MINISTERIO DE CIENCIA, INNOVACIÓN Y UNIVERSIDADES

CURRICULUM VITAE (maximum 4 pages)

Part A. PERSONAL INFORMATION

CV date	12/09/2022

First and Family name	Paloma Rodríguez Horche		
Passport, ID number			
Researcher numbers		Researcher ID	F-6441-2015
		Orcid code	0000-0002-3559-8159

A.1. Current position

Name of University/Institution	Universidad Politécnica de Madrid			
Department	Dpto. Tecnología Fotónica y Bioingeniería/ETSI Telecomunicación			
Address and Country	Avda, Complutense , 30. Madrid 28040			
Phone number	**913367306**	**correo electrónico**	**p.rhorche@upm.es**	
Current position	CU		Fecha inicio	30/09/2019
Espec. cód. UNESCO	220905/330707			
Palabras clave	Optical Communications Network, WDM systems, Filtering and optical routing devices, Directly Modulated Laser (DML), Photonics and Biophotonics Sensors.			

A.2. Education

PhD	University	Year
Ingeniero de Telecomunicación Calificación Media: **Notable**	ETSIT - Universidad Politécnica de Madrid	Julio 1986
Doctor Ingeniero de Telecomunicación, Calificación**: Apto Cumlaude por Unanimidad.**	ETSIT- Universidad Politécnica de Madrid	Sept. 1991

A.3. JCR articles, h Index,

Sexenios: 4 + 1 de transferencia, **Índice h**: 11. **Thesis supervised**: 5. **WOS-JCR (20**): Q1 (3), Q2 (13), Q3 (3), Q4(1). **SCOPUS-SJR (11):** Q1 (1), Q2 (7), Q3 (3).

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

I received my Telecommunication Engineering degree (six years engineering program) in 1986 and my PhD degree in Ingeniero de Telecomunicación in 1991, both from the Universidad Politécnica de Madrid - UPM. Since 1990, I have been a member of the faculty of the School of Telecommunication Engineering, ETSIT–UPM, currently as a Professor Titular de Universidad of Optical Communications in the Department of Photonic Technology and Bioengineering. My main research activities are in the area of Optical Network Communications with special emphasis on the fields of wavelength division multiplexing (WDM) technology. My research is focused on the development (theoretical and experimentally) of spectral filter devices, dynamic optical switching (ROADM) devices, lasers modulated directly (DML). In addition, I study the advanced modulation formats for their use in coherent optical communications.

I am the author or co-author of more than 70 publications (Book chapters, indexed journals, and congress) and Principal Investigator (PI) of 5 research projects (MINECO), 4 contracts, 9 Educational Innovation Projects.

I was Academic Secretary of ETSIT–UPM from 1994 to 1998, Deputy Director of Photonic Technology and Bioengineering Department from Dec. 2010 to Nov. 2012 and March 2015 to February 2017 and Academic Secretary of Department from Nov. 2012 to Sept. 2014.

Part C. RELEVANT MERITS (last 10 years)

C.1.A Publications

- X. Chen, P.R. Horche (2022). Study of transmission properties of All-fibre Modal Interference Devices by Fourier Transform. Repositorio http://www.tfo.upm.es/investigacion/lineas-de-investigacion/phonet.html

