MINISTERIO DE CIENCIA E INNOVACIÓN

**CURRICULUM VITAE (maximum 4 pages)**

AGENCIA ESTATAL DE INVESTIGACIÓN

## Part A. PERSONAL INFORMATION

| CV date | May 8th 2023 |
|---|---|

| | | | |
|---|---|---|---|
| First and Family name | Javier Rodríguez Vázquez de Aldana | | |
| Social Security, Passport, ID number | 07964791Y | Age | 47 |
| Researcher codes | Open Researcher and Contributor ID (ORCID**) | 0000-0002-5264-8525 | |
| | SCOPUS Author ID (*) | 6602974657 | |
| | WoS Researcher ID (*) | D-6299-2011 | |

*(*) Optional*
*(**) Mandatory*

### A.1. Current position

| | | | |
|---|---|---|---|
| Name of University/Institution | Universidad de Salamanca | | |
| Department | Física Aplicada | | |
| Address and Country | Pl. La Merced SN. 37008, Spain | | |
| Phone number | +34923294678 | E-mail | jrval@usal.es |
| Current position | Titular de Universidad | From | 2018 |
| Key words | Photonics, Lasers, Non-linear optics, Laser-matter interaction | | |

### A.2. Education

| PhD, Licensed, Graduate | University | Year |
|---|---|---|
| PhD in Science | Universidad de Salamanca | 2001 |
| Graduate in Physics | Universidad de Salamanca | 1997 |

### A.3. General indicators of quality of scientific production

*Six-years research periods*

4/4 recognized (last one 2016-2021)

*Supervised doctoral thesis*

1. Carolina Romero Vázquez. Title: *Optical Parametric Processes with Femtosecond Pulses in Nonlinear Crystals. Novel Schemes and Applications*. Date: April 27th 2012. Grade: Sobresaliente Cum Laude. Extraordinary doctorate award. European doctorate mention.
2. Rocío Borrego Varillas. Tittle: *Role of wavefront aberrations of amplified femtosecond pulses in nonlinear optics*. Date: January 18th 2013. Grade: Sobresaliente Cum Laude. European doctorate mention.
3. Gabriel Castillo Vega. Tittle: *Ultrafast Laser Microprocessing of Transparent Dielectrics. New Schemes for the Fabrication of Photonic Devices.* Date: September 11nd 2017. (Co director: Prof. Santiago Camacho López). Grade: Sobresaliente Cum Laude.
4. Javier García Ajates. Tittle: *Diseño y fabricación de circuitos fotónicos integrados 3D mediante microprocesado con láseres pulsados*. Date: October 2021. Grade: Sobresaliente Cum Laude.

*Bibliometric data (extracted from Web of Science)*

- H-index: **30**
- Number of papers in indexed WoS journals: **198**
- Total number of citations: **3660**
- Citations/year in the last 5 years: **370**

*Bibliometric data (extracted from Scholar Google)*

- H-index: **34**
- Number of papers: **264**
- Total number of citations: **4635**

**Part B. CV SUMMARY** *(max. 3500 characters, including spaces)*

The scientific career of the researcher has been mainly focused in the interaction of ultrashort laser pulses with matter, both from the fundamental point of view as in the applications one. He did his PhD in the Ultraintense Lasers Group (Prof. Luis Roso, University of Salamanca) in theory and numerical simulation, and then he moved to experimental research in ultrashort laser pulses. At present, he is member of the Laser Applications and Research Group (Prof. Luis Plaja) where he leads the research line about fabrication of photonic devices with femtosecond lasers.

He is coauthor of more than 170 papers in JCR-indexed journals, and more than 140 are related to materials processing with ultrashort lasers. In his professional trajectory, he was involved in the "Laser Service" of the University of Salamanca, giving scientific and technical support to external users, as well as in the "Spanish Center for Pulsed Lasers-CLPU" (Spanish scientific infrastructure) being responsible for the materials processing laboratory. In the last years, his work at the University of Salamanca has been mainly focused on the design and fabrication of photonic devices by femtosecond laser irradiation for different fields: biosensing, atmospheric sensing, lab-on-a-chip devices or astro-photonics. He has also experience and publications in subcellular laser surgery, biological tissues laser damage, and processing of bio-compatible materials. In his current research, he holds active scientific collaboration with more than 12 international research groups. He has participated as researcher in more than 25 funded projects, being PI in 3 of them. In his professional career it should be highlighted also the research-transfer activity, participating in more than 55 research contracts (art. 83 LOU) both with national as international companies/institutions, being PI in 10 of them.

Concerning teaching and training skills, he has supervised 4 doctoral thesis, 14 master thesis and 10 undergraduate final projects. He has experience as evaluator in international research programs, and also as reviewer for more than 30 JCR journals.

