MINISTERIO DE CIENCIA E INNOVACIÓN

Cofinanciado por la Unión Europea

AGENCIA ESTATAL DE INVESTIGACIÓN

CURRICULUM VITAE (CVA)

IMPORTANT – The Curriculum Vitae cannot exceed 4 pages. Instructions to fill this document are available in the website.

Part A. PERSONAL INFORMATION

CV date	12/09/2023

First name	Belén		
Family name	Arredondo		
Gender (*)	Female	Birth date (dd/mm/yyyy)	
DNI			
e-mail			
Open Researcher and Contributor ID (ORCID) (*)			

A.1. Current position

Position	Associate Professor (Profesora Titular de Universidad)		
Initial date	December 2018		
Institution	Universidad Rey Juan Carlos (URJC)		
Department/Center	Matemática Aplicada, Ciencia e Ingeniería de Materiales y Tecnología Electrónica	Escuela Superior de Ciencias Experimentales y Tecnología	
Country	SPAIN	Teleph. number	
Key words	Organic and perovskite solar cells, sensors, photodetectors, impedance spectroscopy.		

A.2. Previous positions (research activity interruptions, art. 14.2.b))

Period	Position/Institution/Country/Interruption cause
21/11/2014 - 20/12/2018	Profesora Contratada Doctor (URJC, Spain)
11/11/2010 - 20/11/2014	Profesora Visitante y Ayudante Doctor (URJC, Spain)
15/05/2011 - 15/10/2011	Maternity leave
01/01/2004 - 01/10/2008	Profesora Ayudante
01/07/2002 - 31/12/2004	Researcher in UC3M

A.3. Education

PhD, Licensed, Graduate	University/Country	Year
Master in Physics	Universidad Complutense de Madrid, Spain	1999
PhD. in Physics	Universidad Rey Juan Carlos, Spain	2008

Part B. CV SUMMARY *(max. 5000 characters, including spaces)*

I received the Diploma in Physics with Distinction in 1997 from the University of Kent at Canterbury (Erasmus Program) and the Master degree in Physics specialized in Electronics in June 1999 from the Universidad Complutense de Madrid. In June 2000 I received a research traineeship from the Spanish Ministry of Science and Education to join the Electromagnetics Division of the European Space Agency (Noordwijk, The Netherlands) for two years, where I worked in photonic band gap crystals for antenna applications. In June 2002 I joined the Optoelectronic and Laser Group of Universidad Carlos III de Madrid where I worked in the characterization of mode locking lasers (within the European project "Monopla") for one and half years. In January 2004 I joined the Electronic Technology Department of Universidad Rey Juan Carlos (URJC) and begun researching in modelling, fabrication and

characterization of organic light emitting diodes. This work resulted in my PhD degree in 2008, backed by one patent and three high impact papers, and recognized with the extraordinary PhD award. I continued teaching and researching in the URJC as an assistant professor, and in 2010 Prof. Beatriz Romero and I started the Organic and Electronic Photonic Devices Group (DELFO) focusing our research interests on modelling and characterization of organic solar cells. In 2014 our group joined the European Cost Action "Unraveling degradation mechanisms of Organic and Perovskite Solar Cells by complementary characterization techniques" (StableNextSol, MP1307) which resulted in several fruitful European collaborations in the area of organic/perovskite solar cell stability. In the past three years DELFO group has obtained more than 100.000 € funding from regional administration and private contracts, and in 2018 it was recognized as a high performance research group by the URJC (https://gestion2.urjc.es/pdi/grupos-investigacion/delfo). The group has currently twelve members (six professors, three PhD students, one lab technician, two master students). In 2017 DELFO received the award of Campus de Excelencia Internacional "Energía Inteligente" for the project "Hacia la Energía Solar Fotovoltaica del Futuro: desarrollo de estructuras híbridas perovskita-nitruro para células solares de tercera generación". In 2016, I received a research grant from the "José Castillejo" program to carry out a five months stay at the National Physical Laboratory (NPL, Teddington UK, colleague group belonging to the Cost Action) where I worked in monitoring degradation of flexible organic solar cells by impedance spectroscopy characterization resulting in a high impact publication. I am an associate professor at URJC since December 2018. Currently, my main research interests are focused on organic and perovskite solar cells, electrical characterization, and circuital modelling. I have participated in more than twenty research projects being principal investigator in four of them. I am currently the main researcher of the project contract with the company "Flying Screens" and responsible for the Fabrication and Characterization of Optoelectronic and Photovoltaic Devices (CandeLab) belonging to the Laboratory Network of Comunidad de Madrid (www.candelab.es). I am co-author of two patents and more than forty peer reviewed papers in international high impact journals, total times cited 546 and h-index 15. I have supervised more than ten BSc final year projects, one Master Dissertation and one PhD thesis. I also have nineteen years of teaching experience in electronic and photonics courses. I currently hold recognition for three six-year research periods (sexenios) and three five-year teaching periods (quinquenios). I have participated in outreach and education activities focused on encouraging female participation in STEM careers such as giving talks on the International Day of Girls and Women in Science (25th Feb) and I have been a member of the organizing committee of several workshops on Women in Science and Engineering at the URJC. I am involved in university management and currently I am the coordinator of the teaching laboratories of the electronic technology area and deputy director of students of the Official Master's Degree School of the URJC.

