

CV date	10/12/2025
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Part A. PERSONAL INFORMATION

First name	Victorino		
Family name	Franco		
Gender (*)	Male	Birth date (dd/mm/yyyy)	
ID number			
e-mail	vfranco@us.es	URL Web	https://personal.us.es/vfranco/
Open Researcher and Contributor ID (ORCID) (*)	0000-0003-3028-6815		

(*) *Mandatory*

A.1. Current position

Position	Full Professor (Catedrático)		
Initial date	25/06/2012		
Institution	University of Seville		
Department	Condensed Matter Physics, Faculty of Physics		
Country	Spain	Teleph. number	954553886
Key words	Magnetic refrigeration; soft magnetic materials; thermomagnetic phase transitions; energy efficiency; device development; instrumentation		

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

Period	Position/Institution/Country/Interruption cause
2004 – 2012	Associate Professor, University of Seville
1999 – 2004	Assistant Professor, University of Seville
1995 – 1999	Research Fellow, University of Seville

A.3. Education

PhD, Licensed, Graduate	University/Country	Year
Ph.D. in Physics	University of Seville, Spain	1999
Licenciado en Física	University of Seville, Spain	1994

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

Victorino Franco is a Full Professor at the University of Seville, where he directs the Multidisciplinary Unit For Energy Science (MUFENS) and leads the multinational *Functional Materials for Sustainability & Resilience* (FunMat4SuRe) research group. He is internationally recognized for pioneering advances in soft magnetic materials, caloric materials, and characterization techniques. Beginning his career in a university without established magnetism infrastructure, he developed his own loop tracer system for characterization during his PhD, laying the foundations for a research environment that is now internationally recognized in experimental magnetism.

He pioneered the application of scaling-laws and universality for reliable evaluation of thermomagnetic phase transitions, and IR lock-in thermography for characterizing direct magnetocaloric effects of low-dimensionality samples. These methodologies, grounded in physical principles, have become global standards, being applied even in complementary research areas, leading to numerous international and/or industrial collaborations. The projects resulted in patents, including one exploited by the Russian company AMT&C and another patent application with industry (ThyssenKrupp Steel, Europe), as well as over 8 industrial projects totaling 449 k€.

His work has produced over 250 publications, with 15000 citations and an h-index of 57 (Google Scholar), reflecting the broad international adoption of his methodologies and devices. He has also

developed novel experimental devices and demonstrators, including active transient cooling systems and miniature solid-state caloric setups.

He has led major international and national projects, currently serving as PI of 4 European projects, (totalling over 1.4M €, including 2 Pathfinder Open and Challenges, 1 MSCA DN, and 1 Hydrogen Europe), PI of 4 national projects (>645 k€), 2 regional project (>200 k€). He was also PI of projects funded by the US Air Force Office of Scientific Research, US Army Research Lab, and US Office of Naval Research, for more than 350 k\$, co-PI of grants with China, Brazil, and Norway, totalling over \$350k. He received the Chinese Academy of Sciences President's International Fellowship in 2020 and 2024.

V. Franco has held key leadership roles in international scientific communities: President of the Spain Chapter of the IEEE Magnetics Society, President of the Magnetic Materials Committee of the Minerals Metals and Materials Society (TMS), and President of Club Español de Magnetismo (CEMAG). He has served on multiple scientific advisory and evaluation committees, including ERC, US Department of Energy, and national funding agencies in Germany, France, Singapore, Czech Republic, Argentina, Poland, Romania, and Hungary, and was Scientific Manager ("Gestor") for Spain's AEI. He is also the first international committee member of the 147th Committee on Amorphous and Nano-Crystalline Materials of the University-Industry Cooperative Research Committees, Japan Society for the Promotion of Science (JSPS).

V. Franco's international recognition includes being appointed as IEEE Fellow (2024) and an elected voting administrative committee member of the IEEE Magnetics Society, with responsibilities on the Conference Executive Committee (Vice Chair) and Chapters Committee. He has been in the Stanford ranking of top 2% researchers since its inception in 2020. He was an IEEE Magnetics Distinguished Lecturer in 2019, delivering over 65 invited lectures at leading institutions worldwide. He has delivered over 200 invited/plenary/keynote lectures at leading international conferences and institutions, held visiting professorships across the USA, Europe, and Asia, and chaired the flagship Joint MMM-INTERMAG 2022 conference, highlighting his global visibility. His other awards and honors include the Young Scientist Award of the Royal Physics Society of Spain in 2000 and of the Royal Academy of Sciences of Sevilla (jointly with the Royal Order of Chivalry of Sevilla) in 2005, a TMS-named symposium in his honor in 2024 ("*Advanced Soft Magnets and Magnetocaloric Materials: An FMD Symposium Honoring Victorino Franco*"). Editorial experience includes Editor of *Metallurgical and Materials Transactions E*, and Guest Editor of *Scripta Materialia* and *PNAS*, reflecting sustained influence in both scientific and technical fields.

