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| **CV date** | 15/05/2024 |

**Part A. PERSONAL INFORMATION**

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| --- | --- | --- | --- | --- |
| First name | AIDA | | | |
| Family name | SERRANO | RUBIO | | |
| Gender (\*) | Femele | Birth date (dd/mm/yyyy) | | 06/06/1983 |
| Social Security, Passport, ID number | | 03129126E | | |
| e-mail | aida.serrano@csic.es | URL Web | www.css.icv.csic.es | |
| Open Researcher and Contributor ID (ORCID) (\*) | | 0000-0002-6162-0014 | | |

*(\*) Mandatory*

**A.1. Current position**

|  |  |  |  |
| --- | --- | --- | --- |
| Position | Ramón y Cajal Researcher | | |
| Initial date | 01/01/2023 | | |
| Institution | Instituto de Cerámica y Vidrio, ICV, CSIC | | |
| Department/Center | Electrocerámica | | |
| Country | Spain | Teleph. number | 649116894 |
| Key words | Nanomaterials, multifunctional systems, cold sintering process, interaction effects, synchrotron radiation, Raman spectroscopy, solid-state dewetting, surface plasmon resonance | | |

**A.2. Previous positions (research activity interruptions, see call)**

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| --- | --- |
| Period | Position/Institution/Country/Interruption cause |
| 2022 (16 weeks) | Maternity leave |
| 2022 (5 months) | Postdoctoral Researcher-NanoMECommons European project ICV, CSIC, Madrid, Spain |
| 2018-2022 | Postdoctoral Researcher-Atracción de Talento CAM 2017 ICV, CSIC, Madrid, Spain |
| 2016-2018 | Postdoctoral Researcher- Local Contact-BM25 beamline at The ESRF, Grenoble, France |
| 2015-2016 | Postdoctoral Collaborator- UCM, Madrid, Spain |
| 2014-2015 | Postdoctoral contract-ICV, CSIC, Madrid, Spain |
| 2010-2014 | Ph.D. Student JAEPre-ICV, CSIC, Madrid, Spain |
| 2008-2010 | Hired higher graduate-UCM, Madrid, Spain |

**A.3. Education**

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| --- | --- | --- |
| PhD in Physics (Cum Laude) | Universidad Complutense de Madrid | 2014 |
| Master in Applied Physics | Universidad Complutense de Madrid | 2009 |
| Degree in Physics | Universidad Complutense de Madrid | 2008 |

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

**I am** developing my scientific career in the Ceramic for Smart Systems (CSS) group at the Instituto de Cerámica y Vidrio (ICV), CSIC, with a **"Ramón y Cajal"** contract**, leading my own research line. My research career is strongly multidisciplinary**. My main research line includes the **design and fabrication of multifunctional materials by non-conventional methodologies** **with active interfaces tailoring the functional response** for diverse applications. I am developing a great experience in **the transfer of new phenomena and functionalities of nanoelements to large-scale systems and novel industrially scalable routes.** Specifically, **I have implemented the cold sintering process at the ICV** to sinter materials, being the **national pioneering group** working in this line of research **led by myself**. Besides, my work line focuses on the **investigation of interaction effects** in several hybrid systems with **plasmonic activity**, the **advanced characterization** by **techniques** including **Raman spectroscopy and synchrotron radiation techniques** among others, as well as the **development of instrumentation to combine different experimental measurements**. I have participated in the **development** of the **new set-up to combine surface plasmon resonance and X-ray absorption spectroscopy (SPR-XAS set-up) at a synchrotron beamline** and an innovative experimental set-up where **confocal Raman microscopy and grazing X-ray diffraction measurements are conduced applying electrical currents**.

