

Part A. Personal Information

DATE	15/06/2020
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Surname(s)	IBARRA GARCÍA	
Forename	MANUEL RICARDO	
Social Security, Passport, ID number	24112003E	
Sex	Male	
Age	64	
Researcher codes	WoS Researcher ID (*)	K-1150-2014
	SCOPUS Author ID(*)	55664785300
	Open Researcher and Contributor ID (ORCID)	0000-0003-0681-8260

(*) At least one of these is mandatory

A.1. Current position

Post/ Professional Category	Full Professor at the Condensed Matter Physics Department in the University of Zaragoza since 1995.	
UNESCO Code	-	
Key Words	Nanoscience, magnetism, hyperthermia, spintronics.	
Name of the University/Institution	University of Zaragoza.	
	Department/Centre	Condensed Matter Physics Department
	Full Address	C/ Mariano Esquillor, s/n, Edificio I+D+i, Campus Río Ebro, 50018 Zaragoza
	Email Address	ibarra@unizar.es
	Phone Number	+34.976.76.27.77
Start date	28/11/1995	

A.2. Education (title, institution, date)

Year	University	Degree	Title
1979	University of Granada	Degree	Bachelor's Degree in Physics
1983	University of Zaragoza.	Doctorate	PhD in Physics
2008	AGH University of Science and Technology. Krakow (Poland).	Doctorate	Doctor Honoris Causa

A.3. Indicators of Quality in Scientific Production (See the instructions)

<p>Six-year terms (research): 01/01/1990, 01/01/1991, 01/01/1998, 01/01/2003, 01/01/2009, 01/01/2015. Five-year terms (teaching): latter, 2013. 13 theses supervised.</p> <p>Coauthor of 454 publications and 17 book chapters. Around 185 belong to the first quartile (Q1), and many of them have an impact factor greater than 5.00, such as Condensed Matter (5), Nano Today (1), Nature Communications (2), Nature Physics (2), Nano Letters (3), ACS Nano (3), Physical Review Letters (9), Advanced Functional Materials (1), Chemistry of Materials (2), Small (1), Biosensors & Bioelectronics (1), Nature Scientific Reports (6).</p> <p>Furthermore, 39 of the publications have been cited more than 100 and 19 more than 200 times, being one of the most cited experimental physicists in Spain.</p> <p>Google Scholar: https://scholar.google.es/citations?user=oPQjQqMAAAAJ&hl=es. H-index: 71. Citations: almost 20,700.</p> <p>Web of Science ResearcherID (Web of Science & Publons): K-1150-2014.H-index: 60. Publications: 485 (Publons); 457 (WoS). Citations: almost 15,400.</p> <p>Scopus ID: https://www.scopus.com/authid/detail.uri?authorId=55664785300. H-index: 59. Publications: 451. Citations: more than 15,800.</p> <p>Orcid code: https://orcid.org/0000-0003-0681-8260. 533 items.</p>

Part B. Free Summary of CV (Max. of 3.500 characters, including spaces)

His research activity has been developed in the fields of magnetism and the magnetic properties of nanostructured materials. Along the past few years his research activity is also focused on the application of nanotechnology in biomedicine. Significant contributions in the fields of: Magnetic anisotropy in rare earth intermetallics, colossal magnetoresistance in mixed valent magnetic oxides, giant magnetocaloric effect alloys, magnetic thin films, magnetic and superconductors' nanostructures and magnetic nanoparticles and their application in life sciences. **It is worth noticing the explanation of the intrinsic mechanism of the Colossal Magnetoresistance (published in Nature 1997) and the application of magnetic nanoparticles in biomedicine (published in Nano Today 2007) constituted scientific key advances in the area of basic and applied condensed matter physics.**

He has been invited to give conferences in about 170 congresses, symposia, and workshops; it can be underlined: plenary talks in international (15) and national (5) conferences, Keynote speaker (15) and invited talks in international (26) and national (7) conferences, and Chairmen sessions in many relevant and prestigious Conferences as ICM, MMM, EPS-CMD.

He has coordinated 32 national and international R&D projects of infrastructures and research in the field of magnetism and nanotechnology and its applications, with an overall financial support of €20,000,000.

He has the copyright of 11 patents, 2 of them WO, 1 PCT and 2 in exploitation.

Head of the Magnetism Section of the European Physical Society 2000-2018, he has participated in more than 30 scientific committees.

