Jose Dario Perea Ospina

Curriculum Vitae

Education

2019– **Postdoctoral researcher**, *MIT*, Cambridge, *USA*.

2014–2019 **PhD - Organic Photovoltaics : Lehrstuhl fur Werkstoffwissenschaften (Materialien der Elektronik und der Energietechnologie)**, *Friedrich-Alexander Universitat*, PhD Thesis: Solubility and Miscibility of Organic Semiconductors for Efficient and Stable Organic Solar Cells Investigated via Machine Learning and Quantum Chemistry Methods / Loslichkeit und Mischbarkeit organischer Halbleiter fur effiziente und stabile organische Solarzellen, untersucht mittels maschinellem Lernen und quantenchemischer Methoden, Erlangen.
Germany

2008–2010 **Master in Physics: Grupo de Fisica Teorica del Estado Solido**, *Universidad del Valle*, MsC Thesis: Quantum confinement and applied hydrostatic pressure effects on the cyclotron effective mass and Lande g - factor in GaAs-Ga(1-x)AlxAs double coupled quantum wells, Cali.
Colombia

2000–2007 **Physics**, *Universidad del Valle*, Cali, *Colombia*.

1999 **High School**, *Institut de Educacio Secundaria Pere Calders.*, Cerdanyola del Valles (Barcelona), *Spain*.

Professional Experience

* *Sunmer Solutions S.A.S. co-founder*
* *Scientific Organizer: Colombian children visit Germany, Friedrich Alexander Universitat, Hi-EnCn (Erlangen - Nurnberg), and Max Planck (Berlin - Potsdam). https://www.i-meet.ww.uni-erlangen.de/2018/11/jose-is-hosting-a-visit-of-young-colombians-school-kids-who-participated-in-a-joint-project-with-nasa-at-i-meet-hi-ern-and-zae/*
* *Scientific Organizer: Organic Solar Cells in the Outer Space, Cubes in Space - NASA held in Sumner New Mexico, USA, 9 September 2018 (https://www.i-meet.ww.uni-erlangen.de/2018/09/nasa-brought-joses-organic-solar-cells-successful-to-the-outer-space/).*

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* *International Instructor Clubes de Ciencia: 'Acercando el Futuro; celdas solares organicas', held in Cali, 2018 www.clubesdeciencia.co*
* *Scientific Organizer: 4th International Congress Next Generation Solar Energy 2017 held in Cali, www.ngse.info*
* *Harvard University - Associate Researcher, Cambridge - USA, February - November 2017*
* *Harvard University - Course Tester: The Quantum World EDx (https://www.edx.org/course/quantum-world-harvardx-chem160x), Cambridge - USA, 2017*
* *Harvard University - Friedrich Alexander University scientific collaboration, Cambridge - USA. Feb 08-Feb 13, 2017*
* *Universidad del Valle - Friedrich Alexander University scientific collaboration, Cali - Colombia. Nov 28-Dic 3, 2016*
* *Pannoia University - Friedrich Alexander University scientific collaboration, Veszprem - Hungary. March 23-25, 2015*
* *University Lecturer of Fundamental Physics for Engineering: Universidad del Valle, Cali Colombia 2008-2014*
* *University Lecturer of Physics for Engineering: Universidad Autonoma de Occidente Cali Colombia. 2009-2014*
* *University Lecturer of Oscillation and Waves Physics for Electrical Engineering: Universidad San Buenaventura Cali Colombia. 2011-2012*
* *University Lecturer of Mathematics for Engineering: Universidad Catolica Lumen Gentium Cali. 2012-2014*
* *Handling of the PPMS in the CENM (Excellence Center for Novel Materials) Cali - Colombia, January - March of the 2009*
* *String Quartet Leon de Greiff - Colombia, 2007-2009*
* *String Trio O Belle Nuit - Colombia, 2010-2012*

Publications

2019

* *Daniel Cruz, Jose Garcia Cerillo, Baris Kumru, Ning Li, José Darío Perea, Bernhard V.K.J. Schmidt, Iver Lauermann, Christoph J. Brabec, Markus Antonietti. Thiazole-modified Carbon Nitride Colloids as an Effective Hole-blocking Layer for Enhancing the Performance of Inverted Perovskite Solar Cells. Submitted*
* *J. J. Prías-Barragán, K. Gross, José Darío Perea, Christoph J. Brabec, H. Ariza-Calderón, and P. Prieto. Graphene Oxide Thin Films: Synthesis and Optical Characterization. Submitted*

