

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	Carmen		
Family name	Alvarez Lorenzo		
URL Web	https://www.idfarmausc.es/		
Open Researcher and Contributor ID (ORCID) (*)	0000-0002-8546-7085		

(*) Mandatory

A.1. Current position

Position	Full Professor (Catedrática)		
Initial date	20/10/2020		
Institution	Universidade de Santiago de Compostela (USC)		
Department/Center	Farmacología, Farmacia y Tecnología Farmacéutica	Fac. Farmacia	
Country	Spain	Teleph. number	
Key words	Drug delivery systems; Regenerative medicine; 2D and 3D Scaffolds; Biomaterials; Stimuli-responsive hydrogels; Molecular imprinting; Drug-medical device combination products		

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

Period	Position/Institution/Country/Interruption cause
01/10/1993-30/05/1998	Predoctoral Fellow Xunta de Galicia/USC
01/10/1998-30/06/1999	Postdoctoral Fellow Caixa Galicia Foundation/ MIT USA
01/10/1999-30/09/2000	Postdoctoral Fellow Ramón Areces Foundation/ MIT USA
01/10/2000-31/01/2001	Visiting Scientist (contract)/ MIT USA
01/03/2001-14/11/2001	Postdoctoral research contract/ USC
15/11/2001-14/11/2006	Ramón y Cajal Researcher/ USC
15/11/2006-16/01/2007	"Profesora Titular" interim/ USC
17/01/2007-19/10/2020	Profesora Titular/ USC (accredited to catedrático in 2011)

A.3. Education

PhD, Licensed, Graduate	University/Country	Year
Lcda. Pharmacy (with Honors)	Santiago de Compostela	1993
PhD Pharmacy (Extraordinary Award)	Santiago de Compostela	1998
University Expert in Business Administration: Direction and Management	UNED	2019

(Include all the necessary rows)

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

Carmen Alvarez-Lorenzo is the **Head of the Institute of Materials (iMATUS)** and **Coordinator** of the I+DFarma Competitive Reference Group (<http://idfarmausc.es/>) at the University of Santiago de Compostela (USC). She has 25 years of research experience in academic institutions in Spain and the USA (**Massachusetts Institute of Technology, MIT**) and in collaboration with industries.

Her work lies at the **interface** between pharmaceutical technology, biology, materials science, and medicine (**multidisciplinary**) and has led to a variety of advanced macro-nano drug carriers, drug-eluting medical devices and tissue scaffolds. Inspired by how natural macromolecules fold and unfold, she was the first to accomplish **stimuli-responsive synthetic networks endowed with biomimetic receptors** and to explore their applications to drug delivery and regenerative medicine. Her **main research lines** involve (i) stimuli-responsive bioinspired drug delivery systems; (ii) copolymers that revert cell multidrug

resistances; (iii) personalized medicines for children (first clinical trial with 3D printed formulations); (iv) tissue scaffolds: syringeable, electrospun, 3D printed and scCO₂ foamed; and (iv) medical devices that prevent biofilm formation. She has authored **+385 articles** in leading journals (270 Q1; 100 D1), **40 book chapters**, and **+470 abstracts**, and co-edited **2 books**. Her strong commitment in innovation and patient-driven research are exemplified by **20 patents**, participation in several valorization programs (Innocash, MindTheGap, USC-Santander) and launching of a **spin-off** (co-founder and chief scientist of HGBeyond Materials Science S.L., 2015-2022).

The relevance of her work is given by the cumulated total citations (**+15,987 Web of Science; + 23,257 Google Scholar**) and **h-Index = 67 (Web of Science); 83 (Google Scholar)**. She is ranked **7th in the h-index** in Pharmacology and Pharmacy of Spain (<https://grupodih.info/salud.html>), listed among the Best Resident Scientists in Spain, World Ranking Top 2% Highly Cited Researchers, and few Top100 scientists in Spain with leadership in two matters: Materials Science and Chemistry (Research.com). She has **4 research and 1 transference six-year terms (sexenios)**.

She has built a strong **network of national and foreign researchers (33 countries)**, through 8 regional projects, 14 national projects (9 PI MINECO; 1 PI Leonardo Grant F. BBVA), 4 Spain-supported supranational projects (4 PI), 1 Mexico CONACYT, 2 NSF-USA, 3 EU POCTEP, 1 CYTED Network (PI), 3 infrastructures (1 PI), 1 COST 2018 AERoGELS (CA18125 ES, WG1 leader), USC PI of the H2020-MSCA-ITN-2018 (Marie-Curie Network) ORBITAL, and PI of an ISCIII Acción Estratégica en Salud 2019 associated to GLIOSILK project (EURONANOMED III). As PI she has secured +3,0·10⁶ euros in competitive calls since 2010. Participation in 39 R&D projects for industries (33 PI).