One of the highlights is my participation in **industrial projects** to **transfer basic knowledge to companies** and my **usual collaboration** **with a large number of national and international centers and laboratories**. I am co-author of **1 book chapter**, **1 book**, **3 patents** (1 licensed) and **over 92 articles** in peer-reviewed journals, with over **1370 cites**, an average **impact factor of 5.96** in the last 5 years and an **h-factor of 23**. **91% of publications are within the first quartile** and **75% of them are international collaborations**. I have presented more than **145 contributions on Conferences,** of which **72 in international Conferences**, **84 oral contributions** and **6** of them **invited**.

I have contributed in **24 research projects**, **5 of them with private company, 6 European projects and 5 as Principal Investigator**. I have **generated important industrial developments** and has obtained more than **558,38 k€** from projects **in public calls**. Besides, I have been **Principal Investigator of 18 accepted projects** (more of **1000 k€ of funding**) and **User of more than 70 experiments at** **synchrotron facilities** (**ESRF, Bessy II, ALBA synchrotron**). In addition, during my scientific career, I have passed **short periods** in international laboratories: in the Dipartimento de Chimica at the **Università degli Studi di Firenze** in Italy (3 months), in the Shuller´s group at the **University of California** in USA (1 month) and in BM25-CRG beamline at the **ESRF** in France (2 years). My research activity has been awarded with **several prizes and distinctions**, including the **Extraordinary Prize** from the UCM, by **Springer Editorial** for the Ph.D. thesis publication in the **book Series Springer Thesis**, **ESRF highlight** 2021, the **Best Poster Presentation** at the Workshop 3D Raman Imaging-AFM 2013, the **Best Oral Presentation** at the IX Jornadas Jóvenes Investigadores ICV-SECV 2021 and the **Best Poster Presentation** at the NALS 2022. I have **the positive evaluation from ANECA** for Assistant professor doctor, Contracted professor doctor and Private University professor.

From the point view of the scientific training, I have supervised **5 Internships**, **1 predoctoral stay** and **3 M.Sc. students**. Currently, I **am supervising** **3 Ph.D. Students (1 funded by an industrial project, 1 FPU).** In addition, I have participated as member of **Member of two Ph.D. tribunals.** I **have participated** in the **organizing and scientific committee** of several Jornadas de Jóvenes Investigadores at the ICV (CSIC), in the SpLine Meeting 2019 and in the LVIII Congreso de la Sociedad Española de Cerámica y Vidrio 2022. I am **Member of committee on dissemination, equality and communication at the ICV (CSIC), organizing and participating in** events such as the **Researchers' Night** 2019, 2020 and 2023 organized by CSIC, Jornadas de Puertas Abiertas, **Science and Innovation Week** of CAM at the stands "Cerámicas 4.0: más allá del botijo" and "Vidrio o cristal", ICV (CSIC), 2019 and 2021 and “**International Day of Women and Girls in Science**” for 11F, 2019 and 2020. During this period, I have also participated as an **Instructor in The European School HERCULES** and in **XAS practices at The ESRF User Meeting (France**) 2017 and 2018, in the recent **Hackathon #MadridVenceAlVirus 2020** as **Promotor,** I have been **Guest Editor for two Special Issues in Coatings, one in Nanomaterials** and **Referee of projects and several international Journals.**

**Part C. RELEVANT MERITS**

**C.1. Publications** *1 book, 1 book chapter, over 92 articles. Over 1370 cites. h-index of 23. Average impact factor of 5.96 in the last 5 years. \*Corresponding author*

1. **A. Serrano**\*, E. García-Martín, C. Granados-Miralles, G.Gorni, J.López-Sánchez, S. Ruiz-Gómez, L. Pérez, A. Quesada, J.F. Fernández, Hexaferrite-based permanent magnets with upper magnetic properties by cold sintering process via a non-aqueous solvent, ***Acta Materialia***, 219, 117262, 2021. DOI: 10.1016/j.actamat.2021.117262. *20 cites.*

