

Leyre Gómez Navascués, PhD

Nationality: Spanish

Date of birth: 21-03-1986

Address: Calle del Bosc 83, 08210 Barberá del Vallés, Barcelona

Tel.: +34 620584566

E-mail: leyre_gomez86@hotmail.com



Chemical Engineer PhD – Nanotechnology R&D

WORK EXPERIENCE

September 2019 - Present	Barcelona, Spain	Postdoctoral researcher Catalan Institute of Nanoscience and Nanotechnology (ICN2)
--------------------------	------------------	---

- Postdoctoral fellowship associated to the European Research and Innovation Programme Horizon 2020 under the Marie Skłodowska-Curie grant agreement No. 754510.
- Development of photonic sensors with nanoporous materials (MOF, COF, MOP) as specific receptors for environmental pollutants detection.

July 2015 – July 2019	Amsterdam, The Netherlands	Postdoctoral researcher University of Amsterdam
-----------------------	----------------------------	--

- Establishment and management of a new chemistry laboratory.
- Starting a new research line within the scientific group.
- Planning, design and execution of experiments along with daily supervision of bachelor, master, and PhD students (6-8 people).
- Development of new materials to improve the photovoltaic field: synthesis and characterization of nanocrystals (emission, absorption, photoluminescence quantum yield, etc.)
- Data analysis (*Origin, Excel, ImageJ*).
- Collaboration with international universities (Osaka University, ETH Zurich) and companies (Solliance, Shell and Canon).
- 8 oral communications at national and international conferences and 11 scientific articles published in high impact journals (e.g. *Nature Communications, Nano Letters*).
- Grant proposals and project solicitations.
- Entrepreneurship Program (15h) – Innovation Exchange Amsterdam.
- Involved in the selection process of new research staff.

June 2010 - December 2014	Zaragoza, Spain	Predocotrinal researcher Nanoscience Institute of Aragon University of Zaragoza
---------------------------	-----------------	--

- Synthesis of laser-driven nanoparticles for applications in medicine (phototherapy and drug delivery systems), and photocatalysis.
- Characterization techniques (spectrophotometry, DLS, ICP, XPS, etc.).
- Production scale up and optimization of the process.
- Daily supervisor of bachelor, master, and early stage PhD students (4-6 people).
- Collaboration with international scientific groups (e.g. MIT-USA, Universidad Nacional del Litoral – Argentina, La Paz Hospital-Madrid).
- Publication of 15 scientific articles in high impact journals (e.g. *PNAS, Nanoscale*) and several conference proceedings.
- Acquirement of a Spanish patent with international projection “Fibrine hydrogels with plasmonic particles”.
- Teacher assistant for 60h at the Chemical Engineering degree, course “Laboratory of Chemical Engineering V”, 40 students, 2012-2013.

July - November 2013

Los Angeles (CA), USA

**Predocctoral stay abroad
University of Southern California**

- Engineering school, Stephen B. Cronin Lab.
- 2 scientific articles published about water purification by photocatalysis.

January 2013 - Present

Referee for peer-reviewed journals

- More than 15 articles: *ACS Applied Materials & Interfaces*, *Nanoscale*, *Journal of Physical Chemistry Letters*, *Journal of Physical Chemistry C*, *New Journal of Chemistry*.

1 July - 31 August 2008

Corella (NA), Spain

**Internship
Unión de Industrias C.A.S.A.**

- Quality technician in the rubber sector.
- Control tests on raw materials and product (durability, hardness, rheological properties, etc.).
- Design of a database of rubbers according to their properties.
- Management of internal quality incidents.

EDUCATION

June 2010 - November 2014

University of Zaragoza

**Chemical Engineering PhD
(CUM LAUDE)**

- Predocctoral FPI fellowship from the Spanish Government.
- Member of the Nanostructured Films and Particles group, Nanoscience Institute of Aragon.
- Best Doctoral Thesis Award 2014-2015 from the Chemical Engineering Department.

September 2010 - September 2011

University of Zaragoza

**Master on Nanostructured
Materials for Nanotechnology
Applications**

- All courses where taught in English.
- Final Project 9/10.

September 2009 - January 2010

Technical University of
Denmark

Final Engineering Project

- Erasmus grant at the chemical engineering department.
- Experimental work and data analysis about the reduction of NO_x formation and CO₂ emission control under oxy-combustion conditions (O₂/CO₂).
- Publication of 1 scientific article.