She has a **strong commitment to community education** with actions at various levels for **junior researchers** (FECYT summer campus, CYTED network RIMADEL, AERoGELS COST Action, ITN ORBITAL, ERASMUS, technical supervisor of UNAM students), **senior citizens** (IV Ciclo), and **professionals continuous training** (AEMPS, CGCOF, SEHER). She launched and coordinated the **Master in Nanoscience and Nanotechnology** (USC-UVigo, 2018-2022), and co-directs the **USC 3DBioprinting Summer School** (2018, 2019, 2022, and 2024). She has **supervised** 30 PhD Thesis already defended (7 ESB Julia Polack European Doctoral Award), +40 TFG and TFM, and +30 foreign graduate students and postdocs. She currently supervises 10 PhD students.

She has served as USC Editorial member (since 2011), Department Secretary (2012-2016), **Secretary of SEFIG** (2008-2011), Academic Secretary (since 2022) and Twitter account manager of the **Galician Royal Academy of Pharmacy**.

Panels and Committees (since 2010)

-Referee > 50 indexed journals

-36 Project and mobility panels: ANEP-AEI (Assistant to Technology Transfer Area 01/01/2015-31/07/2018), national (public and private), European (SFI, HRB, IFS, GA CR, DFG...), and South American agencies.

-ERC Consolidator Grant Panel 2023 and 2025.

-Editor: Int. J. Pharm. (since Dec 2019) and Int. J. Pharm. X (since 2022).

-Editorial Board: J. Pharm. Sci, JDDST, Front. Bioeng. Biotech., DDTR, J. Control. Release, Carbohydr. Polym., and J. Pharm. Pharmacol.

-Congress Organization: CISDEM (2015), XIV SEFIG (2019), EuroCD 2019 (Chair, 2019), International Conference on Aerogels for Biomedical and Environmental Applications (2020).

-Expert of the AEMPS (Agencia Española de Medicamentos y Productos Sanitarios).

Awards

American Institute for Medical and Biological Engineering (AIMBE, USA) Fellow Class of 2021. Medalla de Investigación Angeles Alvariño, Real Academia Galega de Ciencias (RAGC, 2021). INNOVATIA 8.3, The Institute of Women, Ministry of Health, Social Services and Equality, Spain (2018). The Best Technology Transfer Award, RAGC and GAIN (2017). Leonardo Grant to Researchers and Cultural Creators (2015). BIOGA 2015 BEST BUSINESS IDEA. IX Research Award Antonio Usero (2015).

Part C. RELEVANT MERITS (sorted by typology)

