



CURRICULUM VITAE (CVA)

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

Part A. PERSONAL INFORMATION

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| CV date | 06/11/2023 |
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|--|---------------------|--|--|
| First name | Concepción | | |
| Family name | Valencia Barragán | | |
| Gender (*) | Female | | |
| e-mail | barragan@uhu.es | | |
| Open Researcher and Contributor ID (ORCID) (*) | 0000-0002-9197-4606 | | |

(*) Mandatory

A.1. Current position

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|-------------------|--|--|---|
| Position | Full Professor | | |
| Initial date | 22/04/2019 | | |
| Institution | University of Huelva | | |
| Department/Center | Chemical Engineering | Higher Technical School of Engineering | |
| Country | Spain | Teleph. number | + |
| Keywords | Rheology, lubricating greases and oils, emulsions, colloids, biopolymers, lignocellulosic materials, agitation and mixing, gels, adhesives | | |

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

The scientific career of Prof. Concepción Valencia began with the reading of her Bachelor's thesis and continued with her PhD thesis, studying 2-amino-2-deoxyaldoses reactions with isocyanates and isothiocyanates and the synthesis of heterocycles in the area of Organic Chemistry. She then began a long research career in the area of Chemical Engineering and related fields. Since then, she has carried out his research work in the framework of numerous projects developed with public and private funding, leading to a large number of research results. In the last years, the financing received has come from competitive public projects and contracts with companies, carrying out an important task of technology transfer to the industrial sector. In total, she has participated in more than 30 research projects with public funding, obtained in competitive calls, in some of them as a lead researcher, and in more than 40 contracts with private sector companies. Among the public projects, we should highlight those related to the improvement and innovation of lubricant and biolubricant formulations. The main scientific and technical achievements have focused on the modification of the rheological properties of lubricating greases by means of reactive and recycled polymeric additives, as well as on the development of biodegradable oleogels capable of replacing traditional lubricating greases formulated from non-renewable resources. The development of new thickeners based on chemical modifications of biopolymers to gel in vegetable oils should be highlighted. On the other hand, she has worked on projects related to the formulation and characterization of biodegradable oleogels for various industrial applications (lubricants, adhesives and coatings) from pretreated and/or chemically modified lignocellulosic fractions and the preparation of lignin nanoarchitectures obtained via electrospinning for structuring vegetable oils. As a result of these projects, several contracts financed by companies have subsequently been carried out. Prof. Valencia has 5 research six-year terms (sexenios), with the last date of a six-year term concession in 2020. She has published more than 121 scientific articles in journals indexed in recognized databases (Scopus, ISIWeb,...) in different categories



of the Journal Citation Reports (JCR) with more than 3325 citations, 328 citations/year in average last 5 years and h-index of 33. She is the editor of two books and also co-author of more than 140 contributions to national and international scientific conferences and congresses, as well as several patents. She has supervised 6 PhDs, 3 of them with European and International Mentions, and more than 36 Master's Final Works. She belongs to the research group "Complex Fluid Engineering", cataloged in the Andalusian Plan for Research, Development and Innovation (PAIDI) with the code TEP185 and recognized as a group of excellence. She has been the Coordinator of two Ph.D. Programs "Processes and Chemical Products" (MCD2006-00400) (2011-2017) and "Industrial and Environmental Science and Technology" (2015-2021) at the University of Huelva, as well as the Master "Product Formulation and Technology" at the University of Huelva (2011-2014) and the International University of Andalusia (2007-2011). On the other hand, she belongs to the Board of Directors of the Polymer Specialized Group of the Royal Spanish Society of Chemistry and Physics, since 2009. She has been Chair of the Organizing Committee of Scientific Congresses and member of different Scientific Committees of Congresses and an evaluator of the State Research Agency.

Part C. RELEVANT MERITS (sorted by typology)

C.1. Publications (see instructions)

M. Borrego, J. E. Martín-Alfonso, M. Sánchez, C. Valencia, J. M. Franco (2021) Electrospun lignin-PVP nanofibers and their ability for structuring oil. *Int. J. Biol. Macromol.* 180, 212-221.

A.M. Borrero-López, L. Wang, C. Valencia, J.M. Franco, O.J. Rojas (2021) Lignin effect in castor oil-based elastomers: Reaching new limits in rheological and cushioning behaviors. *Compos Sci Technol.* 203, 108602.

A.M. Borrero-López, C. Valencia, J.M. Franco (2020) Green and facile procedure for the preparation of liquid and gel-like polyurethanes based on castor oil and lignin: Effect of processing conditions on the rheological properties. *J. Clean. Prod.* 277, 123367.