September 2004 - March 2010

University of Zaragoza

Chemical Engineering

- Specialization in Process Engineering.
- Inside the best 20% students.

September 2002 - June 2004

Alhama High School - Corella

Technical studies

- Final score: 9.3/10 – Cum laude.

LANGUAGES

- **Spanish:** Native speaker.
- **French:** Basic communication skills.
- **English:** Proficiency.
- **Dutch:** Beginner.

PUBLICATIONS, PATENTS AND CONFERENCES

- **Publications:** 27 articles on peer-reviewed journals; **H-index:** 18 (Google Scholar – Leyre Gomez).
- **Patents:** 1 Spanish patent (ES 2527800 A1).
- **Conferences:** Several poster and contributed talks in national and international conferences.

ANNEX: Publications, Patents and Conferences

PUBLICATIONS

1. C. de Weerd, L. Gomez, A. Capretti, D. M. Lebrun, E. Matsubara, J. Lin, M. Ashida, F. C. M. Spoor, L. D. A. Siebbeles, A. J. Houtepen, K. Suenaga, Y. Fujiwara, and T. Gregorkiewicz. "Efficient carrier multiplication in CsPbI₃ perovskite nanocrystals", *Nature Comm.* **2018**, DOI: 10.1038/s41467-018-06721-0.
2. C de Weerd, T Gregorkiewicz, and L. Gomez. "All-Inorganic Perovskite Nanocrystals: Microscopy Insights in Structure and Optical Properties", *Adv. Optical Mater.* **2018**, 6, 1800289.
3. B. Mitchell, E. Herrmann, J. Lin, L. Gomez, C. De Weerd, K. Suenaga, and T. Gregorkiewicz. "Measuring the Practical Particle-in-a-Box: Orthorhombic Perovskite Nanocrystals", *Eur. J. Phys.* **2018**, 39, 055501.
4. M.O. Nestoklon, S.V. Goupalov, R.I. Dzhioev, O.S. Ken, V.L. Korenev, Yu G. Kusrayev, V.F. Sapega, C. de Weerd, L. Gomez, T. Gregorkiewicz, J. Lin, K. Suenaga, Y. Fujiwara, L.B. Matyushkin, and I.N. Yassievich. "Optical orientation and alignment of excitons in ensembles of inorganic perovskite nanocrystals", *Phys. Rev. B* **2018**, 97, 235304.
5. L. Gomez, J. Lin, C. de Weerd, L. Poirier, S. C. Boehme, E. von Hauff, Y. Fujiwara, K. Suenaga, and T. Gregorkiewicz. "Extraordinary interfacial stitching between single all-inorganic perovskite nanocrystals", *ACS Appl. Mater. Interfaces* **2018**, 10, 5984-5991.
6. C. de Weerd, J. Lin, L. Gomez, Y. Fujiwara, K. Suenaga, and T. Gregorkiewicz. "Hybridization of single nanocrystals of Cs₄PbBr₆ and CsPbBr₃", *J. Phys. Chem. C* **2017**, 121, 19490-19496.
7. M. C. Ortega-Liebana, N. X. Chung, R. Limpens, L. Gomez, J. L. Hueso, J. Santamaria, and T. Gregorkiewicz. "Uniform luminescent carbon nanodots prepared by rapid pyrolysis of organic precursors confined within nanoporous templating structures", *Carbon* **2017**, 117, 437-446.
8. E. M. L. D. de Jong, G. Yamashita, L. Gomez, M. Ashida, Y. Fujiwara, and T. Gregorkiewicz. "Multiexciton lifetime in all-inorganic CsPbBr₃ perovskite nanocrystals", *J. Phys. Chem. C* **2017**, 121, 1941-1947.
9. L. Gomez, C. de Weerd, J. L. Hueso, and T. Gregorkiewicz. "Color-stable water-dispersed inorganic perovskite nanocrystals", *Nanoscale* **2017**, 9, 631-636.
10. J. Lin, L. Gomez, C. de Weerd, Y. Fujiwara, T. Gregorkiewicz, and K. Suenaga. "Direct observation of band structure modifications in nanocrystals of CsPbBr₃ perovskite", *Nano Lett.* **2016**, 16, 7198-7102.
11. I. Ortiz de Solorzano, M. Prieto, L. Gomez, G. Mendoza, T. Alejo, S. Irusta, V. Sebastian, and M. Arruebo. "Microfluidic synthesis and biological evaluation of photothermal biodegradable copper sulfide nanoparticles", *ACS Appl. Interfaces* **2016**, 8, 21545-21554.
12. C. de Weerd, L. Gomez, H. Zhang, W. J. Buma, G. Bedelcu, M. V. Kovalenko, and T. Gregorkiewicz. "Energy transfer between inorganic perovskite nanocrystals", *J. Phys. Chem. C* **2016**, 120, 13310-13315.
13. M. M. Encabo-Berzosa, M. Gimeno, L. Lujan, M. Sancho-Albero, L. Gomez, V. Sebastian, M. Quintanilla, M. Arruebo, J. Santamaria, and P. Martin-Duque. "Selective delivery of photothermal nanoparticles to tumors using mesenchymal stem cells as Trojan horses", *RSC Adv.* **2016**, 6, 58723-58732.
14. M. Prieto, R. Arenal, L. Henrard, L. Gomez, V. Sebastian, and M. Arruebo. "Morphological tunability of the plasmonic response: from hollow gold nanoparticles to gold nanorings", *J. Phys. Chem. C* **2014**, 118, 28804-28811.
15. L. Gomez, J. L. Hueso, M. C. Ortega-Liebana, J. Santamaria, and S. B. Cronin. "Evaluation of gold-decorated halloysite nanotubes as plasmonic photocatalysts", *Catal. Commun.* **2014**, 56, 115-118.
16. F. Martin-Saavedra, V. Cebrian, L. Gomez, D. Lopez, M. Arruebo, C. G. Wilson, R. T. Franceschi, R. Voellmy, J. Santamaria, and N. Vilaboa. "Temporal and spatial patterning of transgene expression by near-infrared irradiation", *Biomaterials* **2014**, 35, 8134-8143.