Member of the scientific committee in the Institute of Applied Magnetism, Laboratory "Salvador Velayos", Universidad Complutense de Madrid, ADIF, CSIC. Since 2017. Member of the Advisory Board in the Institute of Nanoscience and Nanotechnology, University of Porto (Portugal); since 2018.

In the last years, he has been awarded with more than 10 prizes in academic and scientific research. Doctor Honoris Causa. AGH University. Krakow (Polonia). 2008. It is worth mentioning the Award 'Aragón Investiga' 2009 for Research Excellence; the Spanish National Research Council (CSIC) tribute to the researchers who were awarded during the 2009-2010 academic year for their outstanding work in research and for their scientific excellence; the Plaque of Honour AEC-2014, awarded by the Spanish Scientists Association in November 2014; Institute of Nanoscience of Aragon: Award 'Aragoneses del Año' in the Science and Technology category, granted by El Periódico de Aragón, 2014; Academic elected by the Royal Academy of Exact, Physical, Chemical and Natural Sciences of Zaragoza, 2016.

Part C. Relevant accomplishments

C.1. Publications

- Guillamón, I.; Suderow, H.; Vieira, S.; Sesé, J.; Córdoba, R.; de Teresa, J.M.; Ibarra, M.R. "Direct observation of stress accumulation and relaxation in small bundles of superconducting vortices in tungsten thin films". **Physical Review Letter**, 106, 077001. 2011. DOI: 10.1103/PhysRevLett.106.077001. WoS; Q1. 15 citas (WoS). Impact factor: 7.37.
- Serrano-Ramón, L.; Córdoba, R.; Rodríguez, L.A.; Magén, C.; Snoeck, E.; Gatel, C.; Serrano, I.; Ibarra, M.R.; de Teresa, J.M. "Ultrasmall functional ferromagnetic nanostructures grown by focused electron-beam-induced deposition". **ACS Nano**, 5 (10), 7781-7787. 2011. DOI: 10.1021/nn201517r. WoS; Q1. 61 citas. F. de impacto: 11.421.
- Córdoba, R.; Baturina, T. I.; Sesé, J.; Yuminorov, A.; de Teresa, J.M.; Ibarra, M.R.; Nasimov, D. A.; Gutakovskii, A. K.; Latyshev, A. V.; Guillamón, I.; Suderow, H.; Vieira, S.; Baklanov, M.R.; Palacios, J. J.; Vinokur, V. M. "Magnetic field-induced dissipation-free state in superconducting nanostructures". **Nature Communications**, 4, 1437. DOI: 10.1038/ncomms2437. 2013. WoS; Q1. 38 citas. Impact factor: 10.742.
- Marín, L.; Morellón, L.; Algarabel, P.A.; Rodríguez, L.A.; Magén, C.; de Teresa, J.M.; Ibarra, M.R. "Enhanced magnetotransport in nanopatterned manganite nanowires". **Nano Letters**, 14, 423-428. 2014. DOI: 10.1021/nl402911w. WoS; Q1. 5 citas. Impact factor: 13.592.
- Guillamón, I.; Córdoba, R.; Sesé, J.; De Teresa, J.M.; Ibarra, M.R.; Vieira, S.; Suderow, H. "Enhancement of long-range correlations in a 2D vortex lattice by an incommensurate 1D

disorder potential". **Nature Physics**, 10 (11), 851-856. 2014. DOI: 10.1038/nphys3132. WoS; Q1. 22 citas. Impact factor: 20.147.

- Marín, L.; Rodríguez, L.A.; Magén, C.; Snoeck, E.; Arras, R.; Lucas, I.; Morellón, L.; Algarabel, P.A.; de Teresa, J.M.; Ibarra, M.R. "Observation of the strain induced magnetic phase segregation in manganite thin films". **Nano Letters**, 15 (1), 492-497. 2015. DOI: 10.1021/nl503834b. WoS; Q1. 8 citas. Impact factor: 13.779.

- M.C. Martínez-Velarte, B. Kretz, M. Moro-Lagares, M.H. Aguirre, T.M. Riedemann, Th.A. Lograsso, L. Morellón, M.R. Ibarra, A. García-Lekue, D. Serrate. "Chemical disorder in topological insulators: A route to magnetism tolerant topological surface states". **Nano Letters**, 2017. Q1. DOI: 10.1021/acs.nanolett.7b00311. Impact factor: 13.779.