Part C. RELEVANT MERITS *(sorted by typology)*

C.1. Publications *(see instructions)*

1. Perez-Martinez, JC, Martin-Martin, D., del Pozo, G., Arredondo, B., Guerrero, A., Romero, B. Impact of Scan Rate and Mobile Ion Concentration on the Anomalous J-V Curves of Metal Halide Perovskite-Based Memristors. IEEE Electron Device Letters, Volume44 Issue8 Page1276-1279. DOI10.1109/LED.2023.3288298, 2023.

2. Perez-Martinez, JC., Berruet, M., Gonzales, C., Salehpour, S., Bahari, A., Arredondo, B., Guerrero, A. Role of Metal Contacts on Halide Perovskite Memristors. Advanced Functional Materials. DOI10.1002/adfm.202305211, 2023.

3. Enrique Hernández-Balaguera, Belén Arredondo, Carlos Pereyra, Mónica Lira-Cantú. Parameterization of the apparent chemical inductance of metal halide perovskite solar cells exhibiting constant-phase-element behavior. Journal of Power Sources 560 (2023) 232614, 2023.

4. Lopez-Gonzalez, MC., del Pozo, G., Arredondo, B., Delgado, S., Martin-Martin, D., Garcia-Pardo, M., Romero, B. Temperature behaviour of mixed-cation mixed-halide perovskite solar cells. Analysis of recombination mechanisms and ion migration. Organic Electronics, Volume120, Number 106843. DOI10.1016/j.orgel.2023.106843, 2023.

5. Romero, B. Delgado, S.,Glowienka, D. Chang, CT., del Pozo, G., Arredondo, B., Martin-Martin, D., Contreras, P. Galagan, Y. Highly stable CsFAPbIBr perovskite solar cells with dominant bulk recombination at real operating temperatures. Sustainable Energy & Fuels, Vol. 7 Issue 9 Page 2146-2152. DOI10.1039/d2se01766k, 2023.