17. L. Gomez, V. Sebastian, M. Arruebo, J. Santamaria, and S. B. Cronin. "Plasmon-enhanced photocatalytic water purification", *Phys. Chem. Chem. Phys.* **2014**, 16, 15111-15116.
18. I. Urries, C. Muñoz, L. Gomez, C. Marquina, V. Sebastian, M. Arruebo, and J. Santamaria. "Magneto-plasmonic nanoparticles as theragnostic platforms for magnetic resonance imaging, drug delivery and NIR hyperthermia applications", *Nanoscale* **2014**, 6, 9230-9240.
19. B. P. Timko, M. Arruebo, S. A. Shankarappa, J. B. McAlvin, O. S. Okonkwo, B. Mizrahi, C. Stefanescu, L. Gomez, J. Zhu, A. Zhu, J. Santamaria, R. Langer, and D. S. Kohane. "Near-infrared actuated devices for remotely controlled drug delivery", *P. Natl. Acad. Sci. USA* **2014**, 111, 1349-1354.
20. R. Campardelli, G. Della Porta, L. Gomez, S. Irusta, E. Reverchon, and J. Santamaria. "Au-PLA nanocomposites for photothermally controlled drug delivery", *J. Mater. Chem. B* **2014**, 2, 409-417.
21. L. Gomez, V. Sebastian, S. Irusta, A. Ibarra, M. Arruebo, and J. Santamaria. "Scaled-up production of plasmonic nanoparticles using microfluidics: from metal precursors to functionalized and sterilized nanoparticles", *Lab Chip* **2014**, 14, 325-332.
22. J. Brix, L. Gomez, J. B. Nielsen, P. L. Bonnek, H. E. Larsen, S. Clausen, P. Glarborg, and A. D. Jensen. "Oxy-fuel combustion of millimeter-sized coal char: Particle temperatures and NO formation", *Fuel* **2013**, 106, 72-78.
23. A. Pineda, L. Gomez, A.M. Balu, V. Sebastian, M. Ojeda, M. Arruebo, A. A. Romero, J. Santamaria, and R. Luque. "Laser-driven heterogeneous catalysis: efficient formation of amides from aldehydes and amines", *Green Chem.* **2013**, 15, 2043-2049.
24. L. Gomez, V. Cebrian, F. Martin-Saavedra, M. Arruebo, N. Vilaboa, and J. Santamaria. "Colloidal stability and biocompatibility of gold nanorods for photothermal therapy", *Mater. Res. Bull.* **2013**, 48, 4051-4057.
25. V. Cebrian, F. Martin-Saavedra, L. Gomez, M. Arruebo, J. Santamaria, and N. Vilaboa. "Enhancing of plasmonic photothermal therapy through heat-inducible transgene activity", *Nanomed. Nanotechnol.* **2013**, 9, 646-656.
26. L. Gomez, V. Sebastian, M. Arruebo, L. Gutierrez, and J. Santamaria. "Facile synthesis of SiO₂/Au nanoshells in a three-stage microfluidic system", *J. Mater. Chem.* **2012**, 22, 21420-21425.
27. L. Gutierrez, L. Gomez, S. Irusta, M. Arruebo, and J. Santamaria. "Comparative study of the synthesis of silica nanoparticles in micromixer-microreactor and batch reactor systems", *Chem. Eng. J.* **2011**, 171, 674-683.