- F.Fabris, E.Lima, E.DeBiasi, H.Troiani, M.Vásquez, T.Torres, R.Fernández Pacheco, M.R.Ibarra, G.Goya, T.Zysler, E.Winkler. "Controlling the dominant magnetic relaxation mechanisms for magnetic hyperthermia in bimagnetic core-shell nanoparticles". Back cover page. **Nanoscale**. The Royal Society of Chemistry. Published 29 Nov. 2018. Impact factor: 7.233. WoS; Q1. DOI: [10.1039/c8nr07834c](https://doi.org/10.1039/c8nr07834c).

- T.E. Torres, E. Lima Jr., M.P. Calatayud, B. Sanz, A. Ibarra, R. Fernández-Pacheco, A. Mayoral, C. Marquina, M.R. Ibarra, and G.F. Goya. "The relevance of Brownian relaxation as power absorption mechanism in magnetic hyperthermia". **Nature Scientific Reports**. Published online: 12 March 2019. DOI: [10.1038/s41598-019-40341-y](https://doi.org/10.1038/s41598-019-40341-y). Impact factor: 4.122. WoS; Q1.

- M. Moro-Lagares, R. Korytár, M. Piantek, R. Robles, N. Lorente, J.I. Pascual, M.R. Ibarra, D. Serrate. "Real space manifestations of coherent screening in atomic scale Kondo lattices". **Nature Communications**, volume 10, article number 2211 (2019). Published: 17 May 2019. DOI: [10.1038/s41467-019-10103-5](https://doi.org/10.1038/s41467-019-10103-5).

C.2. Research Projects and Grants

He has coordinated 32 national and international R&D projects of infrastructures and research in the field of magnetism and nanotechnology and its applications, with an overall financial support of €20,000,000. In general, he has participated in more than 50 projects. International projects: 22 (6 funded by the European Commission, Framework Program VI-VII; 2 by NanoSci-E+Eranet; 14 from multinational agreements). National projects: 20 funded by CICYT, FECYT, DGICYT; and 7 coordinated with other Institutions and two of them in very competitive calls: in the frame of the strategic action in Nanoscience (NAN2004-09270-C03) and in the CONSOLIDER program (CSD2006-12) "Nanotechnologies in nanobiomedicine", which grouped 10 different institutions (4.500 k€).

He has the copyright of 11 patents, 2 of them WO, 1 PCT and 2 in exploitation.

-Title: "Trans-Pyrenees Action on Advanced Infrastructures for Nanoscience and Nanotechnologies" (Train²). Financed by the European Union, Interreg IV B SUDOE. TRAIN2-SOE2/P1/E-280. Duration: 01/01/2011-31/12/2012. Budget: 2.342.558 €. <http://train2.eu/inicio>. M.R. Ibarra, Coordinator.

-Title: "High performance energy by the interplay between thermoelectricity and spin Seebeck effect" (THERMO-SPINTRONIC). Financed by the European Union. PUI/2012-053. Duration: 2012-2016. Budget: €100,000. M.R. Ibarra, Coordinator. http://cordis.europa.eu/project/rcn/104433_en.html. Grant Agreement number: PCIG10-GA-2011-304043. Referencia: 304043.

-Title: "Enabling science and technology through European Electron Microscopy" (ESTEEM2). Financed by the European Union, FP7 on Research Infrastructures. Duration: 01/10/2012-30/09/2016. Budget total consorcio: 7.486.016€, presupuesto (INA): 370.905'60 €. M.R. Ibarra, INA, partner. <http://esteem2.eu/>.

- "Nanotecnologías en biomedicine" (NANOBIOMED). CONSOLIDER. PI118/08. Coordinador: M.R. Ibarra. Financed by the Ministerio de Educación y Ciencia. CSD2006-00012. Duration: 2006-2011. Budget: €4,500,000.

- Title: "Multifunctional gold nanoparticle for gene therapy" (NANOTRUCK). IP: M.R. Ibarra (Coordinador) y J. Martínez de la Fuente. European Union, ERA-NET NanoSci-E+. Budget: €220,000. Duration: 2009-2012.

- Title: "Enabling science and technology through European Electron Microscopy" (ESTEEM3). <https://www.fkf.mpg.de/5462311/esteem3>. Main researcher: M.R. Ibarra. Financed by the European Union; Horizon 2020, Infraia-01-2018-2019. Project number 823817. Budget: €10,000,000 (total); €444.680 (INA). 2019-2022.