C.1. Publications

- 1.- A. Iglesias-Mejuto, B. Magariños, T. Ferreira-Goncalves, R. Starbird-Pérez, I. Ardao, C. Alvarez-Lorenzo, C. Pinto-Reis, C.A. García González, 2024. Vancomycin-loaded methylcellulose aerogel scaffolds for advanced bone tissue engineering. *Carbohydr. Polym.* 324:121536. IF: 11.2; Q1.
- 2.- P. Carou-Senra, L. Rodríguez-Pombo, A. Awad, A.W Basit, C. Alvarez-Lorenzo, A. Goyanes, 2023. Inkjet printing of pharmaceuticals. *Adv. Mater.* 2023: 2309164. IF: 29.4; Q1.
- 3.- C. Alvarez-Lorenzo, M. Vivero-Lopez, A. Concheiro, 2023. Contact lenses that transform gold into nanoparticles for prophylaxis of light-related events and photothermal therapy. *Int. J. Pharm.* 641: 123048. IF: 6.51; Q1.
- 4.- X. Farto-Vaamonde, L. Diaz-Gomez, A. Parga, A. Otero, A. Concheiro, C. Alvarez-Lorenzo, 2022. Perimeter and carvacrol-loading regulate angiogenesis and biofilm growth in 3D printed PLA scaffolds *J. Control. Release* 352: 776-792. IF: 10.8; Q1.
- 5.- L. Diaz-Gomez, I. Gonzalez-Prada, R. Millan, A. Da Silva-Candal, A. Bugallo-Casal, F. Campos, A. Concheiro, C. Alvarez-Lorenzo, 2022. 3D Printed carboxymethyl cellulose scaffolds for autologous growth factors delivery in wound healing. *Carbohydr. Polym.* 278:118924. IF: 11.2; Q1.
- 6.- A.F. Pereira-da-Mota, M. Vivero-Lopez, M. Serramito, L. Diaz-Gomez, A.P. Serro, G. Carracedo, F. Huete-Toral, A. Concheiro, C. Alvarez-Lorenzo, 2022. Contact lenses for pravastatin delivery to eye segments: design and in vitro-in vivo correlations. *J. Control. Release* 348:431-443. IF: 10.8; Q1.
- 7.- C. Sanhueza, ..., C. Alvarez-Lorenzo (AC), F. Acevedo (AC), 2021. One-step electrospun scaffold of dual-sized gelatin/poly-3-hydroxybutyrate nano/microfibers for skin regeneration in diabetic wound. *Mater. Sci. Eng. C* 119:111602. IF: 7.328; Q1. Total authors 10 (9/10).
- 8.- X. Farto-Vaamonde, G. Auriemma, R.P. Aquino, A. Concheiro, C. Alvarez-Lorenzo, 2019. Post-manufacture loading of filaments and 3D printed PLA scaffolds with prednisolone and dexamethasone for tissue regeneration applications. *Eur. J. Pharm. Biopharm.* 141:100-110. IF: 4.604; Q1.
- 9.- C.A. García-González, J. Barros, A. Rey-Rico, P. Redondo, J.L. Gómez-Amoza, A. Concheiro, C. Alvarez-Lorenzo, F.J. Monteiro, 2018. Antimicrobial properties and osteogenicity of vancomycin-loaded synthetic scaffolds obtained by supercritical foaming. *ACS Appl. Mater. Interf.* 10:3349-3360. IF: 8.456; Q1.
- 10.- P.C. Caracciolo, M.I. Rial-Hermida, F. Montini-Ballarín, G.A. Abraham, A. Concheiro, C. Alvarez-Lorenzo, 2017. Surface-modified bioresorbable electrospun scaffolds for improving hemocompatibility of vascular grafts. *Mat. Sci. Eng. C* 75:1115-1127. IF: 5.080; Q1.

C.2. Congress

74 oral communications and 32 key-notes or plenary conferences in international meetings

- 1.- C. Alvarez-Lorenzo. Nanostructuring contact lenses for therapeutic applications. Keynote Speaker. 20th International Conference on Nanosciences & Nanotechnologies (NANOTEXNOLOGY 2023). Thessaloniki, Grecia, 4-7/07/2023.
- 2.- C. Alvarez-Lorenzo. Cyclodextrin supramolecular structures for drug delivery and regenerative medicine. Key Note Lecture. 20th International Cyclodextrin Symposium (ICS2022). Giardini Naxos, Messina, Italy, 13-17/06/2022.
- 3.- C. Alvarez-Lorenzo. Medical devices decorated with stimuli-responsive polymers for contact-killing surfaces and antimicrobial competitive release. Plenary lecture, V International Conference on Antimicrobial Research - ICAR2018, Torremolinos, 24-25/05/2018.
- 4.- C. Alvarez-Lorenzo. Cyclodextrins as multi-task components of scaffolds. Invited lecture, The 19th International Cyclodextrin Symposium (ICS 2018), Tokyo, 27-30/04/2018.
- 5.- C. Alvarez-Lorenzo. Medical devices as drug delivery platforms. Invited lecture. XI CRS Spanish-Portuguese Conference on Controlled Drug Delivery, Granada, 21-23/01/2016.

C.3. Research projects

- 1.- PLEC2022-009217: Encapsulación de células CART en sistemas porosos nanoestructurados bioactivos para su liberación dirigida en tumores sólidos. Plan de Recuperación, Transformación y Resiliencia. Proyectos en Líneas Estratégicas 2022. 02/01/2023-31/12/2024. Group member: C. Alvarez Lorenzo. Amount: 993.540,02 €.

- 2.- PID2023-150422OB-I00: Cell membrane-coated piezoelectric scaffolds for personalized regenerative medicine (CELLPIEZOMAT). Proyectos Generación de Conocimiento, MINECO. 01/09/2024-31/12/2026. PI1: C. Alvarez Lorenzo, PI2: Angel Concheiro. Amount: 237500.00€.
- 3.- AC19/00067: Silk-fibroin interventional nano-trap for the treatment of glioblastoma (GLIOSILK). ISCIII Acción Estratégica en Salud 2019 associated to an EURONANOMED III awarded project. 01/01/2020-31/12/2023. PI: C. Alvarez Lorenzo. Amount: 149539.06 €.
- 4.- ORBITAL (Ref. 813440): Ocular Research By Integrated Training And Learning. H2020-MSCA-ITN-2018 (Total 4066231.32 euros). 02/09/2019-31/08/2023. PI: L. Fitzhenry (WIT, Ireland). PI at USC: C. Alvarez-Lorenzo. Amount for USC: 501809.76 €.
- 5.- PID2020-113881RB-I00: 5D architectures for regenerative medicine and localized therapy (BIOMAT-5D). RETOS MINECO. 01/09/2021-31/12/2023. PI1: C. Alvarez Lorenzo, PI2: Angel Concheiro. Amount: 188900.00 €.

