

## 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	Gladys		
Family name	Mínguez Vega		
Gender	Female	Birth date:	10/05/1974
Social Security, Passport, ID number			
e-mail		URL Web:	<a href="https://www.groc.uji.es/">https://www.groc.uji.es/</a>
Open Researcher and Contributor ID (ORCID)	<a href="https://orcid.org/0000-0003-4994-1859">0000-0003-4994-1859</a>		

#### A.1. Current position

Position	Full Professor		
Initial date	August 2022		
Institution	Universitat Jaume I		
Department/Center	Physics Department	Science and Technology Faculty	
Country	Spain	Teleph. number	
Key words	Ultrashort lasers, nanomaterials, photonics		

#### A.2. Previous positions

Period	Position/Institution/Country/Interruption cause
24/02/2009 – 5/9/2022	Professor (University Jaume I, Spain)
1/1/2019-31/12/2022	Physics department secretary (University Jaume I, Spain)
1/6/2015- up to now	Head of the Lasers and Physical Properties Measurement Section of the SCIC (Universitat Jaume I, Spain)

#### A.3. Education

PhD, Licensed, Graduate	University/Country	Year
Degree in Physics	Universitat de València	1997
PhD in Physics	Universitat de València	2002

### Part B. CV SUMMARY

I contributed to the generation of knowledge by the development of three research lines along my career. The first one deals about the **compensation of chromatic dispersion** associated with the propagation of white light in free space. To this end, we needed to combine refractive and diffractive elements and I learned the main properties of polychromatic light and diffractive optics. The second line began in 2005 thanks to the acquisition of a femtosecond (fs) laser with FEDER funds. I used my previous knowledge to control broadband ultrashort lasers pulses spatiotemporally by using **spatial light modulators**. Here, we were pioneers in Spain in use this technology with pulses of less than 35 fs. In 2013, I began the third line about laser processing of materials. Specifically, I focused on the **synthesis of nanomaterials**, because it gives us an opportunity to develop nanotechnology in a green and sustainable procedure and collaborate to the European Green Deal and with the SDG Agenda 2030.

I developed several cutting-edge technologies but now I would like to highlight just few of my contributions that, from my point of view, are more relevant for ESTELA project or in the context of technological development, social impact and/or technological transfer:

- We have developed a high resolution multifocal processing station with fs lasers (DOI: [10.1364/OL.31.002631](https://doi.org/10.1364/OL.31.002631), [10.1364/OE.21.031830](https://doi.org/10.1364/OE.21.031830)). We discovered a pioneering solution to avoid the spatiotemporal broadening of femtosecond pulses when passing through any type of diffractive element. This system allowed us to **improve the speed of material processing in a factor 50**. Thanks to its relevance, we obtained financing for its transfer from the company



Proton Laser Applications S.L. Also, it was mentioned in international popularization magazines, as [Optics & Photonics News \(May 2014\)](#) and [Europhotonics \(Spring 2015\)](#).

- In an international collaboration led by Prof. Elson Longo from the Universidade Federal de São Carlos (Brazil), we worked in the study of the biocidal properties of silver tungsten after its irradiation with a fs laser. The laser generates the reduction of silver and its segregation as nanoparticles. This product has bactericidal, virucidal, fungicidal effects and it can **inactivate the virus of SARS-CoV-2** that provokes the COVID-19 disease (DOI: [10.1038/s41598-018-19270-9](#), [10.1038/s41598-022-11902-5](#)). Our results are so promising that we filed a patent application in Brazil (BR1020190154730) and the company Nanox Intelligent Materials has it in its target. This research has also impacted in the scientific community as one of our papers was selected as "[Top 100 in Material Science](#)" in 2019. Also, we disseminate our research results, with more than 20 contributions on mass media. As an example, we can see a news in [newspapers](#), [internet](#), [Facebook](#), and [YouTube](#).

- In the last years, I have focused in improving the productivity in the synthesis of nanomaterials with laser (DOI: [10.1364/PRJ.7.001249](#), [10.1021/acsomega.7b02082](#)) and in the development of carbon quantum dots (CQDs) as a material for **bioimaging and optical sensing**. In 2020, ACS Omega magazine selected me, as one of the [fifty women of reference in the leadership of women scientists](#). This work was the precursor of the Marie-Curie IF GLUCOTEAR grant (Grant agreement ID: 751249), where we developed a technique to manufacture CQDs, thanks to which we filed a European patent application with international extension (reference EP19382521.3 - PCT/EP2020/067060). Also, the efficient production of nanoparticles allowed us to join the project "[Nanouptake](#)" (COST Action CA15119) with high social repercussion.

