkowski
Published in: ACS Applied Materials & Interfaces, Issue 15, 2023, Page(s) 55065–55072, ISSN 1944-8244
Publisher: American Chemical Society
DOI: 10.1021/acsami.3c11103

Autonomous optimization of an organic solar cell in a 4-dimensional parameter space

Author(s): Osterrieder, Tobias; Schmitt, Frederik; Lüer, Larry; Wagner, Jerrit; Heumüller, Thomas; Hauch, Jens; Brabec, Christoph J.
Published in: Energy & environmental science, Issue 16(9), 2023, Page(s) 3984-3993, ISSN 1754-5692
Publisher: Royal Society of Chemistry
DOI: 10.1039/d3ee02027d

Sustainability considerations for organic electronic products

Author(s): Iain McCulloch, Michael Chabinyc, Christoph Brabec, Christian Bech Nielsen & Scott Edward Watkins
Published in: Nature Materials, Issue 22, 2023, Page(s) 1304–1310, ISSN 1476-1122
Publisher: Nature Publishing Group
DOI: 10.1038/s41563-023-01579-0

Aerosol-Jet-Printed Encapsulation of Organic Photovoltaics

Author(s): Robin Basu, Kok S. Siah, Andreas Distler, Felix Häußler, Jörg Franke, Christoph J. Brabec, Hans-Joachim Egelhaaf
Published in: Advanced Engineering Material, Issue 25, 2023, Page(s) 2300322, ISSN 1438-1656
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Unveiling the Electronic Band Structure and Temporal Dynamics of Excited Carriers in Formamidinium Lead Bromide Perovskite
Author(s): Giuseppe Ammirati, Stefano Turchini, Francesco Toschi, Patrick O'Keeffe, Alessandra Paladini, Faustino Martelli, Fabio Matteocci, Jessica Barichello, Paolo Moras, Polina M. Sheverdyaeva, Valeria Milotti, Daniel Ory, Aldo Di Carlo, Daniele Catone
Published in: Advanced Optical Materials, Issue 12, 2024, Page(s) 2302013, ISSN 2195-1071
Publisher: Wiley
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Cutting “lab-to-fab” short: high throughput optimization and process assessment in roll-to-roll slot die coating of printed photovoltaics
Author(s): Michael Wagner,ab Andreas Distler, Vincent M. Le Corre, Simon Zapf, Burak Baydar, Hans-Dieter Schmidt,b Madeleine Heyder, Karen Forberich, Larry Lüer, Christoph J. Brabec, H.-J. Egelhaaf
Published in: Energy & Environmental Science, Issue 16, 2023, Page(s) 5454-5463, ISSN 1754-5692
Publisher: Royal Society of Chemistry
DOI: 10.1039/d3ee01801f

All-blade-coated flexible perovskite solar cells & modules processed in air from a sustainable dimethyl sulfoxide (DMSO)-based solvent system
Author(s): Farshad Jafarzadeh, Luigi Angelo Castriotta, Francesca De Rossi, Jazib Ali, Francesco Di Giacomo, Aldo Di Carlo, Fabio Matteocci, Francesca Brunetti
Published in: Sustainable Energy & Fuels, Issue 7, 2024, Page(s) 2219-2228, ISSN 2398-4902
Publisher: Royal Society of Chemistry
DOI: 10.1039/d2se01678h

Signatures of Polaron Dynamics in Photoexcited MAPbBr3 by Infrared Spectroscopy
Author(s): Valentina Carpenella, Claudia Fasolato, Diego Di Girolamo, Jessica Barichello, Fabio Matteocci, Caterina Petrillo, Danilo Dini, and Alessandro Nucara
Published in: Journal of Physical Chemistry C, Issue 127 (45), 2023, Page(s) 22097-22104, ISSN 1932-7447

Publisher: American Chemical Society
DOI: 10.1021/acs.jpcc.3c03668

Datasets

Datasets via OpenAIRE (7)

Figure 2a - Rossi et al. Design of Highly Efficient Semitransparent Perovskite/Organic Tandem Solar Cells RRL Solar (2022)
Author(s): Rossi Daniele; Di Carlo Aldo, ; Matteocci Fabio; Auf Der Maur Matthias
Published in: Zenodo

Dataset of figures in Ammirati et al. Electron Hole Liquid Formation in the Formamidinium Lead Bromide Perovskite
Author(s): Ammirati, Giuseppe; Catone, Daniele; O'Keeffe, Patrick; Toschi, Francesco; Turchini, Stefano; Mattocci, Fabio; Barichello, Jessica; Di Carlo, Aldo; Martelli, Faustino
Published in: Zenodo

Figure 2a. Barichello et al._Semi-transparent blade-coated FAPbBr3 perovskite solar cells: A scalable low-temperature manufacturing process under ambient condition. RRL Solar 2023
Author(s): Paci, Barbara; Barichello, Jessica; Di Girolamo, Diego; Nonni, Elisa; Generosi, Amanda; Kim, Minjin; Levtchenko, Alexandra; Cacovich, Stefania; Di Carlo, Aldo; Matteocci, Fabio
Published in: Zenodo

Characterization of the semi-transparent perovskite solar cells
Author(s): Matteocci, Fabio
Published in: Zenodo

Dataset of figures in Ammirati et al. Unveiling the Electronic Band Structure and Temporal Dynamics of Excited Carriers in Formamidinium Lead Bromide Perovskite
Author(s): Ammirati, Giuseppe; Turchini, Stefano; Toschi, Francesco; Paladini, Alessandra; Martelli, Faustino; Matteocci, Fabio; Barichello, Jessica; Moras, Paolo; Sheverdyaeva, Polina M.; Milotti, Valeria; Ory, Daniel; Di Carlo, Aldo; Catone, Daniela
Published in: Zenodo

Figure 3. Barichello et al._Semi-transparent blade-coated FAPbBr3 perovskite solar cells: A scalable low-temperature manufacturing process under ambient condition. RRL Solar 2023

Author(s): Barichello, Jessica; Di Girolamo, Diego; Nonni, Elisa; Paci, Barbara; Generosi, Amanda; Kim, Minjin; Levtchenko, Alexandra; Cacovich, Stefania; Di Carlo, Aldo; Matteocci, Fabio
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Polymer-acid-metal quasi-ohmic contact for stable perovskite solar cells beyond a 20,000-hour extrapolated lifetime

Author(s): Zhao, Yicheng; luo, junsheng
Published in: figshare

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