

CURRICULUM VITAE ABREVIADO (CVA)

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

Part A. PERSONAL INFORMATION

First name	José Miguel		
Family name	Mateos Roco		
Gender (*)	Male	Birth date	05/07/1967
Social Security, Passport, ID number	CYL2548947732	PAD661950	11770815J
e-mail	roco@usal.es	URL Web	
Open Researcher and Contributor ID (ORCID) (*)		0000-0002-8930-9201	

(*) Mandatory

A.1. Current position

Position	Profesor Titular de Universidad		
Initial date	09/01/1998		
Institution	University of Salamanca		
Department/Center			
Country	Spain	Teleph. number	670707575
Key words	Thermodynamics; Energy Converters, Optimization		

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

Period	Position/Institution/Country/Interruption cause
1990-1993	Profesor Asociado/University of Salamanca/New Work Contract
1993-1998	Profesor Ayudante de Facultad/University of Salamanca/New Work Contract
1995	Becario Postdoctoral (Subprograma General en el Extranjero (EX94 11770815)

A.3. Education

PhD, Licensed, Graduate	University/Country	Year
Licensed	Physics	1990
PhD	Physics	1993

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

62 JCR articles, 43 Q1

h-index: 22 (WOS), average citations per publication: 25,68. 1592 citations,

Publications (per research line):

- Infrared Spectroscopy: 20 publications. 13 Q1
- Thermodynamic Optimization: 40 publications. 28 Q1:
- High-Temperature Superconductors: 1 Q1.
- Teaching Innovation: 1 Q1

6 book chapters

Congresses: 28 contributions

Research projects: 23 research projects: 2 European (1 IP), 1 International (IP), 11 national (1 IP); 5 regional; 4 local

Research stays: One year PostDoc, Department of Physics, University of Messina (Italy)

Research collaborations with abroad groups and researchers:

- Prof. K. Okuda, University of Hokkaido and Dr. Y. Izumida, University of Tokyo, Japan.
- Prof. F. Angulo-Brown's research group, Polytechnic National Institute of México.
- Dr. Juncheng Guo, University of Fuzhou China Popular Republic. Postdoc researcher in the University of Salamanca under my supervision (12/04/2018 to 11/04/2019). As result of this stay It has been published 4 articles JCR (first decile WOS)

Five six-year research periods (CNEAI), uninterrupted since 1991 (Last period positively evaluated 2015-2020)

Guest Editor of MDPI three Entropy Special Issues: "Entropy Generation and Heat Transfer I and II", "Thermodynamic Optimization of Heat Devices, Stability and Control" (Impact Factor: 2.494 (2020)). Referee JCR publications (Energy, EPL, JSTAT, European Journal of Physics B, Entropy, etc).

Teaching activity

Teaching in Thermodynamics, Engineering Thermodynamics, Statistical Physics, Energy Conversion, Renewable Energies, Master and Degree Level.

Rating of Excellent evaluation (DOCENTIA, University of Salamanca, call 2015, call 2020).

Teaching publications: Three articles JCR and a one teaching manual in Thermodynamics Laboratory Training.

Innovation Teaching Projects: 22 projects (6 as main responsible)

Congresses: 8 contributions to teaching issues (2 as invited speaker)

Academic management positions

- Vice Chancellor of Research 20-05-2024 up to date
- Director of the PhD School Studii Salamantini 21-05-2024 up to date
- Vice Chancellor of Research and Knowledge Transfer 28-05-2021 to 19-05-2024
- Dean of the Faculty of Science since 01-04-2014 to 27-05-2021
- Master in Physics Academic Director since 01-10-2013 to 30-10-2014.
- Vice Dean of the Faculty of Science (2012-2014)
- Physics Degree Coordinator since 2009 to 2014
- Academic Secretary of the Faculty of Science (2004-06)

Diffusion and scientific dissemination

- IP: EUCYS-USAL European Union Contest for Young Scientists' 2020. Acronym: EUCYS_USAL. Call: H2020-IBA-SWFS-EUCYS-2020
Contract number: 953360. Period: 01/01/2020 a 31/10/2021. Financing Agency: European Commission. Budget: 960.000 €
- Series of lectures: "Encounters on the new frontiers of Science: Physics time". Fundación Duques de Soria, Facultades de Ciencias de las Universidades de Valladolid y Salamanca. Editions: Valladolid 2015, 2018, 2023, and Salamanca 2017 and 2019.

