

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	Luis Alberto		
Family name	Angurel Lambán		
Gender (*)	Male	Birth date (dd/mm/yyyy)	
Social Security, Passport, ID number			
e-mail	angurel@unizar.es	URL Web	
Open Researcher and Contributor ID (ORCID) (*)	0000-0001-5685-2366		

A.1. Current position

Position	Full Professor		
Initial date	28/03/2012		
Institution	University of Zaragoza		
Department/Center	Institute of Nanoscience and Materials of Aragón		
Country	Spain	Teleph. number	976762520
Key words	Applied Superconductivity, Laser Processing, Surface structuring		

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

Period	Position/Institution/Country/Interruption cause
1990-1991	F.P.I. grant at ICMA (CSIC)
1991-1996	Assistant Professor, University of Zaragoza
1996-2012	Associate Professor, University of Zaragoza
2003-2010	Vicedirector at Instituto de Ciencia de Materiales de Aragón
2012-2018	Director Servicio General de Apoyo a la Investigación- SAI at University of Zaragoza

A.3. Education

PhD, Licensed, Graduate	University/Country	Year
Licensed in Physics	University of Zaragoza	1989
PhD in Sciences	University of Zaragoza	1993

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

I am Professor at the University of Zaragoza and researcher at the "Laser for Energy and Advanced Materials (LEMA)" research group in Instituto de Nanociencia y Materiales de Aragón (INMA, CSIC-University of Zaragoza). My main research areas are the fabrication and characterization of superconducting materials for large-scale electrical applications and the development of laser treatments for materials processing. From the point of view of material fabrication, I have been working in the development of 1) laser melting techniques to texture bulk High Temperature Superconductors and other ceramics with different cylindrical and planar geometries, and 2) laser ablation methods, where my experience in generating new surface functionalities is relevant for this project. In the field of characterization, in the last years, my main area of research has been the development of thermal stability characterization techniques, using electrical and magnetic measurements or optical ones based on the Digital Speckle Interferometry. In addition, I have been working in the development of applications with superconducting materials. I have coordinated a research project to develop 600A HTS current leads for the LHC at CERN, and I have collaborated with a wind-energy company in the development of a superconductor generator and also in the analysis of thermal instability problems in superconducting coils.

Laser technologies have a great industrial interest. In the last years I have been involved in several projects with companies developing laser treatments to control surface properties in different materials coordinating 8 industrial projects in several sectors. Some of the developed

laser protocols are now being transferred to the production lines. I am also a promotor of a Technology Company GLASSKIN TECH (now LASER LINE SCANNING) that develop new laser processes for the production of new ceramic materials and high mechanical resistance glass.

Some of these initiatives related with technology transfer have been recognized: Award to Innovation in industry of BSH-University of Zaragoza Cathedra in the category of research teams with the Project: Development of a new material for cooking plates”, Third Prize VI Triple Hélice UNIZAR (2020) for the project “Development of laser treatments to obtain stainless steel surfaces with new properties” with the company ACERINOX Europa and Third Prize VI Triple Hélice UNIZAR (2021) for the project associated with the company GLASSKIN TECH. I have published more than 130 papers in international journals (WoS). I have coordinated 8 national research projects and the participation of University of Zaragoza in three European Projects since 2016, where the application of laser technologies has been tested in different problems related with energy or transport. I have been the supervisor or co-supervisor in 12 Ph.D. theses that have been finished and two more are in progress. All of them are in subjects related with superconductivity and laser material processing.

These research activities have gained recognition for five “Sexenios de Investigación” (Six-year research), the last one covers the period 2014-2019, and one “Sexenio de transferencia” (Transfer six-year research). h-index=21 in JCR or 21 in SCOPUS.

During several years, I coordinated the outreach activities at the Instituto de Ciencia de Materiales de Aragón, developing several projects that have been recognized by some prizes, as for instance, Premio Tercer Milenio a la Divulgación Científica en Aragón to the project CSI-Aragón (2016). Between 2003 and 2010 I was Vicedirector of Instituto de Ciencia de Materiales de Aragón and from 2012 to 2018 I was the Director of Servicio General de Apoyo a la Investigación- SAI at University of Zaragoza.