PATENTS

1. **Título:** Hidrogeles de fibrina con partículas plasmónicas

Inventores: Francisco Manuel Martín Saavedra, Nuria Vilaboa Díaz, Virginia Cebrián Hernando, Manuel Arruebo Gordo, Jesús Santamaría Ramiro, Leyre Gómez Navascués.

Número de aplicación/Patente: P201330894 / ES 2527800 A1

País de prioridad: España **Fecha de prioridad:** 14/06/2013

Entidades: Hospital La Paz, Ciber-BBN y Universidad de Zaragoza

ORAL CONTRIBUTIONS

1. "Highly emissive perovskite nanocrystals", **Physics@FOM**, Veldhoven (Países Bajos), enero 2016.
2. "Water-stable encapsulated perovskite nanocrystals", **E-MRS Spring Meeting**, Lille (Francia), mayo 2016.
3. "Energy transfer between inorganic perovskite nanocrystals", **II Dutch Perovskite Workshop**, Delft (Países Bajos), junio 2016.
4. "Quantum confinement on a single object level: band structure modification in perovskite nanocrystals", **E-MRS Spring Meeting**, Estrasburgo (Francia), mayo 2017.
5. "All-inorganic perovskite nanocrystals: understanding their behavior", **ICDS-29**, Matsue (Japón), julio 2017.
6. "Single-object and ensemble properties of all-inorganic perovskite nanocrystals", **Quantsol**, Rauris (Austria), marzo 2018 - *Invited talk*.
7. "Water- and color-stable all-inorganic perovskite nanocrystals", **MRS**, Phoenix (USA), abril 2018.
8. "Microscopic insights into the structural and optical properties of all-inorganic perovskite nanocrystals", **IV Dutch perovskite workshop**, Eindhoven (Países Bajos), junio 2018.

POSTER CONTRIBUTIONS

1. "Synthesis of silica nanoparticles using micromixers and batch reactors", **I Workshop bilateral España-Hong Kong sobre Micro y Nanosistemas**, Zaragoza (España), octubre 2010.
2. "Optical hyperthermia conducted by silica/gold nanoshells to induce transgenic expression", **ImagineNano**, Bilbao (España), abril 2011.
3. "Gold nanoparticles for the thermal ablation of tumoral cells and for the activation of therapeutic genes", **V Conferencia Anual CIBER-BBN**, Zaragoza (España), septiembre 2011.
4. "Heat-inducible expression of reporter or cytotoxic genes in human cells by using NIR-NPs", **IX International Conference of Nanoscience & Nanotechnology**, Thessaloniki (Grecia), julio 2012.
5. "Continuous synthesis of plasmonic nanoparticles by using microreactors", **Colloids and Nanomedicine**, Amsterdam (Países Bajos), julio 2012.
6. "Plasmonic Scaffolds for Deliberate Regulation of Transgene Expression", **Termis-eu Biomedtek**, Estambul (Turquía), junio 2013.
7. "Surface plasmon resonance assisted catalysis for the production of amides (4-benzoylmorpholine) from aldehydes", **XI European Congress on Catalysis**, Lyon (Francia), septiembre 2013.
8. "Hollow Gold Nanoparticles as Tumor Treatments", **ESGCT and SETGyC COLLABORATIVE CONGRESS**, Madrid (España), octubre 2013.
9. "Scaled-up production of hollow gold nanoparticles using microfluidics", **XIII IMRET**, Budapest (Hungría), junio 2014.
10. "Microfluidic-based synthesis and biomedical applications of plasmonic nanoparticles", **ICN+T**, Vail (USA), julio 2014.
11. "Magneto-plasmonic nanoparticles as theranostic platforms for magnetic resonance imaging, drug delivery and NIR hyperthermia applications", **20th International Conference on Magnetism**, Barcelona (España), julio 2015.