* *Cesar Omar Ramirez Quiroz, George Spyropoulos, Looch, Michael Salvador, Marvin Berlinghof , José Darío Perea, Karen Forberich, Laura-Isabelle Dion-Bertrand, Nadine Schrenker, Andrej Classen, Nicola Gasparini, Ganna Chistiakova , Mathias Mews, Lars Korte, Bernd Rech, Ning Li, Frank Hauke, Erdmann Spiecker, Tayebeh Ameri, Steve Albrecht, Gonzalo Abellan, Salvador Leon, Tobias Unruh, Andreas Hirsch, Alspuru-Guzik, Christoph Brabec. Interface molecular engineering for laminated monolithic perovskite/silicon tandem solar cells with 80.4 fill factor. Just Accepted in Advanced Functional Materials*

* *Nicola Gasparini, Simon Kahmann, Michael Salvador, José Darío Perea,, Andreas Sperlich, Andreas Baumann, Ning Li, Stefanie Rechberger, Erdmann Spiecker, Vladimir Dyakonov, Giuseppe Portale, Maria A. Loi, Christoph J. Brabec, Tayebeh Ameri. Favorable mixing thermodynamics in ternary polymer blends for realizing high efficiency plastic solar cells. Adv. Energy Mater. 2019, 1803394, DOI: 10.1002/aenm.201803394*

* *J. R. MejSalazar, José Darío Perea, J. C. Collazos, R. Castillo, O Mor J.E. Diosa, and E. Baca. Several electrical and magnetic properties of $(Bi222(Y)3)_{1-X}(LBMO)_X$ composites thick films. Materials 2019, 12, 861; DOI:10.3390/ma12060861*

* *Chaohong Zhang, Thomas Heumueller, Salvador Leon, Wolfgang Gruber, Klaus Burlafinger, Xiaofeng Tang, Jose D. Perea, Isabell Wabra, Andreas Hirsch, Tobias Unruh, Ning Li, Christoph J. Brabec, A Top-down Strategy Identifying Molecular Phase Stabilizers to Overcome Microstructure Instabilities in Organic Solar Cells. Energy & Environmental Science 2019. DOI: 10.1039/c8ee03780a*

2018

* *Benjamin Sanchez Lengeling, Loic M. Roch, José Darío Perea, Stefan Langner, Christoph J. Brabec, and Alán Aspuru-Guzik. A Bayesian approach to predict solubility parameters. Adv. Theory Simul. 2018, 1800069. DOI: 10.1002/adts.201800069*

* *Stefan Langner, Jose Dario Perea Ospina, Chaohong Zhang, Ning Li, and Christoph J. Brabec. The Relevance of Solubility and Miscibility for the Performance of Organic Solar Cells, Handbook of Conducting Polymers new Edition, CRC Press - Nov 2019*

2017

* *José Darío Perea, Stefan Langner, Michael Salvador, Benjamin Sanchez-Lengeling, Ning Li, Chaohong Zhang, Gabor Jarvas, Janos Kontos, Andras Dallos, Alan Aspuru-Guzik, and Christoph J. Brabec. Introducing a New Potential Figure of Merit for Evaluating Microstructure Stability in Photovoltaic Polymer-Fullerene Blends, J. Phys. Chem. C. 2017. DOI: 10.1021/acs.jpcc.7b03228*

* *Chaohong Zhang, Stefan Langner, Alexander Mumyatov, Jie Min, Denis V. Anokhin, José Darío Perea, Kirill L. Gerasimov, Andres Osvet, Dimitri A. Ivanov, Pavel Troshin, Ning Li, and Christoph J. Brabec. Understanding the correlation and balance between miscibility and optoelectronic properties for polymer-fullerene solar cells. J. Mater. Chem. A2017. DOI: 10.1039/c7ta03505e*