Part C. RELEVANT MERITS (sorted by typology)

C.1. Publications

- 1.- E. Martínez, N. Lejeune, J. Frechilla,, L. Porta-Velilla, E. Fourné, L. A. Angurel, G. F. de la Fuente, J. Bonse, Alejandro V. Silhanek, A. Badía-Majós, *Laser engineered architectures for magnetic flux manipulation on superconducting Nb thin films*, Applied Surface Science 679 (2025) 161214
- 2.- V. V. Lennikov, A. Gómez-Herrero, L. A. Angurel, G. F. de la Fuente, L. C. Otero-Díaz. Direct Laser Synthesis of Fe₂O₃ Modified TiO₂, Z. Anorg. Allg. Chem. 2024, e202400078
- 3.- A. Frechilla, M. Napari, N. Strkalj, E. Barriuso, K. Niang, M. Hellenbrand, P. Strichovanec, F.M. Simanjuntak, G. Antorrena, A. Flewitt, C. Magén, G. F. de la Fuente, J. L. MacManus-Driscoll, L. A. Angurel, J. Á. Pardo, *Spatially selective crystallization of ferroelectric Hf_{0.5}Zr_{0.5}O₂ films induced by sub-nanosecond laser annealing*, Applied Materials Today 36 (2024) 102033
- 4.- A. Badía-Majós, E. Martínez, L. A. Angurel, G. F. de la Fuente, E. Fourné, S. Marinković, A. V. Silhanek, *Laser nanostructured metasurfaces in Nb superconducting thin films* Applied Surface Science 649 (2024) 159164
- 5.- L. Porta-Velilla, E. Martínez, A. Frechilla, M. Castro, G. Francisco de la Fuente, J. Bonse, L. A. Angurel, *Grain Orientation, Angle of Incidence, and Beam Polarization Effects on Ultraviolet 300 ps-Laser-Induced Nanostructures on 316L Stainless Steel*, Laser Photonics Rev. 2023, 2300589
- 6.- A. Frechilla, A. Sekkat, M. Dibeneditto, F. lo Presti, L. Porta-Velilla, E. Martínez, G.F. de La Fuente, L.A. Angurel, D. Muñoz-Rojas, *Generating colours through a novel approach based on spatial ALD and laser processing*, Materials Today Advances 19 (2023) 100414
- 7.- J. Rivera-Sahún, L. Porta-Velilla, G.F. de la Fuente, L. A. Angurel, *Use of green fs lasers to generate a superhydrophobic behavior in the surface of wind turbine blades*. Polymers 14 (2022) 5554
- 8.- L. Porta-Velilla, N. Turan, A. Cubero, W. Shao, H. Li, G.F. de la Fuente, E. Martínez, Á. Larrea, M. Castro, H. Koralay, S. Cavdar, J. Bonse, L. A. Angurel, *Highly regular hexagonally-arranged nanostructures on Ni-W alloy tapes upon irradiation with ultrashort UV laser pulses*, Nanomaterials 12 (2022) 2380
- 9.- E.M. Maingi, M.P. Alonso, L.A. Angurel, Md A. Rahman, R. Chapoulie, S. Dubernet, G.F. de la Fuente, *Historical stained-glass window laser preservation: The heat accumulation challenge*, Boletín de la Sociedad Española de Cerámica y Vidrio, 61 (2022) S69-S82

10.- A. Cubero, E. Martínez, Germán de la Fuente, I. García-Cano, S. Dosta, L.A. Angurel, *Large enhancement of thermal conductance at ambient and cryogenic temperatures by laser remelting of plasma-sprayed Al₂O₃ coatings on Cu*, Materials Research Bulletin 143 (2021) 111450

11.- R. Molina, M. Ertugrul, A. Larrea, R. Navarro, V. Rico, F. Yubero, A.R. González-Elípe, G.F. de la Fuente, L.A. Angurel, *Laser-induced scanning transfer deposition of silver electrodes on glass surfaces: A green and scalable technology*, Applied Surface Science 556 (2021) 149673

C.2. Congress, indicating the modality of their participation (invited conference, oral presentation, poster)