Part C. RELEVANT MERITS (sorted by typology)

C.1. Selected Publications. Citation data from Google Scholar (10/12/2025). (CA) stands for corresponding author.

- 1) Y. Lin, ..., J.Y. Law, **V. Franco**, ..., B. Shen (22/24), **2025**, "Large low-field-driven electrocaloric effect in organic-inorganic hybrid TMCM-CdCl₃", [Nature Communications 16, 4009](#).
- 2) H. Chen, ..., J.Y. Law, **V. Franco**, H. Zhang (15/16), **2025**, Thermomagnetic liquid metal switches with fast bidirectional response, [Nature Communications, 16, 2634](#).
- 3) J. Revuelta-Losada, A.N. Khan, L.M. Moreno-Ramírez, J.Y. Law, A.K. Giri, V. Franco **(CA)**, **2025**, Magnetic reversibility & thermal hysteresis studied by lock-in thermography, [Materials & Design 256, 114372](#).
- 4) T. Diamantopoulos, L.M. Moreno-Ramírez, **V. Franco**, R. Bjørk, **2025**, A Fast 1D Model of Active Magnetic Regeneration with a Compressible Working Fluid, [International Journal of Refrigeration 178, 359–366](#).
- 5) L. Xie, ..., **V. Franco**, H. Zhang (14/17), **2025**, "High-Throughput Screening of High-Performance Magnetocaloric Materials by Gradient Additive Manufacturing," [Advanced Functional Materials 35, 2414441](#).
- 6) K. Qiao, ..., C. Romero-Muñiz, J.Y. Law, **V. Franco**, ..., H. Zhang (15/17), **2025**, Giant room-temperature magnetocaloric effect MM'X alloys explored by machine learning, [Acta Materialia 297, 121344](#).

- 7) Z. Tian, J.Y. Law, ..., V. Franco, B.G. Shen (12/13), **2025**, Compositionally complex alloying in multiple-R-Co₂ laves phase system: Lattice distortion and static and dynamic magnetocaloric properties, [Acta Materialia 299, 121472](#).
- 8) Á. Díaz-García, J.Y. Law, L.M. Moreno-Ramírez, V. Franco (CA), **2025**, Stress-relieved Fe-Mn-Ni-Ge-Si high-entropy alloys: A path for enhancing the magnetocaloric response, [Scripta Materialia 258, 116492](#).
- 9) K. Klinar, J.Y. Law, V. Franco, X. Moya, A. Kitanovski, **2024**, Perspectives and energy applications of magnetocaloric, pyromagnetic, electrocaloric & pyroelectric materials, [Advanced Energy Materials 39, 2401739](#), Open Access. Citations: 84. **“Highly cited paper” by Web of Science.**
- 10) V. Franco (CA), ... (1/6), **2018**, *Magnetocaloric effect: From materials research to refrigeration devices*. [Progress In Materials Science 93, 112-232](#). Citations: 1687. **“Highly cited paper” by Web of Science**

C.2. Selected Research Projects (up to 2022)

- 1) 2024–2028. MAGCCINE, Grant agreement #101161135. EU Pathfinder Challenge project. Coordinator: University of Porto, Portugal. Amount: 3,635,772.50 €. Principal Investigator (PI): V. Franco, University of Seville.
- 2) 2023–2028, PID2023-146047OBI00 funded by MCIN/AEI/10.13039/501100011033. Amount: 225,000.00 €. PIs: V. Franco, J.Y. Law, University of Seville, Spain.
- 3) 2023–2027, HyLICAL, Grant Agreement #101101461, European Commission. Coordinator: IFE, Norway. Amount: 4,677,848.75 €. PI: V. Franco, University of Seville.
- 4) 2023–2026, CoCoMAG, Grant agreement #101099736, EU Pathfinder Open project. Amount: 2,987,943.00 €. Coordinator: TU Darmstadt, Germany. PI: V. Franco, University of Seville.
- 5) 2023–2027, KPN 336403. “Hydrogen Liquefaction with Caloric materials (LIQUID-H)”. The Research Council of Norway. Coordinator: IFE, Norway. PI: V. Franco, University of Seville.
- 6) 2021-2024, FA8655-21-1-7044, US Air Force Office of Scientific Research. Amount: 195,000.00 USD. PIs: V. Franco, J.Y. Law, University of Seville, Spain.
- 7) 2019-2021, W911NF1920212, US Army Research Laboratory. Amount: 65,000.00 \$. PI: V. Franco, University of Seville.
- 8) PID2019-105720RB-I00. “Addressing the limitations of magnetocaloric materials towards their implementation in energy efficient applications”. Ministerio de Ciencia, Innovación y Universidades. 01/06/2020-31/05/2025. PI: V. Franco, University of Seville.
- 9) P18-RT-746. “Thermomagnetic phase transitions for an efficient use of energy and resources”. Regional Government of Andalucía. 01/01/2020-31/03/2023. PI: V. Franco, University of Seville.
- 10) US-1260179. “Influencia de excitaciones múltiples sobre transiciones de fase termomagnéticas para aplicaciones energéticas”, Universidad de Sevilla-FEDER Andalucía. 1/02/2020-30/04/2022. PI: V. Franco, University of Seville.