2. A. Curcio, A.B. Van de Walle, E. Benassai, **A. Serrano**, N. Luciani, N. Menguy, B.B. Sargsian, S. Soenen, A. Espinosa, A. Abou-Hassan\*, C. Wilhelm\*, Massive Intracellular Remodeling of CuS Nanomaterials Produces Nontoxic Bioengineered Structures with Preserved Photothermal Potential, ***ACS Nano***, 15, 6,9782-9795, 2021. DOI: 10.1021/acsnano.1c00567. 35 *cites.*

3. A. Curcio, A.B. Van de Walle, **A. Serrano**, S. Prévéral, C. Péchoux, D. Pignol, N. Menguy, C.T. Lefèvre, A. Espinosa, C. Wilhelm\*, Transformation Cycle of Magnetosomes in Human Stem Cells: From Degradation to Biosynthesis of Magnetic Nanoparticles Anew, ***ACS Nano***, 14, 2, 1406–1417, 2020. DOI: 10.1021/acsnano.9b08061. *41 cites.*

4. **A. Serrano**\*, O. Caballero-Calero, M.A. García, S. Lazić, N. Carmona, G.R. Castro, M. Martín-González, J.F. Fernández, Cold sintering process of ZnO ceramics: Effect of the nanoparticle/microparticle ratio, ***Journal of the European Ceramic Society***, 40, 15, 5535-5542 (2020). DOI: 10.1016/j.jeurceramsoc.2020.05.059. *37 cites.*

5. E.I. García López, G. Marcí\*, G.I. Krivstov, J. Casado Espina, L.F. Liotta, **A. Serrano**\*, Local Structure of Supported Keggin and Wells–Dawson Heteropolyacids and Its Influence on the Catalytic Activity, ***The Journal of Physical Chemistry C***, 123, 32, 19513-19527, 2019. DOI: 10.1021/acs.jpcc.9b03659. *30 cites.*

6. **A. Serrano**\*, J. Rubio-Zuazo, J. López-Sánchez, I. Arnay, E. Salas-Cólera, G.R. Castro, Stabilization of Epitaxial α-Fe2O3 Thin Films Grown by Pulsed Laser Deposition on Oxide Substrates*,* ***The Journal of Physical Chemistry C***, 122, 28, 16042-16047, 2018. DOI: 10.1021/acs.jpcc.8b02430. *17 cites.*

7. **A. Serrano**\*, O. Llorca-Hernando, A. del Campo, F. Rubio-Marco, O. Rodríguez de la Fuente, J.F. Fernández, M.A. García, Ag-AgO nanostructures on glass substrates by solid-state dewetting: From extended to localized surface plasmons, ***Journal of Applied Physics***, 124, 133103, 2018. DOI: 10.1063/1.5049651. *14 cites.*

8. **A. Serrano**\*, J.F. Fernández, O. Rodríguez de la Fuente, M.A. García, A novel route to obtain metal and oxide nanoparticles co-existing on a substrate, ***Materials Today Chemistry***, 4, 64-72, 2017. DOI: 10.1016/j.mtchem.2017.02.005. *14 cites.*

9. J. López-Sánchez#,\*, **A. Serrano**#, A. del Campo, M. Abuín, O. Rodríguez de la Fuente, N. Carmona, Sol-gel synthesis and micro-Raman characterization of ε-Fe2O3 micro- and nanoparticles, ***Chemistry of Materials****,* 28, 511-518, 2016. DOI: 10.1021/acs.chemmater.5b03566. # Equal contribution. *107 cites*.

