PERSONAL INFORMATION

Name: **David**.
Surnames: **Lago Cachón**
Phone (+34) 646921293.
Email dlagocachon@gmail.com
Personal webpage: http://davidlagocachon.wordpress.com
ORCID: 0000-0001-9355-8211
Scopus Author ID: 54585462400
Google Scholar: David Lago-Cachón

SKILLS & CAPACIBILITIES

Good communication skills gained through my experience as science communicator and speaker at scientific conferences.

Leadership and team builder. Used to work or lead groups formed with people of different backgrounds and cultures.

Good managerial skills and problem-solving abilities obtained as organizer of scientific congresses and educational activities.

Expertise in Health and Safety at work, including chemical, electrical and radiological hazards.

Experience in cleanroom class 100: Chemical Vapor Deposition, Lithography, Plasma Etching, Scanning Electron Microscopy, Focused Ion Beam, among others.

Experience in equipment control. Mainly in LabView and MatLab.

Strong scientific background. Mainly in magnetic nanomaterials and biosensors.

CAREER SUMMARY

Postdoctoral Fellow at King Abdullah University of Science and Technology (KAUST), in the research group Communication and Computing Systems Lab.
Acting as Lab Manager, Lab Safety Representative and Webmaster. Training students to use lab's equipment
Working in wireless communications: Fullduplex implementation and Human Body Communications.
March 2020 – Present

Postdoctoral Fellow at King Abdullah University of Science and Technology (KAUST), in the research group Sensing, Magnetism and Microsystems.
Acted as Lab Manager, Lab Safety Representative and responsible for a Vibrating-Sample Magnetometer.
Worked in nanowires fabrication, Tunneling Magnetoresistance sensors fabrication and magnetic characterization.
June 2018 – June 2020

Technician at Scientific Culture and Innovation Unit (SC+iU) of University of Oviedo. *September 2017 - December 2017.*

President of Cielos Despejados, organization to promote Science and Astronomy.
During this time I organized several scientific communication activities, as for example: CosmOviedo or International Observe the Moon Night, with several thousand attendees and teams up to 25 volunteers. *May 2012 - February 2016.*

EDUCATION AND TRAINING

- **PhD in Physics** *Electromagnetic sensor for detecting magnetic nanoparticles and its use as biosensor*, directed by José Ángel García and Montserrat Rivas. Summa cum laude by unanimous decision. 10/2016. University of Oviedo.
  During the thesis I have worked in:
  - Synthesis and functionalization of magnetic nanoparticles (MNP)
  - Magnetic and structural studies of MNP
  - Cancer cells culture and magnetophoresis using the MNP.
  - Magnetic and structural studies of amorphous ribbons.
  - Development of a impedance-based biosensor of MNP.
  - Quantification of Prostate Specific Antigen (PSA) in the clinical range.
- **Science and Technology of Materials, MSc** 07/2010. University of Oviedo.
- **Physics BSc,** specialization in Electronic, Automatism and Signal Processing. 12/2008. University of Oviedo.

AWARDS

- **2nd best project Jornada Proyectos IUTA 2014**, by Instituto Universitario de Tecnología de Asturias. December 2014.
- **Best project Jornada de Proyectos IUTA 2012**, by Instituto Universitario de Tecnología de Asturias. December 2012.
- **2nd best entrepreneur idea,** IV Concurso de Ideas Empresariales Universidad de Oviedo. May 2012.

SPOKEN LANGUAGES

- ENGLISH. Used professionally. Level C1.
- FRENCH. Studied at high-school. Level B1.
- SPANISH. Mother language.

Levels according to the Common European Framework of Reference for Languages: A1 and A2: Basic user - B1 and B2: Independent user - C1 and C2: Proficient user.

SCIENTIFIC PUBLICATIONS

[1] N. S. Patel, **D. Lago-Cachón**, H. Mohammed, J. A. Moreno, J. Kosel. **Iron Nanowire Fabrication by Nano-Porous Anodized Aluminum and its Characterization**. *J. Vis. Exp.* (152), e60111, doi:10.3791/60111 (2019).

[2] J. Carrasco, B. Allende, R. Fernández, F. J. García, **D. Lago-Cachón**, L. Elbaile, R. D. Crespo, J. A. García, **Synthesis of Magnetic Poly (acrylic acid) Nanoparticles via a Two-Steps Co-Precipitation Method,** Adv. Sci. Eng. Med. 10 (2018) 38-42(5) .