C.3. Technology Transfer

- **Patent:** A.M. Tishin, V. Franco, A. Conde, Y.I. Spichkin, I.N. Zubkov. Reference RU2442975. “The Method of Approximation of the Magnetocaloric Effect Temperature Dependence by Means of a Universal Curve”. Country: Russia. Priority date: 14/05/2009. Date awarded: 20/02/2012. Assignee: Advanced Magnetic Technologies and Consulting, Ltd.
- **Patent:** B. Achzet, R. Fechte-Heinen, L. Patberg, M. Rauhut, S. Will, V. Franco, L.M. Moreno-Ramírez, J.J. Ipus, J.S. Blázquez, A. Conde. “Magnetokalorische Legierung, Verfahren zum Herstellen einer solchen Legierung sowie die Verwendung der Legierung” (Application DE 10 2020 104 938, 25/02/2020), owner: thyssenKrupp Steel Europe.
- **Other technology transfer merits:**
 - **Software:** Magnetocaloric Effect Analysis Software. Programmed by V. Franco and distributed by Lake Shore Cryotronics, Inc. <https://www.lakeshore.com/products/product-detail/8600-series-vsm/mce-analysis-software>

C.4. Industrial contracts, technological or transfer merits (since 2012)

- **ThyssenKrupp Steel Europe**, Germany: "Physical Characterization of Electrical Steels" and "Characterization of the Physical Properties of Materials"
- **Erasteel**, France: "Characterization of Magnetocaloric Materials"
- **Lake Shore Cryotronics Inc**, USA: "Magnetocaloric Research with Vibrating Sample Magnetometers: Algorithms for Data Analysis and Development of New Measuring Protocols". Lake Shore Cryotronics are currently distributing the resulting software.
- **Lake Shore Cryotronics Inc**, USA: "Development of thermomagnetic instrumentation and measurement algorithms."
- **ArcelorMittal** (confidential topic)
- **TDK**, Japan: collaboration agreement

C.5. Conference Organization (selected)

- General Chair: 2022 Joint MMM-Intermag, New Orleans, USA.
- General Chair: 23rd Soft Magnetic Materials Conference, Sevilla, 2017.
- Publications Chair of several MMM and MMM-Intermag Conferences

C.6 Scientific Committee Society / Editorial (selected)

- Club Español de Magnetismo: **President** (November 2022-November 2024), Vice-president (December 2018-November 2020). Secretary (Nov. 2016-Dec. 2018)
- Member of the 147th Committee on Amorphous and Nano-Crystalline Materials of the University-Industry Cooperative Research Committees, Japan Society for the Promotion of Science (JSPS) (since November 2018)
- Member of the International Scientific Council. South Ural State University, Chelyabinsk (Russia), since 2019
- Member of the International Organizing Committee, Soft Magnetic Materials Conference series (since December 2018)
- Spain Chapter of IEEE Magnetics Society: **Chairman** (Nov. 2016-March 2019). Previously Secretary/Treasurer (June 2014-Nov. 2016)
- **Chairman** of the Magnetic Materials Committee of the Minerals Metals and Materials Society (TMS), USA, March 2012-Feb. 2014 (previously, Vice-chair October 2009-March 2012) Spain Section of IEEE, Conference Coordinator (March 2014-March 2016)
- **Editorial services (selected)**
 - Editor "Metallurgical and Materials Transactions E: Materials for Energy Systems" (Springer). Since its foundation in 2014 until 2017.
 - Publications Chair of MMM and MMM-Intermag Conferences since 2017 until 2020. Publications Editor: MMM Conference (2011, 2013, 2014 & 2016 editions) and Joint MMM-Intermag (2013 and 2016 editions).
 - Guest editor: JOM, July 2012; Scripta Materialia, 2012; JOM, July 2013; PNAS, 2024.

C.7 Awards

- PhD Thesis Extraordinary Award. Sevilla University
- Young Scientist Award. Royal Order of Chivalry of Sevilla+Royal Academy of Sciences of Sevilla, 2015
- Young Scientist Award. Royal Physics Society of Spain. 2000
- 2019 IEEE Magnetics Society Distinguished Lecturer
- Chinese Academy of Sciences President's International Fellowship, 2020 and 2024
- Honoree at the TMS 2024 symposium "Advanced Soft Magnets and Magnetocaloric Materials: An FMD Symposium Honoring Victorino Franco"
- IEEE Fellow "for contributions to the study of thermomagnetic phase transitions, soft magnets, and magnetocaloric materials" (2024)
- Stanford ranking of top 2% researchers" since its inception in 2020