A.M. Borrero-López, A. Blánquez, C. Valencia, M. Hernández, M.E. Arias, J.M. Franco (2019) Influence of solid-state fermentation with *Streptomyces* on the ability of wheat and barley straws to thicken castor oil for lubricating purposes. *Ind. Crops. Prod.* 140, 111625.

A.M. Borrero-López, A. Blánquez, C. Valencia, M. Hernández, M.E. Arias, M.E. Eugenio, U. Fillat, J.M. Franco (2018) Valorization of soda lignin from wheat straw solid-state fermentation: production of oleogels. *ACS Sustain. Chem. Eng.* 6, 5198-5205.

A.M. Borrero-López, C. Valencia, J.M. Franco (2017) Rheology of lignin-based chemical oleogels prepared using diisocyanate crosslinkers: Effect of the diisocyanate and curing kinetics. *Eur. Polym. J.* 89, 311-323.

R. Gallego, T. Cidade, R. Sanchez, C. Valencia, J.M. Franco. (2016) Tribological behaviour of novel chemically modified biopolymer-thickened lubricating greases investigated in a steel-steel rotating ball-on-three plates tribology cell. *Tribol. Int.* 94, 652-660.

R. Gallego, J.F. Arteaga, C. Valencia, M.J. Díaz, J.M. Franco (2015) Gel-Like Dispersions of HMDI-Cross-Linked Lignocellulosic Materials in Castor Oil: Toward Completely Renewable Lubricating Grease Formulations. *ACS Sustain. Chem. Eng.* 3, 2130- 2141.

E. Galbis, M.V. de Paz, K.L. McGuinness, M. Angulo, C. Valencia, J.A. Galbis (2014) Tandem ATRP/Diels-Alder synthesis of polyHEMA-based hydrogels, *Polym. Chem.* 5, 5391-5402.

R.Gallego, J.F. Arteaga, C.Valencia, J.M.Franco (2013) Rheology and thermal degradation of isocyanate-functionalized methyl cellulose-based oleogels. *Carbohydr. Polym.* 98, 15, 152-160.

C.3. Research projects

Title of project: Production of lignin nanofibers by electrospinning to be incorporated as a multifunctional ingredient in new biodegradable lubricating grease formulations (RTI2018-096080-B-C21). **Funding body:** MICINN. **Amount of subsidy:** 182.710 €. **Date of start:**



2019 **end:** 2022. **Name of the principal investigator:** José María Franco Gómez y Concepción Valencia Barragán. **Type of participation:** principal investigator.

Title of project: Integrated laboratory for microstructural characterization of complex materials (EQC2018-004207-P). **Funding body:** MICINN. **Amount of subsidy:** 337.399,20 €. **Date of start:** 2018 **end:** 2019. **Name of the principal investigator:** José María Franco Gómez. **Type of participation:** researcher.

Title of project: Formulation of biodegradable oleogels for various industrial applications from pre-treated and/or chemically modified lignocellulosic fractions (CTQ2014-56038-C3-1-R). **Funding body:** MINECO (DGICYT). **Amount of subsidy:** 175.450,00 €. **Date of start:** 2015 **end:** 2018. **Name of the principal investigator:** Concepción Valencia Barragán (UHU). **Type of participation:** principal investigator.

Title of project: Functionalization of natural polymers with isocyanate groups for the development of biodegradable oleogels with various industrial applications (TEP 1499). **Funding body:** Consejería de Economía, Innovación, Ciencia y Empresa (JA). **Amount of subsidy:** 143.194 €. **Date of start:** 2014 **end:** 2019. **Name of the principal investigator:** José M^a Franco Gómez (UHU). **Type of participation:** researcher.

Title of project: Integrated laboratory for thermo-mechanical Characterization of Materials (UNHU15-CE-2968). **Funding body:** MINECO (DGICYT). **Amount of subsidy:** 505.889,4 € **Date of start:** 2016 **end:** 2017. **Name of principal investigator:** José M^a Franco Gómez. **Type of participation:** Investigador

Title of project: Intelligent Structuring Systems for Complex Flowing Products (ISSFLOW) - PIAPP-GA-2013-612330. **Funding body:** European Union (Program FP7-PEOPLE-2013-IAPP). **Participating entities:** Procter & Gamble, Polymerexpert SA, Consorzio Interuniversitario per Lo Sviluppo dei Sistemi a Grande Interfase (CSGI), Katholieke Universiteit Leuven, UHU. **Amount of subsidy:** 481.608,35 €. **Date of start:** 2014 **end:** 2017 **Name of the principal investigator:** José M^a Franco Gómez (UHU). **Type of participation:** researcher

