

CURRICULUM VITAE ABREVIADO (CVA)**Part A. PERSONAL INFORMATION**

First name	Hernán Ruy		
Family name	Míguez García		
Gender (*)	Male	Birth date (dd/mm/yyyy)	
ID number			
e-mail	h.miguez@csic.es	URL Web: https://mom.icms.us-csic.es/prof-hernan-miguez/	
Open Researcher and Contributor ID (ORCID) (*)	0000-0003-2925-6360		

(*) *Mandatory***A.1. Current position**

Position	CSIC Research Professor		
Initial date	14/05/2014		
Institution	Spanish National Research Council (CSIC)		
Department/Center	Institute of Materials Science of Seville		
Country	Spain	Teleph. number	
Key words	Materials Science, Energy, Photovoltaics Photoemission		

A.2. Previous positions (research activity interruptions, indicate total months)

Period	Position/Institution/Country/Interruption cause
01/07/2008-13/05/2014	CSIC, Scientific Investigator. Institute of Materials Science of Seville. Spain
01/06/2004-30/06/2008	CSIC, Tenured Scientist, Institute of Materials Science of Seville. Spain
01/07/2002-31/05/2004	Postdoctoral Research Fellow "Ramón y Cajal". Universidad Politécnica de Valencia. Spain.
01/10/2000-30/06/2002	Postdoctoral Research Fellow. University of Toronto. Canada.

A.3. Education

PhD, Licensed, Graduate	University/Country	Year
PhD (Physics)	<i>Universidad Autónoma de Madrid</i>	2000
First degree (Physics)	<i>Universidad Autónoma de Madrid</i>	1994

(Include all the necessary rows)

Part B. CV SUMMARY (*max. 5000 characters, including spaces*)**B1. Indicators of Scientific and Technological Excellence**

Prof. Hernán Míguez (Buenos Aires, 1971), Bachelor degree and PhD in Physics (*Universidad Autónoma de Madrid*, 2000), is CSIC Research Professor at the Institute of Materials Science of Seville (ICMS), where he leads the Multifunctional Materials Group (<http://mom.icmse.csic.es/>). He has been a **European Research Council (ERC) Principal Investigator** between 2012 and 2017. He received the **Research Group of Excellence 2013** award (City Council of Seville) and the "**Real Sociedad Española de Física-Fundación BBVA 2017**" Prize in the modality of "**Physics, Innovation and Technology**", which acknowledged "*his ability to convert fundamental research results into technological and industrial applications*". He is listed in the **World's Top 2% Scientists 2022** ranking of Stanford University in the Domain of "*Applied Sciences*" field of "*Nanoscience and Nanotechnology*", subfield of "*Enabling and Strategic Technologies*". In 2023, he was awarded the **Margarita Salas Medal**, in recognition of his Excellence in the Training of Young Researchers. Prof. Míguez is a member of the Scientific Advisory Board of the journal **Advanced Optical Materials** (Wiley), one of the most prestigious of his field (ranked 20/265 in Electronic, Optical and Magnetic Materials, Scimago). He has been appointed **funded Visiting Fellowships** at Macquarie (2017) and San Martin (2018) Universities.



B2. Brief description of Prof. Míguez activity and impact

Prof. Míguez research focuses on the design, preparation and characterization of optical materials for a variety of applications. He combines his scientific interests with a strong activity in intellectual property generation and technology transfer, which has led him to get frequently involved in contracts with industrial partners and in the foundation of technology-based companies. He has authored more than 200 publications in international peer reviewed journals, mostly in the areas of materials science, physical chemistry, photonics and optoelectronics, which have received numerous citations (WOS: citations>11000, H-index= 56; Google Scholar: citations>16000, H-index=67). He has given more than 50 keynote and invited lectures, at both national and international conferences, as well as seminars at prestigious research institutions (U. Cambridge, Max Planck Institute for Solid State Physics, U. Fribourg, Australian National U., U. Macquarie, U. Sungkyunkwan, U. Pisa, U. Buenos Aires, etc.) and companies. In 2012, he was awarded an **ERC Starting Grant project** (POLIGHT, ID: 307081, at that time **Consolidator modality**) to develop photonic nanostructures for applications in energy and optoelectronics. Overall, he has been the PI of 25 national and European public funded research projects, as well as of 12 industrial ones. He is inventor of 20 patent families, several of them transferred to industry and internationalized, which have served as the foundation of new technology-based companies (the Canadian Opalux Inc., the Swedish Exeger, and, more recently the Spanish Capsun Tech. and Bluesolar Tech.).