Relevance of these academic activities

As it will be shown more explicitly by the merits Part C, the results of my research, academic and management activities in the last ten years present a clear orientation in assuming responsibilities and leadership: IP of research projects and Art.83 contract, IP of institutional research programs and projects, organizer of scientific dissemination activities, Director or postdocs researchers and postgraduates students and director of Master.

Part C. RELEVANT MERITS (sorted by typology)

C.1. Publications (see instructions)

In this part I have only included ten contributions, all of them related with the project, of the thirty three JCR contributions I have published in the last ten years.

Article: Salom Moctezuma Hernández J.A.; Merchán R.P.; Roco, J.M.M.; 2025, *Supercritical CO2 hybrid Brayton–Organic Rankine Cycle integrated with a solar central tower particle receiver: Performance, exergy analysis, and choice of the organic refrigerant*, Renewable Energy 250, 123231 (Q1).

Article: Salomone-González, D.; Curto- Risso, P.L.; Calvo Hernández, A; Medina A.; Roco, J. M. M.; González-Ayala, J.;, 2022, *Pumped heat energy storage with liquid media: Thermodynamic assessment by a transcritical Rankine-like model*, J. Energy Storage, 56, 105966 (Q1), 6 citations WOS.

Article: González-Ayala, J.; Salomone-González, D.; Medina A.; Roco, J. M. M.; Curto- Risso, P.L.; Calvo Hernández, A, 2021, *Multicriteria optimization of Brayton-like pumped thermal electricity storage with liquid media*, J. Energy Storage, 44, 103242 (Q1), 4 citations WOS.

Article: Guo, J.; Yang H.; González-Ayala, J.; Roco, J. M. M.; Medina A.; Calvo Hernández, A, 2020, *The equivalent low-dissipation combined cycle system and optimal analyses of a class or thermally driven heat pumps*, Energy Convers. Manage., 220, 113100 (Q1), 16 citations WOS.

Article: González-Ayala, J.; Guo, J.; Medina A.; Roco, J. M. M.; Calvo Hernández, A, 2020, *Energetic Self-Optimization Induced by Stability in Low-Dissipation Heat Engines*, Phys. Rev. Lett. 124, 050603 (Q1), 20 citations WOS.

Article: Calvo Hernández, A.; Medina, A.; Roco, J. M. M., 2015, *Time, entropy generation, and optimization in low dissipation heat devices*, New J. Phys., 17, 075011, 1367-2630 (Q1), 40 citations WOS

Article: Yuki Izumida; K. Okuda; Roco, J. M. M.; Calvo Hernández, A. , 2015, *Heat devices in nonlinear irreversible thermodynamics*, Physical Review E, 91, 052140 (Q1), 41 citations WOS

Article: Yang Wang; Mingxing Li; Zhanchun Tu; Calvo Hernández, A.; Roco, J. M. M., 2012, *Coefficient of performance at maximum figure of merit and its bounds for low- dissipation Carnot-like refrigerators*, Phys. Rev. E, 86, 011127 (Q1), 112 citations WOS.

Article: de Tomás Andrés, C.; Calvo Hernández, A.; Roco, J. M. M., 2012, *Optimal low symmetric dissipation Carnot engines and refrigerators*, Phys. Rev. E, 85 (Q1) 010104(R), 116 citations WOS.

C.2. Congress (from Academic management activities)

- Title: “High-level education in the Faculty of Science of University of Salamanca”
9th Workshop on Cooperation for Higher Education on Radiological and Nuclear Techniques. CHERNE 2013 Challenges and Future of the CHERNE Network
Salamanca 5th June 2013
Invited conference
- Title: “EDUCATION and TRAINING; A European Master in laser science and technology”
ELI ERIC Iberian Information Day
Madrid, 1st June 2022
Invited round table

C.3. Research projects (Last ten years)