In numbers, I have worked with 129 co-authors, 40 of them foreigners and I have international collaborators from 10 different countries. I am co-author of 68 international publications indexed in the JRC (47 of them in the Q1) and two book chapters. I have participated in 22 competitive calls with a total amount of more than 2 M€, being the PI in 7 of them. Since 2017, I have exerted strategic leadership as co-coordinator of the [GROC-UJI](#), where I have co-directed 10 advanced projects and 4 doctoral theses (currently, I am co-directing three more). Two of the doctoral student that I supervised, [Carlos Doñate](#) and [Rafael Mendoza](#), are currently Group leaders in synthesis of nanomaterials with laser in the University of Wuppertal and of Liberec, respectively. I participated in the organizing and scientific committee of 5 international congress. I have contributed to wider research community by participating in the panel to select "Ramon y Cajal" grants in 2022 and the revision of research projects for the German Research Foundation. Finally, I would like to highlight that almost every year, I carry out dissemination actions, many of them linked to the **presence of women in science and technology**, and I bring my research closer to the public through my Twitter account with a professional profile [@MinguezVega](#).

## Part C. RELEVANT MERITS

### C.1. Publications

1 **Scientific paper.** Inna Y. Khairani, Gladys Mínguez Vega, Carlos Doñate Buendía, Bilal Gökce "Green nanoparticle synthesis at scale: a perspective on overcoming the limits of pulsed laser ablation in liquids for high-throughput production". Physical Chemistry Chemical Physics 29 (2023) pp. 19380-19408.

2 **Scientific paper.** Pereira, Paula Fabiana Santos, Ana Carolina Alves de Paula e Silva, Bruna Natália Alves da Silva Pimentel, Ivo Mateus Pinatti, Alexandre Zirpoli Simões, Carlos Eduardo Vergani, Débora Ferreira Barreto-Vieira et al. "Inactivation of SARS-CoV-2 by a chitosan/ $\alpha$ -Ag<sub>2</sub>WO<sub>4</sub> composite generated by femtosecond laser irradiation." Scientific Reports 12, no. 1 (2022): 1-18.

3 **Scientific paper.** Ivo M. Pinatti; Amanda F. Gouveia; Carlos Doñate Buendía; Gladys Mínguez Vega; Juan Manuel Andrés Bort; Elson Longo. (4/6). "Femtosecond-laser-irradiation-induced structural organization and crystallinity of Bi<sub>2</sub>WO<sub>6</sub>" Scientific Reports. 10, (2020) pp.1-14.

4 **Scientific paper.** Alexandra Gimeno Furió; Raúl Martínez Cuenca; Rosa Mondragón Cazorla; Antonio Fabian Vela Gasulla; Carlos Doñate Buendía; Gladys Mínguez Vega; Leonor Hernández López. (6/7). "Optical characterisation and photothermal conversion efficiency of a

water-based carbon nanofluid for direct solar absorption applications” Energy. 212, (2020) pp.1-10.

5 **Scientific paper.** Carlos Doñate Buendía; María Mercedes Fernández Alonso; Jesús Lancis Sáez; Gladys Mínguez Vega. (4/4). “Overcoming the barrier of nanoparticle production by femtosecond laser ablation in liquids using simultaneous spatial and temporal focusing” Photonics Research 7, (2019) pp.1249-1257.

6 **Scientific paper.** Nadia G. Macedo; Thales R. Machado; Roman A. Roca; Elson Longo, et al; (7/13). “Tailoring the Bactericidal Activity of Ag Nanoparticles/ $\alpha$ -Ag<sub>2</sub>WO<sub>4</sub> Composite Induced by Electron Beam and Femtosecond Laser Irradiation: Integration of Experiment and Computational Modeling” ACS Applied Biomaterials 2, (2019) pp.824-837.

7 **Scientific paper.** Carlos Doñate Buendía; Rafael Omar Torres Mendieta; Alexander Pyatenko; Eva Falomir Ventura; María Mercedes Fernández Alonso; Gladys Mínguez Vega. (6/6) Fabrication by Laser Irradiation in a Continuous Flow Jet of Carbon Quantum Dots for Fluorescence Imaging ACS Omega. 3, (2018) pp.2735-2742.

8 **Scientific paper.** Marcelo Assis; Eloísa Cordoncillo Cordoncillo; Rafael Omar Torres Mendieta; Juan Andrés, et al; (5/11). “Towards the scale-up of the formation of nanoparticles on  $\alpha$ -Ag<sub>2</sub>WO<sub>4</sub> with bactericidal properties by femtosecond laser irradiation” Scientific Reports 8, (2018) pp.1-11.