C.3. Contracts

Managing partner and scientific consultant of three spin-off companies:

- NanoScale Biomagnetics, spin off of the University of Zaragoza.
<http://www.nbnanoscale.com>.
- Nanoimmunotech, spin off of the University of Zaragoza and University of Vigo.
www.nanoimmunotech.eu.
- Graphene Nanotech, EBT linked to the University of Zaragoza and CSIC since 2014.
<http://gpnt.es>.

C.4. Patents and other IPR

Prof. Ibarra has the copyright of 11 patents, 2 of them WO, 1 PCT and 2 in exploitation.

- Dispositivo magnetorresistivo basado en múltiples nanocontactos, su procedimiento y usos. Titular: Universidad de Zaragoza y CSIC. Licenciada a Aragonesa de Componentes Pasivos (ACP). Inventores: M.R. Ibarra, N. García. WO2006/120277. Fecha de publicación internacional: 16/11/2006. Clasificación internacional: G01R33/09; G11B5/39
- Dispositivo de aplicación de hipertermia magnética. Titular: Universidad de Zaragoza. Inventores: G. F. Goya, N. Cassinelli, M.R. Ibarra. Licenciada a la empresa NanoScale Biomagnetics. WO2009/135970. Fecha de publicación internacional: 12/12/2009 (**in exploitation** by Nanoscale Biomagnetics). Clasificación internacional: A61N2/02, A61N1/40
- Spin Seebeck thermoelectric device, method and use. Inventores: M.R. Ibarra, L. Morellón, M.H. Aguirre, R. Ramos, A. Anadón, P. Algarabel, I. Lucas, E. Saitoh, K. Uchida, T. Kikkawa, S. Maekawa, H. Adachi. Número de solicitud: 3095133. Número de solicitud PCT: PCT/EP2014/073451. Fecha de la presentación: 31/10/2014. Referencia: 14/PCT/S019.

C.5. Main achievements

- * **Discovery and explanation of an unusual magnetoelastic effect in colossal magnetoresistance manganites (CMR)** (*Phys. Rev. Lett.*, 75 (19):3541-3544, 1995 (290 times cited in WoS; 353 in Google of Scholar)). This observation changed completely the view of the intrinsic mechanism of the colossal magnetoresistance (CMR), a phenomenon that is at the origin of the magnetic electronics (spintronics) technology.
- * **Discovery of the formation of magnetic polarons** using small angle neutron diffraction allowed the observation of nanometric metallic regions in a paramagnetic insulator background as a new form of phase segregation. (*Nature*, 386, 256-259, 1997 (757 times cited in WoS; 998 in Google Scholar)). This work was recognized in the same issue of *Nature* (News and Views) by Prof. J.B. Goodenough pag. 229. "The realization that such dynamic phase segregation can occur in real systems is opening a new chapter in solid-state science, and is providing surprises that may yet prove to have great technical importance".
- * **Explanation of the Giant Magnetocaloric effect in $Gd_5(Si_2Ge_2)$ effect** was associated to the effect of the existence of a first order field induced structural transition (*Phys. Rev. B*, 58 (1998) R14721 (212 times cited in WoS; 381 times in Google Scholar) and, more recently, the mechanism for the transition involves the formation of a Griffiths phase. (*Phys. Rev. Lett.*, 96 167201 (2006) (116 times cited in WoS; 135 in Google Scholar).
- * **Discovering of new phenomena in superconductor nanostructures**: Observation of the melting of a two dimensional Abrikosov vortex lattice in a new W-C based amorphous superconductor (*Nature Physics*, 5, 651, 2009) and, recently, their dynamics (*Phys Rev Lett*, 106 (2011) 077001). This achievement was recognized by D. Charles in *Physics Today*, 62 (2009) 18. "An enhancement of long-range correlations in a 2D vortex lattice by an incommensurate 1D disorder potential was also observed (*Nature Physics*, 10 (11), 851. (2014)). Discovery of the vortices confinement effects in superconducting nanowires (*Nature Comm.*, 4, 1437 (2013))
- * **The application of magnetic nanoparticles to new therapies**. This contribution summarizes the great impact of nanotechnology in therapy and diagnosis. This work as a whole constitutes a pioneer and seminal work in this research line (*Nano Today*, 2, 22 (2007)) (824 times cited in WoS; 1,195 in Google Scholar; THE MOST CITED ARTICLE 2016-2010), *Current Nanoscience*, 4, 1, 1(2008) (168 times cited in WoS; 281 in Google Scholar); *Pharmaceutical Research*, 29, 5, 1319-1327 (2012) (73 times cited in WoS; 99 in Google Scholar).