10. **Aída Serrano Rubio**\*, *Modified Au-Based Nanomaterials Studied by Surface Plasmon Resonance Spectroscopy*, Springer Theses, **Springer** International Publishing 2015. eBook ISBN: 978-3-319-19402-8 Hardcover ISBN: 978-3-319-19401-1. *43 cites.*

**C.2. Congress** *145 contributions on Conferences: 72 in international Conferences, 84 oral contributions and 6 invited.*

1. **A. Serrano**, J. Rubio-Zuazo, J. López-Sánchez, E. Enríquez, S. Román-Sánchez, E. Salas-Cólera, G.R. Castro, A one-step strategy to prepare nanostructured Au(111)/oxide epitaxial heterostructures with tailoring plasmonic response*,* *EMRS Spring Meeting, June 2021.* ***ORAL.***

2. **A. Serrano**, User and Local Contact in the X-ray absorption spectroscopy instrument at the SpLine-branch A: 2009-2018*,* *SpLine Meeting, May 2019. Madrid (Spain).* ***INVITED ORAL.***

3. **A. Serrano**, J. Rubio-Zuazo, J. López-Sánchez, I. Arnay, S. Román-Sánchez, E. Salas-Cólera, G.R. Castro, alpha-Fe2O3 epitaxial thin films grown by Pulsed Laser Deposition on different substrates for gas sensor application*,* *EMRS Spring Meeting, May 2017, Strasbourg (France).* ***ORAL.***

4. **A. Serrano**, O. Rodríguez de la Fuente, C. Monton, A. Muñoz-Noval, J.F. Fernández, I. Valmianski, G.R. Castro, I.K. Shuller, M.A. García, Effect of X-ray irradiation on Co-Phthalocyanine thin films studied by Surface Plasmon Resonance*,* *TNT2016, September 2016, Fribourg (Switzerland).* ***KEYNOTE ORAL.***

*5*. **A. Serrano**, O. Rodríguez de la Fuente, J.F. Fernandez, M.A. García,Fabrication of noble metal & metal oxide nanoparticles by thin films deposition and annealing, ECERS, July 2015, Toledo (Spain). ***ORAL.***

*6.* M.A. García, **A. Serrano**, O. Rodríguez de la Fuente, Magnetic and plasmonic nanoparticles on glass substrates, *EMRS Spring Meeting, September 2014, Strasbourg (France).* ***INVITED ORAL.***

*7.* M.A. García, **A. Serrano**, D. Pérez de Lara, A. Gómez, O. Rodríguez de la Fuente, J.L. Vicent, Coupling Surface Plasmon Resonance with X-rays and ferromagnets*, 10th International Workshop on Nanomagnetism and Superconductivity at the Nanoscale,* June 2014, Comaruga (Spain). ***INVITED ORAL.***

8. **A. Serrano**, O. Rodríguez de la Fuente, M.A. García, Au/Fe nanoparticles prepared by multilayers annealing, *March Meeting APS, March 2011,* Dallas (USA). ***ORAL.***

**C.3. Research projects** *24 research projects, 5 of them with private company, 6 European projects and 5 as Principal Investigator.*

1. **National Project.** **Fabrication and advanced characterization of multifunctional materials with active interfaces and their modulation through external fields**. Consejo Superior de Investigaciones Científicas. 20236AT002. **PI: Aida Serrano**, 01/01/2023-31/12/2025, **100 k€.** PARTICIPATION: **INVESTIGATOR**

2. **National Project. Ramón y Cajal grant RyC2021-031236-I**, Ministerio de Ciencia e Innovación. **PI: Aida Serrano**, 01/01/2023-31/12/2027, **305.78 k€.** PARTICIPATION: **PRINCIPAL INVESTIGATOR**

3. **National Project. Desarrollo y reciclado de imanes nanoestructurados libres de tierras raras- TED2021-130957B-C51.** PI: A. Quesada, J.F. Fernández. 01/12/2022-30/04/2027, 174.8 k€. PARTICIPATION: **INVESTIGATOR**

4. **National Project. Manipulación remota y caracterización de materiales ferroicos para espintrónica en ausencia de campos externos (AMADEUS). PID2021-124585NB-C33.** IP: A. Quesada. 108.900,00 €. 01/09/2022 - 31/08/2025. PARTICIPATION: **INVESTIGATOR**