1.- A. Badía-Majós, L. Porta-Velilla, J. Frechilla, E. Martínez, L.A. Angurel, G.F. de la Fuente, E. Fourneau, S. Marinkovic, N. Lejeune, A.V. Silhanek, J. Bonse, Control of superconducting properties on niobium foil and thin film samples via surface nanostructuring, LIPSS 11th International Workshop, 27-29 September 2023, Madrid, Oral communication

2.- J. Frechilla, A. Frechilla, E. Martínez, G.F. de la Fuente, L. A. Angurel, Laser processes to generate nitride layers on Nb surfaces, 19th International Conference on Thin films, 26-29 September 2023, Burgos, Oral communication

3.- A. Badía-Majós, E. Martínez, L.A. Angurel, G.F. de la Fuente, E. Fourneau, S. Marinkovic, A.V. Silhanek, Steered flux dynamics in laser nanostructured superconducting thin films, 8th International Conference on Superconductivity and Magnetism, Fethiye (Turquía), 4 - 11 Mai 2023, Invited conference.

4.- L.A. Angurel Laser Line Scanning: New Opportunities to Improve Superconducting Properties, International Summit on Lasers, Optics and Photonics, 24-25 April 2023, Valencia, Plenary conference

5.- L.A. Angurel, A. Badía, E. Martínez, G.F. de la Fuente, E. Fourneau, A. Silhanek, Modification of superconducting properties in Nb using laser technologies International Forum on Superconductivity and Magnetism, IFASM OCEANIA-2022, 6-8 December 2022, Godl Coast (Australia), Invited conference.

6.- L.A. Angurel, B. Ozcelik, H. Amaveda, G.F. de la Fuente, Laser Zone Melting process for fabricating MnFe₂O₄ spinel ferrites International conference on advanced materials science & engineering and high-tec devices applications, ICMATSE-2022, 27-29 October 2022, Ankara (Turquía), Invited conference.

7.- E.M. Maingi, M.P. Alonso, L.A. Angurel, R. Chapoulie, S. Dubernet, G.F. de la Fuente, Application of ultra-short pulse lasers in the restauration of historical stained-glass, 3rd Edition of Virtual Online conference and Expo on Advancements of Lasers, Optics and Photonics, 1-3 September 2021, Oral communication

C.3. Research projects, indicating your personal contribution.

1.- Tecnologías de barrido láser para mejorar funcionalidades de superficies con aplicaciones en producción, almacenamiento y distribución de hidrógeno verde y superconductividad (HYDROSUPERLAS).

Ministerio de Ciencia, Innovación y Universidades y Agencia Estatal de Investigación MCIN/AEI /10.13039/501100011033(PID2023-146041OB-C21)

Period: 01/09/2024- 31/08/2027 Budget: 298.750 € Project coordinators: L. A. Angurel y A. Badía

2.- Triboelectric nanogenerators for raindrop renewable energy harvesting (DropEner)

Ministerio de Ciencia e Innovación y Agencia Estatal de Investigación (TED2021-130916B-I00)

Period: 01/11/2022 - 31/10/2024 Budget: 253.000 € Project coordinator: Ana I. Borrás
Member of the research team

3.- Tecnologías láser para mejorar el rendimiento de materiales en aplicaciones para energía
Ministerio de Ciencia e Innovación y Agencia Estatal de Investigación (PID2020-113034RB-I00)

Period: 01/09/2021 - 31/08/2024 Budget: 150.000 € Project coordinator: Luis A. Angurel

4.- SOUNDofICE: Sustainable Smart De-Icing by Surface Engineering of Acoustic Waves
H2020-FETOPEN/EXCELLENT SCIENCE Challenging Current Thinking (EU 899352)

Period: 11/2020 - 10/2024 Budget: 258.000 € Project coordinator (UNIZAR): Luis A. Angurel

5.- Material functionalization using laser technologies and technological challenges to improve efficiency in renewable and sustainable energy

Agencia Estatal de Investigación and Programa Europeo FEDER (ENE2017-83669-C4-1-R)

Period: 01/2018 - 12/2020 Budget: 193.600 € Project coordinator: Luis A. Angurel

6.- European Doctorate in ARchaeological and Cultural Heritage MATerials science (ED-ARCHMAT) H2020-MSCA-ITN-2017/ EXCELLENT SCIENCE (EU173832)

Period: 04/2018 - 03/2022 Budget: 247.872,96 € Supervisor one of the PhD.