Title of project: Chemical modification of biopolymers for use as thickeners in the manufacture of biodegradable lubricating greases (CTQ2010-15338). **Funding body:** MICINN (DGI). **Amount of subsidy:** 119.790 €. **Date of start:** 2011 **end:** 2013. **Name of the principal investigator:** José M^a Franco Gómez (UHU). **Type of participation:** researcher

C.4. Contracts, technological or transfer merits

Title of Contract: Improvement of XTRAICE synthetic ice surfaces based on the physico-chemical properties of the materials. **Company:** Extraice, S.L. **Amount of funding:** 90.000 €. **Date of start and end:** Sep 2019–Feb 2021. **Principal investigator:** José M^a Franco Gómez

Title of Contract: Optimizing the emulsification process of parenteral emulsions by means of the microfluidization technique. **Company:** Fresenius Kabi Deutschland GMBH. **Amount of funding:** 73.058,82 €. **Date of start and end:** Mar 2019–Mar 2020. **Principal investigator:** José M^a Franco Gómez

Title of Contract: Use of the lipid extract of microalgae biomass for the design of parental emulsions. **Company:** Fresenius Kabi Deutschland GMBH. **Amount of funding:** 30.000 € **Date of start and end:** Dec 2017–Dec 2018. **Principal investigator:** José M^a Franco Gómez

Title of Contract: 3D printing product design for pharmaco-nutritional applications. **Company:** Fresenius Kabi Deutschland GMBH. **Amount of funding:** 60.000 €. **Date of start and end:** Nov 2016–Oct 2018. **Principal investigator:** José M^a Franco Gómez

Title of Contract: Cellulose fibers as rheology modifiers: enhancement and functionalization **Company:** Procter & Gamble. **Amount of funding:** 30.000 €. **Date of start and end:** Mar 2017–Apr 2018. **Principal investigator:** José M^a Franco Gómez

Title of Contract: Physicochemical characterization of marine oil-based parenteral emulsions **Company:** Fresenius Kabi Deutschland GMBH. **Amount of funding:** 105.000 €. **Date of start and end:** Oct 2015–Sept 2017. **Principal investigator:** José M^a Franco Gómez



Title of Contract: AFM observations of lubricating grease microstructures. Addendum: Correlation of structural and physical/ mechanical properties. **Company:** Kluber Lubrication Munchen KG. **Amount of funding:** 25.129 €. **Date of start and end:** Jul 2014-Dec 2014. **Principal investigator:** José M^a Franco Gómez

Title of Contract: New emulsifiers for parenteral emulsions. **Company:** Fresenius Kabi Deutschland GMBH. **Amount of funding:** 75.000 €. **Date of start and end:** Dec 2013– Nov 2014. **Principal investigator:** José M^a Franco Gómez

Title of Contract: Microstructural characterization of lubricating greases (preliminary tests) **Company:** Kluber Lubrication Munchen KG. **Amount of funding:** 20.444,40 €. **Date of start and end:** May 2013-Jul 2013. **Principal investigator:** José M^a Franco Gómez (UHU)

Title of Contract: Emulsion-based delivery systems for pharmaco-nutritional applications **Company:** Fresenius Kabi Deutschland GMBH. **Amount of funding:** 145.000 €. **Date of start and end:** Jan 2013–Dec 2014. **Principal investigator:** José M^a Franco Gómez

Title of Patent: Biodegradable lubricating greases and the procedure for obtaining them from waste oleins. **Authors:** L.A Garcia-Zapaterio, C. Valencia, M.A. Delgado, C. Gallegos, J.M Franco. **N. application:** 201330956. **Priority countries:** CEE. **Priority Date:** 25/06/2013. **N of patent:** ES 2 525 892 A1. **Publication date:** 30/12/2014. **Holder entity:** University of Huelva y University of Cartagena (Colombia)

Title of patent: Compositions for dysphagia assessment. **Authors:** C. Gallegos, E. Brito de la Fuente, J. Mainou, L.A. Quinchia, M. Jozami, C. Valencia, J.M. Franco. **N. application:** EP12159590.4. **Priority countries:** CEE. **Priority Date:** 15/03/2012. **N of patent:** EP12159590. **Holder entity:** Fresenius Kabi Deutschland GmbH and University of Huelva. **Countries to which it has spread:** USA (+PCT). **N. application:** US201261611053P (WO2013EP55064/WO2013135737(A1)). **Priority Date:** 15/03/2012. **N of patent:** 61611053. Companies that are exploiting: Fresenius Kabi Deutschland GmbH