**Part C. RELEVANT MERITS** *(sorted by typology)*

**C.1. Publications (main publications since 2013)**

1. M. Grotevent et al., "Integrated photodetectors for compact Fourier-transform waveguide spectrometers" Nature Photonics 17, 59 (2023).
2. Z. Li, Ch. Pang, R. Li, N. Dong, L. W. J.R. Vázquez de Aldana, Q. Lu, F. Ren, J. Wang, and F. Chen, "Near-Infrared All-Optical Switching Based on Nano/Micro Optical Structures in YVO4 Matrix: Embedded Plasmonic Nanoparticles and Laser-Written Waveguides," Advanced Photonics Research 2, 2000064 (2021).
3. E. Kifle P. Loiko, C. Romero, […] X. Mateos, (4/10) "Watt-level ultrafast laser inscribed thulium waveguide lasers", Progress in Quantum Electronics 72, 100266 (2020).
4. J.R. Vázquez de Aldana, C. Romero, J. Fernandez, G. Gorni, M.J. Pascual, A. Durán y R. Balda, "Femtosecond laser direct inscription of 3D photonic devices in Er/Yb-doped oxyfluoride nano-glass ceramics" Optical Materials Express 10, 2695 (2020).
5. E. Kifle, P. Loiko, J.R. Vázquez de Aldana, […] X. Mateos, "Passively Q-switched fs-laser-written thulium waveguide laser based on evanescent field interaction with carbon nanotubes", Phot. Res. 6, 971-980 (2018).
6. W. Nie, R.Li, Ch. Cheng, […] F. Chen, (7/9) "Room-temperature subnanosecond waveguide lasers in Nd:YVO4 Q-switched by phase-change VO2: A comparison with 2D materials", Scientific Reports 7, 46162 (2017).
7. G.H. Li, HY. Li, R.M. Gong, Y. Tan, J.R. Vázquez de Aldana, F. Chen, "Intracavity biosensor based on the NdYAG waveguide laser: tumor cells and dextrose solutions", Photonics Research 5, 728-732 (2017).
8. R. He, J.R. Vázquez de Aldana, G. Lifante, F. Chen, D. Jaque, "Two-photon luminescence thermometry: towards 3D high-resolution thermal imaging of waveguides". Optics Express 24, 16156-16166 (2016).

9. F. Chen, and J. R. Vazquez de Aldana, “Optical waveguides in crystalline dielectric materials produced by femtosecond- laser micromachining,” Laser & Photonics Reviews 8, 251-275 (2014).
10. Y. Jia, C. Cheng, JR Vázquez de Aldana, […] F. Chen, “Monolithic crystalline cladding microstructures for efficient light guiding and beam manipulation in passive and active regimes”, Scientific Reports 4, 5988 (2014).

**C.2. Research projects**

1. “Estudio y desarrollo de un proceso de fabricación aditiva de alta protección basado en la deposición directa de metal por hilo mediante multi laser (LWMD) para el procesado de materiales de alta reactividad. Aplicación a implantes en Ti64-ELI. ATiLA (PLEC2022-009392)”. Funding agency: Ministerio de Ciencia e Innovación. 10/2022-10/2025. 1.002.162 €. Role: researcher.
2. “Advanced Ultrafast Optics and Integrated photonics for organ-on-chip and biomedical applications (AUTOGRAPH) (PID2020-119818GB-I00)”. P.I.: Iñigo Sola y Javier Rodríguez (Universidad de Salamanca). Funding agency: Ministerio de Ciencia e Innovación. 09/2021-12/2024. 157.300 €. Role: P.I.
3. “Nuevas aplicaciones de la fotónica ultrarrápida en el campo de la fecundación in vitro (FIV): lab-on-a-chip y monitorización no invasiva (SA136P20)”. P.I.: Javier Rodríguez Vázquez de Aldana (Universidad de Salamanca). Funding agency: Consejería de Educación de la Junta de Castilla y León. 11/2020-12/2023. 264.000 €. Role: P.I.
4. “Generación, modelado y caracterización de haces láser pulsados especiales: nuevas herramientas fotónicas (SA287P18)”. P.I.: Íñigo Sola (Universidad de Salamanca). Funding agency: Consejería de Educación de la Junta de Castilla y León. 1/2019-12/2021. 119.499 €. Role: researcher.
5. “Fotónica integrada ultrarrápida (FIS 2017-87970-R)”. P.I.: Pablo Moreno e Íñigo Sola (Universidad de Salamanca). Funding agency: Ministerio de Economía y Competitividad. 01/2018-12/2020. 90.750 €. Role: researcher
6. “Desarrollos tecnológicos de los láseres de potencia y pulso corto: Fabricación de dispositivos fotónicos 3D y aplicaciones de la respuesta óptica ultrarrápida (SA046U16)”. P.I.: Luis Plaja (Universidad de Salamanca). Funding agency: Junta de Castilla y León. 01/2016 a 12/2018. 119.949 €. Role: researcher
7. “Fabrication of Biocompatible Green coloidal nanoparticles by spatial and temporal focusing of femtosecond pulses (AICO/2016/036)”. P.I.: Gladys Minguez Vega (Universitat Jaume I, Castelló). Funding agency: Generalitat Valenciana. 01/2016 a 12/2017. 40.000 €. Role: researcher
8. “Fronteras de la Óptica Ultrarrápida: ciencia y aplicaciones de los pulsos de femto y attosegundo (FIS2013-44174-P)”. P.I.: Luis Plaja Rustein y Pablo Moreno Pedraz (Universidad de Salamanca). Funding agency: Ministerio de Economía y Competitividad. 01/01/2014- 31/12/2016. 100.000 €. Role: researcher
9. “Óptica no lineal extrema: Procesos fundamentales y aplicaciones de los láseres ultracortos ultraintensos (FIS2009-09522)”. P.I.: Luis Plaja (Universidad de Salamanca). Funding agency: Ministerio de Educación y Ciencia. 01/01/2010-31/12/2013. 490.050 €. Role: researcher
10. “Science and applications of Ultrashort Ultraintense Lasers SAUUL (CSD2007-00013)”. Funding agency: Ministerio de Educación y Ciencia. P.I.: Luis Roso. (Universidad de Salamanca). 01/2007-12/2013. 4.500.000 €. Role: researcher