- **Title:** *Integración de la dinámica de sistemas packed-bed en almacenamiento energético mediante sistemas de bombas a alta temperatura*
Acronym: PB-Pumps
Reference: GP PID2023-147201OB-I00
Dates: 01/09/2024 to 31/08/2027
Financing Agency: Ministerio de Ciencia e Innovación
Budget: 62.500€
Main Researcher: Alejandro Medina Domínguez and María Jesús Santos Sánchez
- **Title:** *Fortalecimiento de la estructura de apoyo de la USAL a la innovación y participación en Horizonte Europa*
Acronym: USAL-4InHorizon
Reference: GPE2022-001071
Dates: 01/01/2023 to 31/12/2024
Financing Agency: Ministerio de Ciencia e Innovación
Budget: 286.300€
Main Researcher: José Miguel Mateos Roco
- **Title:** *Research and Innovation For Cities and Citizens*
Acronym: RI4C2
Reference: H2020-IBA-SwafS-Support-2020
Dates: 01/09/2021 to 31/08/2024
Financing Agency: European Union
Budget: 253.976,20€
Main Researcher: José Miguel Mateos Roco, Efrem Yildiz Sadak
- **Title:** *University of Salamanca Programme to Foster Research Excellence.*
Acronym: USAL4EXCELLENCE Call: H2020-MSCA-COFUND-2020
Contract Number: 101034371 Dates: 01/05/2022 a 30/04/2027.
Financing Agency: European Commission, Junta de Castilla y León and University of Salamanca Total Budget: 7.356.000.00 €. Budgeted by European Commission: 3.678.000.00 € Main Researcher: José Miguel Mateos Roco
- **Title:** *Thermal devices at different scales subjected to external disturbances: multi-objective optimization, parameter control and stability*
Acronym: MOCPS

Financing Agency: University of Salamanca.

Dates: 01/12/2022 to 31/12/2022 Budget: 10.000 €.

Main Researcher: José Miguel Mateos Roco Number of researchers: 5

- **Title: *Storage of electrical energy with heat pumps and their impact on the national energy matrix***

Main researcher: Pedro Andrés Galione Klot Number of researchers: 7

Financing agency: Agencia Nacional de Investigación e Innovación (Uruguay) Dates: 11/06/2019 - 11/06/2021, 2 years; Budget: 75.000 €

- **Title: *Small-scale hybrid solar thermal plants for distributed power generation***

Regional level

Main researcher: A. Calvo Hernández. Number of researchers: 7

Financing entity: Junta de Castilla y León, SA017P17

Dates: 26/07/2017 - 31/10/2019; Budget: 108.380 €

IP: Antonio Calvo Hernández.

- **Title: *Efficient energy converters and sustainable working fluids***

National level

Main researcher: Juan Antonio White Sánchez. Number of researchers: 13

Financing entity: MINECO (Spain), ENE2013-40644-R

Dates: 01/01/2014 - 31/12/2016, 3 years; Budget: 56.870 €

- **Title: *Thermodynamic optimization of energy converters***

National level

Main researcher: Medina, A. Number of researchers: 7

Financing entity: MINECO (Spain), FIS2010-17147

Dates: 01/01/2011 - 31/12/2013, 3 years; Budget: 30.250 €

C.4. Contracts, technological or transfer merits

- **Title: *Parabolic disc thermosolar concentration plant with hybrid Brayton cycle for distributed energy generation. BraySolDish***

Main researcher: María Jesús Santos Sánchez. Financing Entity: Junta de Castilla y León, Fundación General Universidad de Salamanca, t-cue Program. Period: 01/07/2019- 30/09/2020; Budget: 8.000 €

- **Title: *Clean and efficient generation of electricity and heat on a small scale: hybrid thermosolar dish. PC-TCUE-18-20_002***

Main researcher: María Jesús Santos Sánchez. Financing Entity: Junta de Castilla y León, Fundación General Universidad de Salamanca, t-cue Program. Period: 19/12/2018 – 19/12/2019; Budget: 10.000 €

- **Title: *Thermo-economic optimization of recuperative multi-stage hybrid thermosolar plants in Castilla y León* Reference: IQPC-TERMOSOLARES**

Main researcher: Alejandro Medina Domínguez. Financing Entity: Junta de Castilla y León, Fundación General Universidad de Salamanca, t-cue Program. Period: 01/04/2016 – 31/03/2017; Budget: 6.000 €

- **Title: *Thermo and techno-economic assessment of hybrid thermosolar plants* FPC-TERMOHIBRIDAS**

Main researcher: Antonio Calvo Hernández. Financing entity: Junta de Castilla y León, Fundación General Universidad de Salamanca t-cue Program. Period: 01/04/2016 – 31/07/2016; Budget: 9.000 €

- **Title: *Thermodynamic and simulation study of different working conditions for the Combined Cycle Plant ACECA. Evaluation of the actions that could reduce plant technical minimum***

Main researcher: José Miguel Mateos Roco; Eva Martín del Valle
Financing entity: Art. 83 LOU. University of Salamanca / Iberdrola
Period: 01/04/2016 – 31/12/2019; Budget: 77.000 €