[3] **D. Lago-Cachón**, M. Oliveira-Rodríguez, M. Rivas, M.C. Blanco-López, J.C. Martínez-García, A. Moyano, M. Salvador, J.Á. García, **Scanning Magneto-Inductive Sensor for Quantitative Assay of Prostate-Specific Antigen**, IEEE Magn. Lett. PP. 2017.

[4] **D. Lago-Cachón**, M. Rivas, J.C. Martínez-García, M. Oliveira-Rodríguez, M.C. Blanco-López, J.Á. García, **High frequency lateral flow affinity assay using superparamagnetic nanoparticles**, J. Magn. Magn. Mater. 423 (2017) 436–440.

[5] J.Á. García, J. Carrizo, L. Elbaile, **D. Lago-Cachón**, M. Rivas, D. Castrillo, A.R. Pierna, **Magnetic anisotropy and magnetostriction in nanocrystalline Fe-Al alloys obtained by melt spinning technique**, J. Magn. Magn. Mater. 372 (2014) 27–32.

[6] M. Rivas, **D. Lago-Cachón**, J.C. Martínez-García, J.Á. García, A.J. Calleja, **Eddy-current sensing of superparamagnetic nanoparticles with spiral-like copper circuits**, Sensors Actuators A Phys. 216 (2014) 123–127.

[7] **D. Lago-Cachón**, M. Rivas, C. López-Larrea, A. López-Vázquez, G. Martínez-Paredes, J.Á. García, **HeLa cells separation using MICA antibody conjugated to magnetite nanoparticles**, Phys. Status Solidi C. 11 (2014) 1043–1047.

[8] J.C. Martínez-García, M. Rivas, **D. Lago-Cachón**, J.Á. García, **FORC differential dissection of soft biphase magnetic ribbons**, J. Alloys Compd. 615 (2014) S276–S279.

[9] J.C. Martínez-García, M. Rivas, **D. Lago-Cachón**, J.Á. García, **First-order reversal curves analysis in nanocrystalline ribbons**, J. Phys. D. Appl. Phys. 47 (2014) 15001–7.

[10] **D. Lago-Cachón**, M. Rivas, J.C. Martínez-García, J.Á. García, **Cu impedance-based detection of superparamagnetic nanoparticles**, Nanotechnology. 24 (2013) 245501–7.

[11] **D. Lago-Cachón**, J.C. Martínez-García, M. Rivas, J.Á. García, **Biased giant magnetoimpedance and switching field distribution curves in Co70Fe5Si15B10 nanocrystalline ribbons**, J. Alloys Compd. 536 (2012) S312–S314.