**C.3. Research contracts (art. 83 LOU)**

1. “Optical waveguides for astrophotonic fabricated by directed laser irradiation” Institut de Planetologie et d’Astrophysique de Grenoble. 1/02/2022 a 30/04/2022. P.I.: C. Romero Vázquez. 3.000 €
2. “Fabrication of complex photonic circuits in glasses with femtosecond pulses (ID18LI7L)” Institut de Planetologie et d’Astrophysique de Grenoble. 15/11/2019 a 29/02/2020. P.I.: J.R. Vázquez de Aldana. 1.500 €

3. “Fabrication of complex photonic circuits in glasses with femtosecond pulses” Institut de Planetologie et d’Astrophysique de Grenoble. 1/5/2019 a 15/9/2020. P.I.: J.R. Vázquez de Aldana. 3.000 €
4. “Inscription of circular cladding waveguides by femtosecond laser irradiation (2017/00233/001)”. MICOS Engineering for Remote Gmbh (Suiza). 15/9/2017 a 15/10/2017. P.I.: J.R. Vázquez de Aldana. 795 €
5. “Fabricación de patrones de micro-poros en muestras de grafeno por irradiación con pulsos ultracortos (2017/00248/001)”. Universitat Politecnica de Valencia. 1/7/2017 a 30/9/2017. P.I.: J.R. Vázquez de Aldana. 1.355 €
6. “Fabrication of surface cladding waveguides in LINbO3 crystals by femtosecond lase irradiation (2017/00009/001)”. MICOS Engineering Gmbh (Suiza). 10/1/2017 a 30/06/2017. P.I.: J.R. Vázquez de Aldana. 2.500 €
7. “Fabrication of optical waveguides in glasses with femtosecond pulses (2017/00009/001). Institut de Planetologie et d’Astrophysique de Grenoble. 15/10/2016 a 31/12/2016. P.I.: J.R. Vázquez de Aldana. 3.000 €
8. “Fabrication of cladding waveguides in LiNbO3 crystal by femtosecond laser” (2015/00099/001).” MICOS Engineering GmbH. 01/05/2015 a 01/06/2015. P.I.: J.R. Vázquez de Aldana. 785 €
9. “Fabrication of optical waveguides in LiNbO3 crystal by femtosecond laser irradiation (2015/00098/001).” MICOS Engineering GmbH. 01/05/2015. P.I.: J.R. Vázquez de Aldana. 735 €
10. “Preliminary tests for the fabrication of 3D optical waveguides in crystals by femtosecond laser irradiation”. Institut de Planetologie et d'Astrphysique de Grenoble. 14/04/2015. P.I.: J.R. Vázquez de Aldana. 750 €

### C.4. Patents

Javier Rodríguez Vázquez de Aldana; Cruz Méndez; Gustavo A. Torchia; Luis Roso. 200601003. Divisor de haz de luz generador de segundo armónico integrado en un cristal doblador de frecuencia. España. 2006. Universidad de Salamanca.

### C.5. Training skills and student supervision

1. Doctoral thesis: 4
2. Master thesis (Máster en Física y Tecnología de los Láseres, USAL): 14
3. Undergraduate final projects (Grado en Física, USAL): 10

### C.6. Evaluation activities

1. Disertation committees (doctoral thesis): 9.
2. Expert evaluator for the “Consejo Nacional de Ciencia y Tecnología de México” in the framework of the research projects program “Ciencia de Frontera 2019”.
3. Expert evaluator for the Austrian Science Fund (FWF) in the framework of research projects Hertha Fimberg, call 2017.
4. Expert evaluator for Marie Skłodowska-Curie grant agreement No. 945413-Martí Marqués Doctoral programme cofund (Rovira I Virgili). Calls 2020 and 2021.
5. Referee of scientific papers in more than 30 journals of several editorials: Nature.com, Optical Society of America, Springer, IEEE, SPIE, IOP, MDPI.