* *Michael Salvador, Nicola Gasparini, José Darío Perea, Sri Harish Paleti, Andreas Distler, Liana N. Inasaridze, Pavel A. Troshin, Larry Ler, Hans-Joachim Egelhaaf, and Christoph Brabec . Suppressing photooxidation of conjugated polymers and their blends with fullerenes through nickel chelates. Energy Environ. Sci. 2017. DOI: 10.1039/c7ee01403a*

* *José Darío Perea Ospina, Stefan Langner, Tayebeh Ameri, and Christoph J. Brabec. Solubility and Miscibility for Diluted Polymers and their Extension to Organic Semiconductors - Chapter Book, Encyclopedia of Physical Organic Chemistry, First Edition. Edited by Zerong Wang. John Wiley & Sons, Inc. ISBN 978-1-118-47045-9. 2017*

* *Ning Li, José Darío Perea, Moses Richter, Thomas Heumueller, Gebhard J. Matt, Yi Hou, Nusret S. Guldal, Haiwei Chen, Shi Chen, Stefan Langner, Thaer Kassar, Tobias Unruh, and Christoph J. Brabec. Abnormal strong burn-in degradation of highly efficient polymer solar cells caused by spinodal donor-acceptor demixing, Nature Communications 2017. DOI: 10.1038/ncomms14541*

* *Simon A. Dowland, Michael Salvador, José Darío Perea, Nicola Gasparini, Stefan Langner, Sambatra Rajoelson, Hasina H. Ramanitra, Benjamin D. Lindner, Andres Osvet, Christoph J. Brabec, Roger C. Hiorns, Hans-Joachim Egelhaaf. Suppression of Thermally Induced Fullerene Aggregation in Polyfullerene Based Multi-Acceptor Organic Solar Cells, ACS Applied Materials & Interfaces 2017. DOI: 10.1021/acsami.7b00401*

* *Xiaoyan Du, Xuechen Jiao, Stefanie Fladischer, José Darío Perea, Erdmann Spiecker, Markus Meyer, Harald Ade, Christoph J. Brabec, Rainer H. Fink, Tayebeh Ameri. Crystallization of Sensitizers Controls Morphology and Performance in Si/C-PCPDTBT-Sensitized P3HT:ICBA Ternary Blends, ACS Macromolecules 2017. DOI: 10.1021/acs.macromol.6b02699*

* *Ievgen Levchuk, Patrick Herre, Xiaofeng Tang, Marco Brandl, José Darío Perea, Andres Osvet, Florian Hoegl, Gebhard J. Matt, Rainer Hock, Wolfgang Peukert, Miroslaw Batentschuk, and Christoph J. Brabec. Brightly Luminescent and Color-Tunable Formamidinium Lead Halide Perovskite $FAPbX_3$ (X = Cl, Br, I) Colloidal Nanocrystals, ACS Nano Letters 2017 DOI: 10.1021/acs.nanolett.6b04781*

* *Ning Chen, Tiantian Cao, Guangxin Liu, Yingbo Wan, José Darío Perea, Yijun Xia, Zhaowe Wang, Bo Song, Ning Li, Xiaohong Li, Yi zhou, Christoph, Brabec and Yongfang Li. Towards a Full Understanding of Regioisomer Effects of Indene-C_{60} Bisadduct Acceptors in Bulk Heterojunction Polymer Solar Cells, Journal of Materials Chemistry A 2017 DOI: 10.1039/C7TA01665D.*

2016

* *J. Darío Perea, Stefan Langner, Michael Salvador, Janos Kontos, Gabor Jarvas, Florian Winkler, Florian Machui, Andreas Görling, Andras Dallos, Tayebeh Ameri, and Christoph J. Brabec. Combined Computational Approach Based on Density Functional Theory and Artificial Neural Networks for Predicting The Solubility Parameters of Fullerenes. J. Phys. Chem. B. DOI: 10.1021/acs.jpcb.6b00787, 2016*