6. Perez-Martinez, JC; Martin-Martin, D; Del Pozo, G; Arredondo, B; Hernandez-Balaguera, E; Romero, B. Validation of Mazhari's Equivalent Circuit Model for Perovskites Solar Cells With S-Shaped J-V Curves. IEEE Transaction on Electron Devices, 69 (10), 5624-5629, 2022.
7. B. Arredondo, J. C. Pérez, L. Muñoz, M.C. López, D. Martín-Martín, G. del Pozo, E. Hernandez-Balaguera, B. Romero, J. Lamminhao, V. Turkovic, M. Madsen, Influence of solvent additive on the performance and aging behavior of non-fullerene organic solar cells, Solar Energy 232 (7), 120-127, 2022.
8. M.C. López-González, G. del Pozo, D. Martín-Martín, L. Muñoz-Díaz, J.C. Pérez-Martínez, E. Hernández-Balaguera, B. Arredondo, Y. Galagan, M. Najafi and B. Romero. Evaluation of Active Layer Thickness Influence in Long-Term Stability and Degradation Mechanisms in CsFAPbIBr Perovskite Solar Cells. Applied Sciences, 11(24), 11668, 2021.
9. E. Hernández-Balaguera, G. del Pozo, B. Arredondo, B. Romero, C. Pereyra, H. Xie and M. Lira-Cantú, Unravelling the key relationship between perovskite capacitive memory, long timescale cooperative relaxation phenomena, and anomalous J-V hysteresis, Solar RRL 5, 2000707, 2021.
10. E. Hernández-Balaguera, B. Romero, B. Arredondo, G. del Pozo, M. Najafi and Y. Galagan, The dominant role of memory-based capacitive hysteretic currents in operation of photovoltaic perovskites, Nano Energy 78, 105398, 2020.
11. Arredondo, B., del Pozo, G. Hernandez-Balaguera, E., Martin Martin, D., Lopez Gonzalez, M.C., Romero, B., Lopez-Fraguas, E., Vergaz, R., Quintana, X., Lamminaho, J., Destouesse, E., Ahmadpour, M., Turkovic, V., Madsen, M. Identification of Degradation Mechanisms in Slot-Die-Coated Nonfullerene ITO-Free Organic Solar Cells Using Different Illumination Spectra. ACS Applied Energy Materials on June 10, Vol. 3, 6476-6485, 2020.
12. E. López-Fraguas, B. Arredondo, C. Vega-Colado, G. del Pozo, Mehrdad Najafi, D. Martín-Martín, Y. Galagan, J. M. Sánchez-Pena, R. Vergaz, B. Romero, Visible Light Communication system using an organic emitter and a perovskite photodetector, Organic Electronics, Volume73, 292-298, 2019.
13. Arredondo B., Romero B., Beliatis, MJ., del Pozo G., Martin-Martín D., Blakesley, JC., Dibb G., Krebs FC., Gevorgyan SA., Castro FA, Analysing impact of oxygen and water exposure on roll-coated organic solar cell performance using impedance spectroscopy, Solar Energy Materials and Solar Cells, Volume: 176, pages 397-404, 2018.
14. B. Romero, G. del Pozo, B. Arredondo, D. Martín-Martín, M. P. Ruiz Gordoa, A. Pickering, A. Pérez-Rodríguez, E. Barrena, and F. J. García-Sánchez. S-Shaped I–V Characteristics of Organic Solar Cells: Solving Mazhari's Lumped-Parameter Equivalent Circuit Model, IEEE Transactions on electron devices. Volume: 64, Issue: 11, 4622 – 4627, 2017.
15. B. Arredondo; M.B. Martín-López; B. Romero; R. Vergaz; P. Romero-Gómez; J. Martorell, Monitoring degradation mechanisms in PTB7:PC71BM photovoltaic cells by means of impedance spectroscopy, Solar energy materials and solar cells, 144, 422- 428, 0927-0248. 2016.

C.2. Congress

1. B. Romero, G. del Pozo, B. Arredondo, D. Martín-Martín, E. Hernández-Balaguera, M. Najafi and Y. Galagan, Analysis of dynamical mechanisms of CsFAPbIBr perovskite solar cells, SPIE, Organic, hybrid, and perovskite photovoltaics XX: doi: 10.1117/12.2528697, San Diego (California), 11-15 de August 2019.
2. B. Romero, G. del Pozo, B. Arredondo, D. Martín-Martín, E. Hernández-Balaguera and M. C. López-González, Characterization of organic and perovskite solar cells by impedance spectroscopy, SPIE, Women in Renewable Energy (WiRE): doi: 10.1117/12.2530568, San Diego (California), 11-15 August 2019.
3. G. del Pozo, D. Martín-Martín, B. Arredondo, P. Apilo and B. Romero, Analyzing outdoor degradation of PEDOT-free P3HT:PCBM organic solar cells using impedance spectroscopy, Spanish Conference on Electron Devices, CDE-2018, Salamanca, 14-November
4. G. Del Pozo, D. Martín-Martín, B. Arredondo, F. Brunetti, F Matteocci, E. Calabró, A. Di Carlo and B. Romero, Impedance spectroscopy in perovskite solar cells with different hole and electron

transport layers, Stability of emerging photovoltaics: from fundamental to applications, SEPV18, Barcelona, 20-23 de February 2018.