Prof. Míguez is currently the Chair of the Materials Science and Technology Panel of the Research State Agency (AEI). He is member of the Governing Council of the Iberian International Nanotechnology Laboratory, as part of the Spanish Delegation appointed by the Ministry of Science and Innovation. He has also served as member of the Materials Science and Technology Area Coordination board of CSIC (2016-2018). He also participates on a regular basis as evaluator for highly European competitive calls (Starting, Consolidator and Advanced Grants, PATH FINDER and the MSCA fellowship program) and other national funding agencies (Portuguese FCT, Dutch NOW, DFG...).

Part C. RELEVANT MERITS (sorted by typology)

C.1. Publications (10 selected of last 10 years)

1. **Scientific paper.** D.O. Tiede, C. Romero-Pérez, K.A. Koch, K.B. Ucer, M.E. Calvo, A.R.S. Kandada, J.F. Galisteo-López*, **H. Míguez*** “Effect of connectivity on the carrier transport and recombination dynamics of perovskite quantum dot networks”. *ACS Nano* 18, 2325-2334 (2024).
2. **Scientific paper.** E. Cabello-Olmo, M. Romero, M. Kainz, A. Bernroither, S. Kopp, M. Mühlberger, G. Lozano*, **H. Míguez*** “Inkjet-Printed and Nanopatterned Photonic Phosphor Motifs with Strongly Polarized and Directional Light-Emission”. *Adv. Funct. Mater.*, 2305907 (2023).
3. **Scientific paper** C. Romero-Pérez, A. Rubino, L. Calìò, M.E. Calvo*, **H. Míguez***. “Optoelectronic Devices Based on Scaffold Stabilized Black-Phase CsPbI₃ Nanocrystals”. *Adv. Optical Mater.* 10(6), 2102112. (2022).
4. **Scientific paper** A. Rubino, A. Francisco-López, A. Barker, A. Petrozza, M. Calvo, A. Goñi*, **H. Míguez*** “Disentangling Electron–Phonon Coupling and Thermal Expansion Effects in the Band Gap Renormalization of Perovskite Nanocrystals”, *J. Phys. Chem. Lett.* 12 (1), 569-575 (2021)
5. **Scientific paper.** D.O. Tiede, M.E. Calvo, J.F. Galisteo-López*, **H. Míguez*** “Local Rearrangement of the Iodide Defect Structure Determines the Phase Segregation Effect in Mixed-Halide Perovskites”, *J. Phys. Chem. Lett.* 11, 4911-4916 (2020).
6. **Scientific paper.** A. Bayles, S. Carretero-Palacios, L. Calìo, G. Lozano, M.E. Calvo, **H. Míguez***. “Localized surface plasmon effects on the photophysics of perovskite thin films embedding metal nanoparticles”, *J. Mater. Chem. C* 8, 916-921 (2020).
7. **Scientific paper.** J. Ávila, C. Momblona, P. Boix,...**H. Míguez***, H.J. Bolink* “High voltage vacuum-deposited CH₃NH₃PbI₃–CH₃NH₃PbI₃ tandem solar cells”, *Energy Environ. Sci.* 11, 3292-3297 (2018).



8. **Scientific paper.** A. Jiménez-Solano, J.F. Galisteo-López, **H. Míguez*** “Absorption and Emission of Light in Optoelectronic Nanomaterials: The Role of the Local Optical Environment”, *J. Phys. Chem. Lett.* 9, 2077-2084 (2018). **Invited Perspective.**
9. **Scientific paper.** M. Anaya, J.F. Galisteo-López, M.E. Calvo, J.P. Espinós, **H. Míguez***. “Origin of Light-Induced Photophysical Effects in Organic Metal Halide Perovskites in the Presence of Oxygen”, *J. Phys. Chem. Lett.* 9, 3891-3896 (2018). **ACS Editor’s Choice.**
10. **Scientific paper.** S. Carretero-Palacios. A. Jiménez-Solano, **H. Míguez*** “Plasmonic Nanoparticles as Light-Harvesting Enhancers in Perovskite Solar Cells: A User’s Guide”. *ACS Energy Lett.* 1, 323-331 (2016).