SCIENTIFIC CONFERENCES

1. Montserrat Rivas, José Carlos Martínez-García, José Ángel García, David Lago-Cachón, Amanda Moyano, María Salvador, María del Carmen Blanco-López, Myriam Oliveira-Rodríguez, José Rivas. *Biosensor for Immunomagnetic Analysis of Prostate Specic Antigen (PSA).* Biotechnology Annual Congress, BAC, Gijón 2016. Poster.
2. Amanda Moyano, María Salvador, Montserrat Rivas, Myriam Oliveira-Rodríguez, María del Carmen Blanco-López, David Lago-Cachón, José Carlos Martínez-García, José Ángel García. *Biosensor for Immunomagnetic Analysis of Prostate Specific Antigen (PSA).* Biotechnology Annual Congress, BAC, Gijón 2016. Poster.
3. Montserrat Rivas, José Carlos Martínez-García, José Ángel García, David Lago-Cachón, Amanda Moyano, María Salvador, María del Carmen Blanco-López, Myriam Oliveira-Rodríguez, José Rivas. *Magnetic Sensor For Protein Quantification By Magnetic Lateral Flow Immunoassay.* 9th International Conference on Fine Particle Magnetics, ICFPM, Washington 2016. Oral talk.
4. David Lago-Cachón, Myriam Oliveira-Rodríguez, María del Carmen Blanco-López, Amanda Moyano, José Carlos Martínez-García, José Ángel García, and Montserrat Rivas. *Dynamic detection of magnetic nanoparticles in Lateral Flow Assay*. 4th International Conference on Nanotechnology in Medicine, NanoMED, Manchester 2015. Oral talk.
5. Montserrat Rivas, Myriam Oliveira-Rodríguez, María del Carmen Blanco-López, Amanda Moyano, David Lago-Cachón, José Carlos Martínez-García, and José Ángel García. *Quantitative Magnetic Lateral Flow for Prostate Specific Antigen Assay*. 4th International Conference on Nanotechnology in Medicine, NanoMED, Manchester 2015. Oral talk.
6. Amanda Moyano, David Lago-Cachón, Felipe Lombó, José Carlos Martínez-García, José Ángel Garcíaand Montserrat Rivas. High frequency lateral ow immunoassay using superparamagnetic nanoparticles. Recent Trends in Nanomagnetism, Spintronics and their Applications, RTNSA, Ordizia (Spain) 2015. Poster.
7. David Lago-Cachón, Montserrat Rivas, José Carlos Martínez-García, Myriam Oliveira-Rodríguez, María del Carmen Blanco-López, and José Ángel García. Quantication of Escherichia coli using immunomagnetic nanoparticles. 4th International Conference on Nanotechnology in Medicine, NanoMED, Manchester 2015. Oral Talk.
8. J. Carrasco, B. Allende, R. Fernández, F.J. García, David Lago-Cachón, L. Elbaile, R.D. Crespo, and J.A. García. Magnetic nanoparticles for drug delivery. 4th International Conference on Nanotechnology in Medicine, NanoMED, Manchester 2015. Poster.
9. David Lago-Cachón, Montserrat Rivas, José Carlos Martínez-García, and José Ángel García. Detección electromagnética de nanoparticulas superparamagnéticas. XXXV Reunión Bienal de la Real Sociedad Española de Física, Gijón (Spain) 2015. Poster.
10. Amanda Moyano, Sara Martín, José Carlos Martínez-García, Montserrat Rivas, David Lago-Cachón, and José Ángel García. Separación de nanohilos magnéticos mediante un sensor basado en la magnetoimpedancia gigante. XXXIII Reunión Bienal de la Real Sociedad Española de Física, Santander (Spain) 2011. Poster.
11. José Carlos Martínez-García, Montserrat Rivas, David Lago-Cachón, José Ángel García, Francisco Javier Carrizo, and Yuset Guerra-Dávila. Biased Giant Magnetoimpedance and Switching Field Distribution Curves in $Co_{70}Fe_5Si_{15}B_{10}$ Nanocrystalline Ribbons. 18th International Symposium on Metastable, Amorphous and Nanostructures Materials, ISMANAM, Gijón (Spain) 2011. Poster.
12. David Lago-Cachón, Montserrat Rivas, José Carlos Martínez-García, and José Ángel García. Phisiologicaly stable magnetic nanoparticles and magnetoimpedance sensor. IEEE Magnetic Summer School, Dresden (Germany) 2010. Poster.

13. José Ángel García, Montserrat Rivas, José Carlos Martínez-García, Laura Elbaile, María R. Díaz-Crespo, David Lago-Cachón, Montserrat Rivas, and Braddy Iván Jiménez-Morales. Magnetic detection and separation of tumor nanoparticle-labelled cells. Nanofutures, Gijón (Spain) 2010. Poster.
14. José Carlos Martínez-García, Montserrat Rivas, David Lago-Cachón, and José Ángel García. First order reversal curves analysis in hard-soft nanocrystalline materials with asymmetrical magnetization reversal. International Workshop on Non-Crystalline Solids, Barcelona (Spain) 2010. Poster.

CONFERENCE ORGANIZATION

- Chair of CosmOviedo, a science communication event oriented to global audience. 28 to 30 of December, 2016. Over 1 300 attendees. Responsible for a team of 15 collaborators. Sponsored by Oviedo City Council and crowdfunding.
- Collaborator in the organization of the 18th International Symposium on Metastable, Amorphous and Nanostructural Materials, ISMANAM 2011 held in Gijón (Spain).