5. **Extraordinary grant for the Preparation of Projects** to be carried out within the framework of the **State R&D&I Plan funded by CSIC** at the ICV (CSIC). 2021AEP122. **PI: Aida Serrano**, A. Quesada, 01/01/2022-30/09/2022. **20 k€.** PARTICIPATION: **PRINCIPAL INVESTIGATOR**

6. **National Project.** **Interfacial magnetism for ultrafast and low dissipation signal processing devices**, Ministerio de Ciencia e Innovación. RTI2018-095303-A-C52. **PI: Aida Serrano**, A. Quesada, 01/01/2019-30/09/2022, **72.6 k€.** PARTICIPATION: **PRINCIPAL INVESTIGATOR**

7. **Regional Project.** **Atracción de Talento Investigador grant 2017-T2/I ND-5395** from Comunidad de Madrid (Spain). **PI: Aida Serrano**, 01/04/2018-31/03/2022, **80 k€.** PARTICIPATION: **PRINCIPAL INVESTIGATOR**

8. **EU Project. Safe and sUstainable by desigN Strategies for HIgh performance multi-component NanomatErials (SUNSHINE).** H2020-NMBP-TO-IND-2020-twostage. Award Number: 952924. PI: M.A. Bañares, J.F. Fernández. 01/01/2021-31/12/2024. 148.4 k€. PARTICIPATION: **INVESTIGATOR**

9. **EU Project. Harmonisation of EU-wide nanomechanics protocols and relevant data exchange procedures, across representative cases, standardisation, interoperability, data workflow (Nanomecommons)**. H2020-NMBP-TO-IND-2020-twostage. Contract n. 952869. PI: M.A. Bañares, J.F. Fernández. 01/01/2021-31/12/2024. 304.2 k€. PARTICIPATION: **INVESTIGATOR**

10. **Project with Private Company.** **Functional properties of Alternator Rectifier-DIOdes (FARDIO)**, SEG Automotive (Germany), PI: J.F. Fernández, A. Moure. 01/01/2018-31/12/2021**,** 319.4 k€. PARTICIPATION: **INVESTIGATOR**

\***Principal Investigator of 18 accepted projects** in national and international publish call **synchrotron experiments** **at the ESRF** (France) and **ALBA** (Spain). Experiments numbers: MA-4180, 25-01-1086, MA-4292, 25-01-1076, 25-01-1070, 25-02-915, 25-01-1049, MA-3458, MA-3353, 25-01-995, 25-01-957, 25-01-905, 25-01-879, 25-01-854, 25-02-940, 25-02-1092; AV2020094658, AV2022025654. **Aida Serrano** as **PI** of more than **1000 k€**. PARTICIPATION: **PRINCIPAL INVESTIGATOR**

**C.4. Contracts, technological or transfer merits** *3 patent (1 licensed).*

1. **Patent**. S. Marín, **Aida Serrano**, E. Enríquez, J.F: Fernández, **Composición precursora de una pieza cerámica a partir de residuos de construcción y/o demolición y pieza cerámica***.* Patent number: P202330701. CSIC 100%*.* 17/08/2023.

2. **Patent**. **Aida Serrano**, E. García-Martín, J.F. Fernández, C. Granados-Miralles, A. Quesada, **Procedimiento de obtención de un imán permanente de cerámica magnéticamente anisótropo y denso***.* Patent number: P202030112. CSIC 100%*.* 11/02/2020.

3. **Patent**. E. Enríquez, J.F. Fernández, M.A. García, **Aida Serrano**, W.E. More, D. Solsona, V.M. Montis, R. Oriol, **Dispositivo de medida del factor de calidez térmica de un material y método asociado**. Patent number: P201530607. 50% CSIC 50% Vidres S.L. **License:** Vidres S.L. 15/09/2015.

4. **Participation** of **meetings** and elaboration of several **confidential reports** written as part of different **industrial projects** with several companies: Gres de Aragon, Nanobiomatters S.L, Centro Tecnológico Vidres S.L., FNMT-RCM, SEG Automotive and BASF.