C.2. Conferences (10 selected of last 5 years, Invited speaker in all cases)

1. Míguez, H. Advanced Functionalities of Perovskite Quantum Dots Embedded in Porous Scaffolds. Fall Meeting of the European Materials Research Society (E-MRS), Varsovia, Polonia 2023. Invited.
2. Míguez, H. Light-matter coupling in optoelectronic materials. 2nd Conference on Advanced Materials in Spain (AMatS). Zaragoza, Spain. 2023. Keynote.
3. Míguez, H. Photophysics of perovskite quantum dots coupled to optical cavities. Emerging Light Emitting Materials (EMLEM22). Limassol, Chipre. 2022. Invited.
4. Míguez, H. Ligand-free perovskite quantum dots embedded in porous matrices: synthesis, properties and optoelectronic devices. International Conference on Hybrid and Organic Photovoltaics HOPV. Valencia, Spain. 2022. Invited.
5. Míguez, H. Ligand-free perovskite quantum dots embedded in porous matrices: synthesis, properties and optoelectronic devices. XVIII Escuela Nacional de Materiales Moleculares. Santiago de Compostela, Spain. 2022. Plenary.
6. Míguez, H. Hybrid light-matter states in molecular materials coupled to optical cavities. Applied light-matter interactions in perovskite semiconductors (ALMI-PS2021). Online, España. 2021. Invited.
7. Míguez, H. Solution processed optical materials for optoelectronic devices. NanoLight 2020. Benasque, Spain. 2020. Invited.
8. Míguez, H. Photophysical Properties of Perovskite Thin Films, Microcrystals and Nanocrystals. MRS Spring Meeting. Phoenix, AZ. United States, 2019. Invited speaker. Invited.
9. Míguez, H. Multifunctional Optical Materials. XXXVI Reunión Bienal de la Sociedad Española de Química. Sitges, Spain. 2019. Zaragoza, Spain. Plenary
10. Míguez, H. Photoemission Properties of Perovskite Thin Films, Microcrystals and Nanocrystals. Conference on Perovskite Solar Cells, Photonics and Optoelectronics (NIPHO19). Jerusalem, Israel, 2019. Invited speaker. Invited.

C.3. Research projects. (10 selected of last 10 years, Principal Investigator in all cases).

1. PHOTOelectrocatalytic systems for Solar fuels energy INTegration into the industry with local resources (PHOTOSINT, G.A. 101118129). HORIZON-CL5-2022-D3-02. HORIZONTE EUROPA. 01/09/2023-31/08/2027 (Total Budget: 4.993.752 €, CSIC budget, 335.000 €). Principal Investigator at CSIC.
2. TED2021-129679B-C22. Efficient and stable single-junction perovskite solar cells (ESPER). Ministerio de Ciencia e Innovación. 01/12/2022-30/11/2024. (Total budget: 230.000,00€) Principal Investigator.
3. PID2020-116593RB-I00. Optimized Photonic Design of Ligand-Free Perovskite Quantum Dot based Optoelectronic Devices (FreeDot). Ministerio de Ciencia e Innovación. Proyectos I+D+I. 01/09/2021-31/08/2024. 302.500€. Principal Investigator.
4. Innovative Training Network, Marie Skłodowska-Curie programme, Perovskite Semiconductors for Photonics (ref.: 956270), Coordinator: Annamaria Petrozza (IIT). CSIC budget: 250.905 € (Total Budget: 3.794.254 €). 01/03/2021-28/02/2025. Principal Investigator at CSIC.
5. P18-RT-2291, Desarrollo de Dispositivos Emisores de Luz basados en Perovskita Nanoestructurada Nano-ABX LED Junta de Andalucía. Hernán Míguez. (Consejo