9 **Scientific paper.** Rafael Torres-Mendieta, Rosa Mondragón, Verónica Puerto-Belda, Omel Mendoza-Yero, Jesús Lancis, J Enrique Juliá, Gladys Mínguez-Vega (8/8) “Characterization of tin/ethylene glycol solar nanofluids synthesized by femtosecond laser radiation” ChemPhysChem 18(2017) pp. 1055-1060.

10 **Scientific paper.** S. Torres-Peiró; J. González-Ausejo; O. Mendoza-Yero; G. Mínguez-Vega; J. Lancis. 2014. Femtosecond laser micromachining with extended depth of focus by using diffractive lenses Applied Surface Science. 303, (2014) pp.393-398.

## C.2. Congress

1 **Invited talk.** Carlos Doñate-Buendía, Sergio Molina-Prados, Francis Rey Cortes, Jesús Lancis, Eva Falomir, Gladys Mínguez-Vega, “From fs-LSPC productivity improvement to the inactivation of SARS-CoV-2 virus” Satellite ANGEL, Padova (Italy), February 2023.

2. **Invited talk.** Carlos Doñate-Buendía, Sergio Molina-Prados, Francis Rey Cortes, Jesús Lancis, Gladys Mínguez-Vega, “Nanomaterials fabricated by pulsed laser synthesis in liquids” Ultrafast Science & Technology Spain 2022, Malaga (Spain), November 2022.

3. **Invited talk.** Carlos Doñate-Buendía, Sergio Molina-Prados, Francis Rey Cortes, Gladys Mínguez-Vega, “Nanomaterials synthesized by pulsed lasers in liquids” 25th Congress of the International Commission for Optics (ICO), Dresden (Germany), September 2022.

4. **Oral presentation.** Francis R. Cortes, E. Falomir, and G. Mínguez Vega “Production of Water-soluble Fluorescent Carbon Quantum Dots through Nanosecond Pulsed Laser Ablation in Liquid” 25th Congress of the International Commission for Optics (ICO), Dresden (Germany), September 2022.

5. **Oral presentation.** A. Puerto, C. López Fernández, J. L. Bella, I. Elvira, María Gladis Mínguez Vega, A. García Cabañes, M. Carrascosa. “Fluorescence enhancement based on plasmonic nanoparticle structures on ferroelectric platforms for bioimaging applications” SPIE Optical Metrology. Online (Germany). June 2021.

6. **Oral presentation.** Í. J. Sola, Jorge Pérez Vizcaíno, María Gladis Mínguez Vega, C. Hernández-García, B. Alonso. “Controlling the spatio-temporal distribution of ultrashort pulses near focus by means of diffractive focusing and pulse shaping” Conference on Lasers and Electro-Optics Europe and European Quantum Electronics Conference (CLEO/Europe-EQEC 2019). Munich (Germany). June 2019.

## C.3. Research projects

1 **Project.** PID2022-142907OB-I00, CARACTERIZACIÓN Y CONTROL ESPACIOTEMPORAL DE HACES DE LUZ Y SU APLICACIÓN A LAS CIENCIAS DE LA VIDA. Ministerio de Ciencia e Innovación. P.I: Enrique Tajahuerce (Universidad Jaime I) and Gladys Mínguez Vega. 01/09/2023-31/08/2025. 268.750,00 €.

2 **Project.** PID2019-110927RB-I00, CONTROL INTELIGENTE DE HACES DE LUZ APLICADO A LAS CIENCIAS DE LA VIDA (BRIGHT). Agencia Estatal de Investigación. P.I:

Enrique Tajahuerce (Universitat Jaume I) and Gladys Mínguez Vega. 01/06/2020-31/05/2023. 221.430 €.

3 **Project.** *UJI-B2019-37*, IMPROVEMENT OF THE BACTERICIDAL PROPERTIES OF DENTAL ADHESIVE MATERIALS THROUGH NANOPARTICLES SYNTHESIZED BY PULSED LASER ABLATION IN LIQUIDS. Universitat Jaume I. P.I. Gladys Mínguez Vega. 01/01/2020-31/12/2022. 24.000 €.

4 **Project.** *PROMETEO/2020/029*, SMART CONTROL OF THE LIGHT BEAMS (SLAB). Generalitat Valenciana CONSELLERIA D'INNOVACIÓ, UNIVERSITATS, CIÈNCIA..P.I; Jesús Lancis Sáez. (Universitat Jaume I). 01/01/2020-31/12/2023. 231.721 €.

5 **Project.** Non-Invasive Fluorescence-based Tear Glucose Sensor Integrated to a Smartphone. MSCA IF European Union. P.I Jesús Lancis (Universitat Jaume I). 01/03/2018-29/02/2020. 170.121 €.