7.- Ultra-versatile Structural PRINTing of amorphous and tuned crystalline matter on multiple H2020-FETOPEN/EXCELLENT SCIENCE Future & Emerging Technologies (EU183283)

Period: 09/2018 - 08/2022 Budget: 241.611 € Project coordinator (UNIZAR): Luis A. Angurel

8.- PHOBIC2ICE – Super-IcePhobic Surfaces to Prevent Ice Formation on Aircraft

European Commission, CALL - H2020-MG_SingleStage-A RIA (Grant 690819)

Period: 02/2016 - 01/2019 Budget: 166.571 € Project coordinator (UNIZAR): Luis A. Angurel

9.- Soluciones tecnológicas para la implantación de materiales superconductores en máquinas eléctricas de potencia.

Ministerio de Economía y Competitividad (ENE2014-52105-R)

Period: 01/2015 - 12/2017 Budget: 160.000 € Project coordinator: Luis A. Angurel

C.4. Contracts, technological or transfer merits

1.- Desarrollo de productos cerámicos de baja temperatura procesados con tecnología de horno láser

Ministerio de Ciencia e Innovación, AEI, Unión Europea, Fondos Next Generation, Proyecto en Colaboración Público-Privada (CPP2022-009956)

Companies: COLOR ESMALT, LLS, Universidad de Zaragoza, CSIC

Period: 11/2023-10/2027 Budget: 116.632 € Project coordinator: Luis A. Angurel

2.- Desarrollo de tratamientos láser para obtener superficies en acero inoxidable con nuevas funcionalidades

Company: ACERINOX.

Period: 08/2019 - 07/2022 Budget: 150.000 € Project coordinator: Luis A. Angurel

3.- Nuevos procesos industriales sostenibles para la producción de dispositivos fotovoltaicos integrables en sensores y sistemas autónomos (FOTOSENS)”

Ministerio de Ciencia, Innovación y Universidades, Retos Colaboración (RTC-2017-5857-3)

Period: 12/2018 - 08/2021 Budget: 154.696 € Project coordinator: Luis A. Angurel

4.- Nuevas formulaciones y procesos para aplicaciones tecnológicas

Company: TORRECID, S. A.

Period: 06-2018 - 05-2020 Budget: 45.000 € Project coordinator: Luis A. Angurel

5.- Nueva generación de tintas y esmaltes digitales

Company: TORRECID, S. A.

Period: 01-2016 - 12-2018 Budget: 75.000 € Project coordinator: Luis A. Angurel

6.- Diseño de una nueva generación de generadores y equipos auxiliares para energía eólica basados en superconductores.

MINECO, Proyecto retos colaborativos: RTC-2014-1740-3

Period: 02/2014 - 04/2016 Budget: 82.777 € Project coordinator: Elena Martínez

7.- Development of New Materials and Laser Processes

Company: EOSWISS Engineering Sàrl

Period: 11/2015 - 09/2017 Budget: 52.000 € Project coordinator: Luis A. Angurel

8.- Análisis de nuevas posibilidades que la tecnología láser abre en el desarrollo de nuevos productos cerámicos

Company: SAMCA, S.A.

Period: 03/2014 - 02/2016 Budget: 120.000 € Project coordinator: Luis A. Angurel

9.- Patent: Inventors: X.F. de la Fuente, C. Estepa, L.A. Angurel

Title: Procedimiento de modificación superficial del vidrio mediante láser (P202030176)

Priority date: 02-03-2020 Holding Institution: CSIC-University of Zaragoza

Company that exploits the patent: Laser Line Scanning, S.L.

10.- Spin-off companies: Promotor of the spin-off company: GLASSKIN TECH, now LASER LINE SCANNING, S.L.. Laser furnace technology is applied to the production of new ceramic materials and high strength glasses.