- Superior de Investigaciones Científicas). 01/01/2020-31/12/2022. 122.968 €. Principal Investigator.
6. MAT2017- 88584-R, Materiales Ópticos Avanzados para Dispositivos Optoelectrónicos más Eficientes. Ministerio de Ciencia, Innovación y Universidades. Proyectos I+D+I - 01/01/2018-31/12/2020. 181.500€. Principal Investigator.
 7. EQC2018-004413-P. Adquisición de un Equipo de Medida de Espectroscopía Ultrarrápida de Estados Transitorios para el Servicio de Espectroscopías del ICMS. Ministerio de Ciencia, Innovación y Universidades. Subprograma Estatal de Infraestructuras de Investigación y Equipamiento Científico Técnico. 01/01/2018 - 31/12/2020. 517.250,80 €. Principal Investigator.
 8. MAT2014-54852-R, Materiales Ópticos Avanzados para Dispositivos Optoelectrónicos más Eficientes. Ministerio de Economía y Competitividad. Proyectos I+D+I - Programa Estatal de Investigación, Desarrollo e Innovación Orientada a los Retos de la Sociedad. 01/01/2015-31/12/2017. 242.000€. Principal Investigator.
 9. RTC-2014-2333-3, HOUSESS – Highly Optimized Unit for Sustainable Enhanced Solar System. Ministerio de Economía y Competitividad. Retos Colaboración 2014. 01/02/2014- 31/12/2017. 244.204,44 €. Principal Investigator.
 10. Grant Agreement N°307081, POLIGHT – Polymer-inorganic flexible nanostructured films for the control of light. European Research Council Executive Agency. ERC Starting Grant (Consolidator modality). 01/12/2012-30/11/2017. 1.497.730 €. Principal Investigator.

C.4. Contracts, technological or transfer merits. (10 selected of last 10 years)

1. **Contract:** Design and realization of dichroic filters for solar energy applications. Bluesolar Technologies S.L. 01/01/2023-31/12/2024. 151.250 €. Principal Investigator.
2. **Contract:** Design optical filters for hybrid PV/CSP technology within the frame of a Misiones CDTI project. Bluesolar Filter, S. L. (Spain). 150.000. 01/01/2021-31/12/2022. Principal Investigator.
3. **Contract:** Design aperiodic optical filters for hybrid photovoltaic-thermosolar plants. Capsun Tech. 60.500 €. 01/01/2019-30/06/2020. Principal Investigator.
4. **Contract:** SPIRE (FEDER ININTERCONNECTA) Private contract with Ghenova Ingeniería S.L.U. (Spain). 24/11/2016-31/12/2018. 302.500 €. Principal Investigator.
5. **Contract:** Design and production of a multilayer solar mirror for heliostats. Abengoa Research. 133.100 €. 15/03/2015-15/02/2016. Principal Investigator.
6. **Contract:** Production of optical coatings for low concentration photovoltaic systems. 15/05/2014-31/03/2015. Abengoa Solar New Technologies, S.A (Spain). 181.500 €. Principal Investigator.
7. **Patent:** EP3570342A1. “ABX3 compounds with perovskite crystalline structure ... within a porous metal oxide film”. A. Rubino, J.F. Galisteo, H. Míguez, M.E. Calvo, M. Anaya. Priority date: 2018/05/18. CSIC.
8. **Patent:** EP3051600A1. “Heterojunction Device”. H. Míguez, M. Anaya, M.E. Calvo, G. Lozano, H.J. Snaith, W. Zhang. Priority date: 2015/01/30. CSIC- ISIS Innovation.
9. **Patent:** WO2016083648A1. “Mirror for solar energy applications...”. K. Boyle, C. Alcañiz, M. Alcon, H. Míguez, M.E. Calvo, A. Jiménez, M. Anaya. Priority date: 2014/11/28. Abengoa Solar New Tech.
10. **Registered software:** notarial record 4755. “Software to optimize multilayered systems to maximize the efficiency of photovoltaic-thermosolar plants”. A. Jiménez-Solano, H. Míguez. Registry date: 11/06/2019. Owner: CSIC. Licensed to: Bluesolar Technologies.