6 **Project.** *UJI-B2016-19*, PLASMONIC SENSOR BASED ON COLLOIDAL NANOPARTICLES SYNTHESIZED BY PULSED LASER ABLATION. Universidad Jaime I. P.I. Gladys Mínguez Vega. (Universitat Jaume I). 01/01/2017-31/12/2019. 40.000 €

7 **Project.** *FIS2016-75618-R*, ÓPTICA COMPUTACIONAL Y CONTROL DIGITAL DE HACES DE LUZ. APLICACIONES EN IMAGEN A TRAVÉS DE MEDIOS TURBIOS Y EN SÍNTESIS LÁSER DE NANOMATERIALES. MINISTERIO DE ECONOMIA Y COMPETITIVIDAD. P.I: Jesús Lancis Sáez. (Universitat Jaume I). 30/12/2016- 29/12/2019. 121.000 €.

8 **Project.** *AICO/2016/036*, FABRICATION OF BIOCOMPATIBLE "GREEN" COLLOIDAL NANOPARTICLES BY SPATIAL AND TEMPORAL FOCUSING OF FEMTOSECOND PULSES. Generalitat Valenciana CONSELLERIA DE EDUC, INVESTIGACIÓN, CULTURA Y DEPORTE. PI:Gladys Mínguez Vega. (Universitat Jaume I). 01/01/2016-31/12/2017. 40.000 €.

9 **Project.** *FIS2016-75618-R*, ÓPTICA COMPUTACIONAL Y CONTROL DIGITAL DE HACES DE LUZ. APLICACIONES EN IMAGEN A TRAVÉS DE MEDIOS TURBIOS Y EN SÍNTESIS LÁSER DE NANOMATERIALES. MINISTERIO DE ECONOMIA Y COMPETITIVIDAD. P.I, Jesús Lancis Sáez. (Universitat Jaume I). 30/12/2016-29/12/2019. 121.000 €.

10 **Project.** APLICACIÓN DEL CONFORMADO ESPACIAL Y TEMPORAL DE PULSOS ULTRACORTOS A LA GENERACIÓN DE EFECTOS ÓPTICOS NO LINEALES. Universidad Jaime I. PI Gladys Mínguez Vega. (Universitat Jaume I). 01/01/2014-31/12/2016. 39.600 €.

#### **C.4. Contracts, technological or transfer merits**

1 **Patent.** Nadia Guerra; Thales Machado; Román Álvarez; Marcelo De Assis; Camila De Fogg; Elson Longo; André Rodrigues; Miguel San Miguel; Juan Andrés; Eloisa Cordoncillo; Hector Beltran; Gladys Mínguez; Veronica Puerto. BR 10 2019 015473 0. COMPOSTO BASEADO EM ÍONS DE PRATA E NANOPARTÍCULAS DE PRATA COM ALTA ATIVIDADE ANTIMICROBIANA E MÉTODO PARA SUA OBTENÇÃO Brasil. 26/07/2019.

2 **Patent.** Wycliffe Kipnusu; Gladys Mínguez Vega; Jesus Lancis; Mercedes Fernández; Carlos Doñate. P5173EP00. CARBON QUANTUM DOTS WITH IMPROVED OPTICAL PROPERTIES 20/06/2019. Universidad Jaime I.

3 **Contract.** ESTUDIO DE PROSPECCIÓN DE LOS POTENCIALES USOS DE NANOFLUIDOS Y NANOCAOMPUESTOS EN EL SECTOR DE LOS ELECTRODOMÉSTICOS BSH Electrodomésticos España, S.A. P.I Rosa Mondragón Cazorla. (Universitat Jaume I). 02/12/2020-02/01/2021. 5.000 €.

4 **Contract.** CONSTRUCCIÓN Y OPTIMIZACIÓN DE UN SISTEMA DE MODULACIÓN ESPECTRAL DE HACES LÁSER DE SUPERCONTINUO FYLA LASER S.L. P.I Enrique Tajahuerce and Gladys Mínguez. 21/03/2019-01/10/2020. 14.950 €

5 **Contract.** DISEÑO Y CONSTRUCCIÓN DE UN SISTEMA ÓPTICO PARA EL CONFORMADO ESPECTRAL DE HACES LÁSER DE SUPERCONTINUO FYLA LASER S.L. P.I. Jesús Lancis 06/07/2016-28/02/2018. 17.900 €.

6 **Contract.** ESTUDIO DE IDONEIDAD DE LÁSER PARA SU ACOPLAMIENTO A UN SISTEMA MODULADOR DE LUZ Proton Laser Applications S.L. P.I: Jesús Lancis. 18/11/2014-18/02/2015. 6.000 €.

7 **Contract.** Colector solar cilíndrico-parabólico de material cerámica. CDTI. P.I: Vicent Climent Desde 09/06/2009. 51.470 €.