5. D. Martín-Martín, G. del Pozo, B. Arredondo and B. Romero, 3rd International Conference on Perovskite Solar Cells and Optoelectronics, PSCO-2017, Oxford, 18-20 September 2017.
6. G. del Pozo, B. Arredondo, D. Martín-Martín, B. Romero, G. Kakavelakis and E. Kymakis, Degradation of planar perovskite solar cells characterized by impedance spectroscopy, 10th international summit on stability of organic and perovskite solar cells, ISOS-10, Malta, 18-20 October 2017.

C.3. Research projects

1. Materiales nanoensamblados para sensado y manipulación de luz en amplio rango espectral, Universidad Rey Juan Carlos- Proyectos Puente, 01/01/2021-30/06/2022. Member of the research team. Funding: 7600,38 €
2. Grupo de investigación de alto rendimiento en Dispositivos Electrónicos y Fotónicos Orgánicos de la URJC, Universidad Rey Juan Carlos-Grupos de investigación, 01/01/2021-30/06/2022. amplio rango espectral, Universidad Rey Juan Carlos- Proyectos Puente, 01/01/2021-30/06/2022. Member of the research team. Funding: 4451 €
3. Células Solares de 3ª Generación de alta eficiencia y estabilidad, SolGenALEE, Comunidad de Madrid, 01/01/2020-30/06/2022. Member of the research team. Funding: 39.789,48 €
4. P2018/NMT4326, SINFOTON2-CM Sensores e Instrumentación en Tecnologías Fotónicas-2, CAM-Consejería Educación, Dir. Gral. Universidades e Investigación (I.P: Carmen Vázquez) 01/01/2019-31/12/2022, Principal investigator of Laboratorio CandeLab. Financiación: 91784€.
5. TEC 2016-77242-C3-3-R Estructuras sub-longitud de onda de capa delgada para circuitos fotónicos. células solares y fotodetectores orgánicos nanoestructurados, MINECO, October 2016–september 2020. Principal investigator. Funding: 88.693 €.
6. COST ACTION MP1307, Stable Next-Generation Photovoltaics: unravelling degradation mechanisms of organic solar cells by complementary characterization techniques, European Union, (IP: Mónica Lira Cantu), 30/03/2014-19/03/2018. Member of the research team.
7. S2013/MIT-2790, SINFOTON-CM Sensores e Instrumentación en Tecnologías Fotónicas, CAM-Consejería Educación, Dir. Gral. Universidades e Investigación. (IP: Carmen Vázquez) 01/10/2014- 30/09/2016. Member of research team. Funding: 38638 €
8. TEC2013-47342-C2-2-R Una nueva generación de dispositivos fotónicos basada en materiales autoorganizados: caracterización, Ministerio de Economía y Competitividad. (IP: J.M. Otón Sánchez) 01/01/2014- 31/12/2016. Member of the research team. Funding: 207.100 €
9. S2009/ESP-1781, Fotónica Aplicada a la creación de Tecnologías Ópticas y su Transferencia a Empresas Madrileñas2, FACTOTEM2. Comunidad de Madrid. (IP: J.M. Otón) 01/01/2010-31/05/2014. Member of research team. Funding: 70.724 €
10. TEC2009-13991-C02-02, Dispositivos avanzados de cristal líquido y de diodos orgánicos electroluminiscentes. Aplicaciones híbridas para visión 3D, Ministerio de Educación, 01/01/2010-31/12/2012. Member of the research team. Funding: 97.284 €.

C.4. Contracts, technological or transfer merits

1. Título: Células Solares de 3ª Generación de Alta Eficiencia y Estabilidad. Contract: Arquimea Group SL. S.L (Art. 83 de la LOU). Principal Investigator: Belén Arredondo y Diego Martín Martín. Period: April 2019- December 2021. Funding: 45.000 €
2. Título: Optimización de células solares de perovskita para aplicaciones espaciales incorporando nanopartículas mediante depósito por Electrospray. (Art. 83 de la LOU). PI: Diego Martín Martín y Belén Arredondo. Period: July 2022 – July 2023. Funding: 36.500 €.