OTHER COMMUNICATION ACTIVITIES

- How to write really small? Experimentando con la Ciencia - XX Semana de la Ciencia y la Tecnología de la Universidad de Oviedo. November 2020.
- From cavern to stars. Project of science divulgation and fundraising during a bicycle trip in collaboration with Biodiversa and Asturies ConBici. List of talks:
    - Presentation of the project. 26/01/2018. El Manglar, Oviedo.
    - *Contaminación Lumínica* (Light Pollution). 27/01/2018. Centro Social El Remediu, Nava.
    - *From Cavern to Stars*. 1/02/2018. Instituto de Física de Cantabria (IFCA), Santander. Video online.
    - *De la caverna a las estrellas*. 6/02/2018. Colegio Franciscanas de Montpellier, Trapagaran. Imparted to ~14 years old students.
    - *From Cavern to Stars*. 6/02/2018. Bar Kubrick, Bilbao.
    - *De la caverna alas estrellas*. 15/02/2018. Ama Guadalupekoa, Hondarribia. Imparted to ~14 years old students.
- *De lo astro a lo nano* (From astro to nano). PechaKucha Gijón, VOL. 6. 01/09/2017. Available online.
- *De lo nano a lo astro* (From nano to astro). AstroAstorga. 24/08/2017.
- *De lo nano a lo astro* (From nano to astro). Festival Astronómico del Solsticio de Verano. Parque de la Vida, Luarca, 17/07/2017.
- *Magnetismo personal*. Pint of Science Gijón (Spain), 17-05-2017. Science Divulgation Talk. Available online.
- *Entendiendo el mundo a travees de la astronomía (Understanding our world through Astronomy).* Free Courses for Citizens. Sponsored by Oviedo City Council and Red Cross Asturias. In collaboration with Dr. Norberto Gutiérrez and Marcos Suárez. Oviedo, 5 and 12/05/2017.
- David Lago-Cachón and María Salvador. *De lo nano a lo astro*. TEDxGijón (Spain), 11-02-2017. Participative workshop.

- *Contaminación Lumínica*. Con Ciencia, té, Oviedo (Spain), 19-02-2016. Science Divulgation Talk. Available online.
- *Impedance-based magnetic nanoparticle sensor for biomedical applications* National Physical Laboratory. London, 2015. Seminar.
- *Incrementa tu magnetismo personal con imanes intravenosos*. Con Ciencia, té Oviedo (Spain), 2015. Science Divulgation Talk.
- David Lago-Cachón and Montserrat Rivas. *Nuevos biosensores electromagnéticos tipo Predictor©*. Jornada de seguimiento de proyectos Instituto Universitario de Tecnología de Asturias Gijón (Spain), 2014. Science Divulgation Talk.
- *Nanotecnología*. TEDx Gijón, 11-05-2013. Available online.
- *Nanopartículas magnéticas como marcadores para biosensores*. II Jornada de NanoBioAnálisis (NBA) Oviedo (Spain), 2013. Seminar.
- David Lago-Cachón and Montserrat Rivas. *Biosensor electromagnético de PSA (Prostate Specic Antigen*). Jornada de seguimiento de proyectos Instituto Universitario de Tecnología de Asturias Gijón (Spain), 2013. Science Divulgation Talk.
- *Biosensor Magnético de PSA*. Jornada de Ingeniería y Medicina Gijón (Spain), 2012. Science Divulgation Talk.
- David Lago-Cachón and Montserrat Rivas. *Detección y separación de células cancerígenas mediante nanoestructuras magnéticas*. Jornada de seguimiento de proyectos Instituto Universitario de Tecnología de Asturias Gijón (Spain), 2012. Science Divulgation Talk.

COURSES AND TRAININGS

- Equipment used in cleanroom:
  - Reactive sputtering.
  - Metal sputtering.
  - Oxide/Nitride Plasma-enhanced chemical vapor deposition.
  - Amorphous Silicon Plasma-enhanced chemical vapor deposition.
  - Ion Beam Assisted Deposition.
  - E-beam writer.
  - Contact aligner
  - Photoresist Spin and Bake.
  - Plasma Etching.
  - Chemical Assist Ion Beam Etching.
  - Laser beam lithography.
  - Scanning Electron Microscope, including Ion Beam mode.
- Other equipment used:
  - Differential Scanning Calorimetry
  - Thermal Gravimetric Analysis.
  - Vibrating Sample Magnetometer.
  - Induction Heater.
  - Magneto Optic Kerr Effect microscope.
  - Atomic Force Microscopy.
  - Impedance Analyzer.
- Certified as a First Aider at Work (RQF) by Highfield Qualifications. 2018.

- Workshop Grammar for Writing Research Papers Concisely and Coherently. KAUST. 30 hours. 2018.
- Effective Communication. 30 hours. University of Oviedo. 2012.
- Challenges and breakthroughs in recent research on nanomagnetism. INL, Braga, July 19th -22nd 2011.
- Basic of Strain Gage Installation and Strain Gage Measurement. 40 hours. Darmstadt 2010.
- R+D projects management. Club Asturiano de la Innovación. 20 hours. Gijón 2010.
- Security, comfort and quality as managing tools for laboratories. University of Oviedo. 40 hours. 2007.