C.4. Contracts, technological or transfer merits

Contracts (5 of 39)

- 1.-Advice on development of a tablet formulation. R&D contract. 28/11/2023-31/07/2024. Entidad: Lab. Gebro Pharma S.A. PI: C. Alvarez Lorenzo (USC). Amount: 18246.00 euros.
- 2.-Flexible engineering applying capsule technologies and in vitro artificial tissue to explore solutions for hyperpigmentation and biofilm disorders. R&D contract. 01/07/2017-30/06/2020. Entidad: Flen Health S.A. PI: C. Alvarez Lorenzo (USC). Amount: 31645.57 euros.
- 3.-Asesoramiento científico- técnico para desarrollo de una formulación en gránulos. R&D contract. 01/10/2014-31/12/2015. Entidad: INIBSA. PI: C. Alvarez Lorenzo (USC). Amount: 29040.00 euros.
- 4.-Evaluación de la calidad de medicamentos veterinarios. R&D contract. 24/10/2013-23/10/2015. Entidad: Agencia Española de Medicamentos y Productos Sanitarios. PI: A. Concheiro Nine (USC). Amount: 194868.57 euros. Team member.
- 5.-Asesoramiento y asistencia técnica en el proyecto "ADVNMEDTEX" del subprograma "INNPACTO". R&D contract. 18/01/2013-31/08/2013. Entidad: AITEX. PI: C. Alvarez Lorenzo (USC). Amount: 11800.00 euros.

Patents (10 of 20)

- 1.-Alvarez Lorenzo, C., Concheiro Nine, A. Gold nanoparticle hydrogels. EP23382049.7. Priority: 23/01/2023. WO2024156632.
- 2.-Alvarez Lorenzo, C., Garcia Valle, I., Vivero López, M., Concheiro Nine, A. Hydrogels incorporating atropine. EP23382050. EU. Priority: 23/01/2023. WO2024156642. Licensed.
- 3.-Garcia Gonzalez, C.A., Santos Rosales, V., Magariños Ferro, M.B., Alvarez Lorenzo, C. System for implantation by sterilization techniques. ES2808994B2. PCT/ES2021/070768. EU, Granted 16/06/2023. Under valorisation program.
- 4.-Alvarez Lorenzo, C., Concheiro Nine, A. Lipoic acid hydrogels. PCT/ES2017/070282; WO 2018/202925A1. EU, Granted 05/05/2017. USC. Licensed to HGBeyond Materials Science.
- 5.- Alvarez Lorenzo, C., Cabana Montenegro, S., Barbosa Fernandez, S., Taboada Antelo, P., Concheiro Nine, A. Medical device for antimicrobial treatment by photothermia. ES2637035B2. Spain. Granted 11/05/2018.
- 6.-Alvarez Rivera, F., Concheiro Nine, A., Alvarez Lorenzo, C. Hydrogels for administering drugs that are aldose reductase inhibitors. ES2604196B2. Spain. Granted 04/09/2017.
- 7.- Garcia González, C., Diaz Gómez, L., Alvarez Lorenzo, C., Concheiro Nine, A. System for administering biologically active substances produced by foaming techniques using compressed gases or supercritical fluids. ES2546566B2. Spain, EU, USA. Granted 07/09/2016. WO2017013288A1. ECOBONE valorisation program.
- 8.- Alvarez Lorenzo, C., González Chomón, C., Concheiro Nine, A. Contact lenses for allergic conjunctivitis. ES2550105B2. Spain. Granted 30/09/2016.
- 9.- Segura, T., Burillo, G., Puga Giménez de Azcárate, A., Alvarez-Lorenzo, C., Concheiro Nine, A. Bioinspired antifungal systems. ES2530915B2. Spain and Mexico. Granted 09/10/2015.
- 10.- Alvarez-Lorenzo, C., Concheiro Nine, A., Simoes, S. Poloxamine hydrogels and the use thereof for bone regeneration or repair. ES2492015B1, WO2014122345A1. Spain. Granted 28/08/2015.