* *Chaohong Zhang, Alexander Mumyatov, Stefan Langner, José Darío Perea, Thaer Kassar, Jie Min, Lili Ke, Tayebeh Ameri, Andreas Osvet, Tobias Unruh, Pavel Troshin, Ning Li, and Christoph J. Brabec, Overcoming the Thermal Instability of Efficient Polymer Solar Cells by Employing Novel Fullerene-Based Acceptors, Adv. Energy Mater. 1601204, 2016.*
* *Lili Ke, Jie Min, Matthias Adam, Nicola Gasparini, Yi Hou, J. Darío Perea, Wei Chen, Hong Zhang, Stefanie Fladischer, Anna-Chiara Sale, Erdmann Spiecker, Rik R. Tykwinski, Christoph J. Brabec, and Tayebeh Ameri, A Series of Pyrene-Substituted Silicon Phthalocyanines as Near-IR Sensitizers in Organic Ternary Solar Cells, Adv. Energy Mater., 1502355, 2016*

2011

* *J. Dario Perea, J. R. Mejia-Salazar and N. Porras-Montenegro, Coupling-barrier and nonparabolicity effects on the conduction electron cyclotron effective mass and Lande g factor in GaAs double quatum wells, Journal of Physics Condensed Matter 23, 2011.*
* *J. Dario Perea, J. R. Mejia-Salazar and N. Porras-Montenegro, Central barrier-width effects on the electron Lande g factor in GaAs-(Ga,As)Al double quantum wells, Physica E 43, 2010.*
* *J. Dario Perea, J. R. Mejia-Salazar and N. Porras-Montenegro, Quantum confinement and magnetic field effects on the electron Lande g factor in GaAs-(Ga,Al)As double quantum wells, AIP 1399, 2011.*

2010

* *J. R. Mejia-Salazar, N. Porras-Montenegro, and J. Dario Perea, The electron Lande g factor in GaAs-(Ga,Al)As cylindrical quantum dots, AIP 1199, 2010.*
* *N. Porras-Montenegro, J. Dario Perea, and J. R. Mejia-Salazar, The electron Lande g factor in GaAs-(Ga,Al)As coupled quantum wells, AIP 1199, 2010.*

2009

* *J. Dario Perea, C. Willian Sanchez, and N. Porras-Montenegro, Calculo de los Primeros Estados Energeticos en Sistemas de Pozos Cuanticos Acoplados de GaAs-(Ga,As)Al, Para Varios Anchos de Pozo y Diferentes Concentraciones de Al, Rev. Col. Fis., 41-1, 2009*
* *J. Dario Perea and N. Porras-Montenegro, Electron and Hole Energy Levels in GaAs- (Ga,Al)As Double Quantum Wells in Presence of a Uniform Magnetic Field, Rev. Col. Fis., 41-1, 2009*

Conferences and Workshop Presentations

* Universidad del Valle, Invited Talk: Acerando el Futuro: Celdas Solares Organicas, Cali, Colombia, 29 June 2018.
* MIT, Invited Talk: Predicting the Microstructure Stability in Photovoltaic Polymer-Fullerene Blends Using Figure of Merit, Cambridge, USA, 01 November 2017.
* Harvard University, Invited Talk: Organic Photovoltaics: Fundamentals, Materials and Processing, Cambridge, USA, 27 July 2017.
* Next Generation Solar Energy Meets Nanotechnology, Poster presentation, Erlangen, Germany, 23 - 25 November 2016.

* 8th Cluster of Excellence Engineering of Advanced Materials (EAM) Symposium, Poster presentation, Kloster Banz, Bad Staffelstein, Germany, 21 - 23 November 2016.
* 4 COSMOlogic Symposium, Assistant, Bonn, Germany, March 16-18, 2015.
* UMWELTnanoTECH, Poster presentation, Straubing, Germany, February 27, 2015.
* X IBEROMET, Poster presentation, Cartagena, Colombia, October 13-17, 2008.
* 29th ICPS, Poster presentation, Rio de Janeiro, Brazil, July 27-August 1, 2008.
* XXII CNF, Poster presentation, Ibague, Colombia, October 22-26, 2007.

Other

Computer Skills

HyperChem 7.51
TURBOMOLE 6.3-6.6
COSMOthermX
Gaussian09
MATHEMATICA
Python - Intermediate level programming

Languages

Spanish	Mothertongue	
Catalan	Advance	*Inst. Pere Calders*
English	Upper Intermediate Level	*Regents College London*
German	Intermediate level	*B1 - Friedrich-Alexander Universitat*

Extracurricular Activities

Interpretation Violin — *Maestro Evgenii Sapovnokov*
Swimming