Instructions

Important Announcement

Following the Call for Proposals, **ONLY CVS SUBMITTED IN THIS FORMAT WILL BE TAKEN INTO CONSIDERATION. CVs presented in other formats WILL BE DISMISSED with no possibilities for modifications.**

GENERAL CONSIDERATIONS

Following the call it is mandatory to use the following format when filling the document: Font Times New Roman / Arial (minimum size 11), single interlineal space, lateral margins of 2.5 cm and top and bottom margins of 1.5 cm.

Max. length of the whole document (Part A, B and C) cannot exceed four pages.

PART A. PERSONAL INFORMATION

Researcher ID is a unique identifier that consists of alphanumeric characters that enable researchers to manage their publication lists, track their times cited counts and h-index, identify potential collaborators and avoid author misidentification. It is hosted by Web of Science.

Access: Web of Science > My Tools > Researcher ID.

Author ID is a unique identifier that consists of alphanumeric characters that enable researchers to manage their publication lists, track their times cited counts and h-index, identify potential collaborators and avoid author misidentification. It is assigned automatically by SCOPUS. You can find an author identifier by running a search for that author. It will appear underneath the author details.

Access: SCOPUS > Author Feedback Wizard> Researcher name.

Open Researcher and Contributor ID (ORCID) provides a persistent digital identifier that distinguishes the researcher from every other person and, through integration in key research workflows such as manuscript and grant submission, supports automated linkages between you and your professional activities ensuring that your work is recognized.

Access: www.orcid.org

A.3. Indicators of Quality in Scientific Production

Please add information on a) total number of citations, average number of citations during the last five years, b) total number of publications in the first quartile (Q1) and first decile (D1), c) h-index, d) thesis supervised, and e) any other indicators that you may consider relevant.

To calculate these values, use default data collected in the Web of Science or Scopus. When this is not possible, other indicators may be used, specifying the reference database.

PART B. FREE SUMMARY OF CV (Max. of 3.500 characters, including spaces)

Describe briefly your scientific career, the main scientific-technical achievements, and the mid-to-long term scientific-technical interests and objectives of your research agenda. Indicate any other aspects that you may consider important to understand your career path.

PART C. ACCOMPLISHMENTS (Order by typology)

Given the limitations in number of characters, please mention the most relevant achievements sorted by the typology that best suits your scientific profile. Please be clear and avoid ambiguities.

Use reverse chronological order within each section. Limit your merits over the past 5 years, except for those which have an extraordinary importance for your CV.

C.1. Publications

Include a full review of relevant 5 to 10 publications.

In case of an article, please include authors in order of signature, year of publication, title of the article, name of the journal, volume, start page to end page.

If it's a book or chapter of a book, include its publisher and ISBN also.

If there are many authors, please indicate the total number of signatories and the position of the researcher (total number/ position of researcher) as for example 95/18.

C.2. Participation in Research, Development and Innovation Projects

Indicate the most important projects in which you have participated (maximum 5 to 7 projects), including a) its reference, b) title, c) funding body and call for proposals, d) name of the principal investigator and his/her institution affiliation, e) date of start and end of the project, f) amount of subsidy, and g) your type of participation, e.g.: researcher, principal investigator, European project coordinator, etc..

C.3. Participation in Research, Development and Innovation Contracts

Indicate the most important contracts in which you have participated (maximum 5 to 7 contracts), including a) title, b) company or entity, c) name of principal investigator and his/her institution affiliation, d) date of start and end of the contract, and e) amount of funding.

C.4. Patents

Indicate the most important patents and other intellectual property in which you have collaborated. Give a) the order of signing authors, b) reference, c) title, d) priority countries, e) date, f) holder entity and companies that are exploiting the patents.

C.5, C.6, C.7... Other

By sequential numbering (C.5, C.6, C.7 ...) please include any other achievements that you deem necessary, such as for example: direction of works, participation in assessment or advisory tasks, membership of international committees, management of scientific activity, editorial boards, scientific awards, etc.

FINAL CONSIDERATIONS

Please remember that all the submitted achievements must be presented concisely, including dates or periods for each performance.

The short CV aims to facilitate, organize and streamline the evaluation process. The use of the individual researcher identifier facilitates access to the published scientific papers and information on the impact of each of them.

Remember that only CVs submitted either in this format or in CVN abridged version will be taken into consideration.