- J. Haro, P.R. Horche (2022). DWDM optical route upgrade over 806 km of a deployed legacy fiber with Mixed 43 Gb/s, 112 Gb/s and 448 Gb/s Channels. Repositorio http://www.tfo.upm.es/investigacion/lineas-de-investigacion/phonet.html
- X. Chen, R. Guan, P.R. Horche (2019). "Study of transverse offset-based SMS structure for vector rotation sensing". *Journal of Lightwave Technology*, DOI 10.1109/JLT.2018.2886351, pp. 1-8, 2019. JCR (2017): 3.650
- C. del Río Campos, A. Consoli, J.M. del Río Campos, and P. R. Horche (2019), "Impact on the chirp effect of the shaped electrical-driven current of the directly-modulated 1.55 µm VCSEL in an optical fiber link." *Optics Communications*. Vol. 435, pp. 326-333, 2019.
- X. Chen, A. Macho, P. R. Horche (2018). "Performance evaluation of 100 and 200-Gb/s WDM PM-QPSK transmission system: Tolerance Analysis to the optical link impairments according to the optical carrier shape." *Optical Review*, pp. 1-13, 2018. DOI: 10.1007/s10043-018-0463-y. JCR (2017): 0.805
- A. Madrid, P. R. Horche (2018). "Light source optimizing in a biophotonic vein finder device: experimental and theoretical analysis". *Results in Physics, 11 p. 975-983* (2018). JCR (2017): 2.147
- X. Chen, J.A. Martín Pereda, P.R. Horche (2016). "Signal Penalties Induced by Different Types of Optical Filters in 100 Gbps PM-DQPSK Based Optical Networks". *Optical Switching and Networking*. Vol. 19, pp. 145–154, (2016). JCR (2016): 1.865.
- X. Chen, P.R. Horche, A. M. Minguez (2015). "Analysis of optical signal impairment induced by different types of optical filters in 40 Gbps DQPSK and 100 Gbps PM-DQPSK systems". *Optical Fiber Technology*. Vol. 22, pp. 113–120. JCR (2015): 1.6
- X. Chen, P.R. Horche, A. M. Minguez *(*2014*)*. "A Low-cost Alternative Scheme to Detect a 100 Gbps PM-DQPSK Signal". *Photonic Network Communications. Vol. 28, Issue 3, pp. 203-213.* JCR (2014): 1.21
- J. Haro, P.R. Horche (2013). "Measurements of Polarization Mode Dispersion on Aerial Optical Cables: Theory and Experiments". *Optics Communications.* Vol. 306, pp. 57–66. JCR (2013): 1.542
- A. M. Ortiz, P. R. Horche (2913). Pulse-Shape Analysis of PDM-QPSK Modulation Formats for 100 and 200 Gb/s DWDM transmissions. 4 July 2013. Physics Corpus ID: 18745052
- A. Martín Mínguez, P. R. Horche (2011). "Design of Equalized Holographic ROADMs for Application in CWDM Metro Networks". *Optics Communications,* vol. 284, Issue 21, pp. 5055-5061. JCR (2011): 1.49
- C. del Río; P. R. Horche; A. Martín Mínguez (2011). "Influence of Current Pulse Shape on Directly Modulated Systems Performance in Metro Area Optical Networks". *Optics Communications*, vol. 284, Issue 5, pp. 1346-13531. JCR (2011): 1.49
- A. Martín Mínguez and P. R. Horche (2010). "Tunable Holographic Components in WDM Optical Networks". *Optical and Quantum Electronics,* vol. 42, pp. 45–67. JCR (2016): 1.055
- C del Río; P. R. Horche; A. Martín Mínguez (2010). "Analysis of Linewidth and Extinction Ratio in Directly Modulated Lasers for Performance Optimization in 10 Gbit/s CWDM Systems". *Optics Communications*, vol. 283, Issue 15, pp. 3058-3066. JCR (2010): 1.52

C.1.B Books

- X. Chen, Paloma R. Horche. "Improvement of Transverse Offset-Based Single-Mode-Multimode-Single-Mode-Fiber Structure for DPSK Signal Demodulation". Chapter 3 in Springer Proceedings in Physics 181. Springer International Publishing Switzerland 2016. P. Ribeiro and M. Raposo (eds.). (2016) ISBN 978-3-319-30135-8
- C. del Río Campos, Paloma R. Horche. "Effects of dispersion fiber on CWDM directly modulated system performance", en *Optical Fiber Communications and Devices.* InTech/Moh. Yasin, Sulaiman W. Harun and Hamzah Arof (Eds). Rijeka, Croatia. Chapter 3, pp. 55-76. (February 2012). ISBN: 978-953-307-954-7.
- Paloma R. Horche, C. del Río Campos. "Influence of Current Pulse Shape on Directly Modulated lasers using positive and negative dispersion fibers", en *Selected Topics on Optical Fiber Technology*. InTech/ Moh. Yasin, Sulaiman W. Harun and Hamzah Arof (Ed.) Rijeka, Croatia. Chapter 18, pp. 509-534 (2012). ISBN: 978-953-51-0091-1
- A. Martín-Mínguez, Paloma R. Horche. "Application of holograms in optical components for WDM fiber systems", en *Holograms - Recording Materials and Applications*. I. Naydenova (Eds.)/ InTech. Rijeka, Croatia. (Capítulo 11) pp. 257- 282, (October 2011) ISBN: 978-953-307-981-3

- P. R. Horche, Miguel A. Muriel and José A. Martín Pereda. "All fiber wavelength filters using concatenated dissimilar fibers", in Couplers and WDM Devices for Optical Transmission. Fiber Optic Reprint Series. Information Gatekeepers Group (IGIC), Inc. Staff (Ed.) Boston, Massachusetts, USA. Vol. 20 (Chapter 59), (1994). ISBN: 1-56851-069-1.
- I. Sanz, P.R. Horche and M.A. Muriel. "A novel Technique for generating ultra short pulses train", in Long Distance-High Bit Rate Systems. Fiber Optic Reprint Series. Information Gatekeepers Group (IGIC), Inc. Staff (Ed.) Boston, Massachusetts, USA. Vol. 11 (Chapter 35). (1994). ISBN: 1-56851-060-8

C.1.C Congress

- A. Perez-Serrano, R. Rodríguez, P.R. Horche (2019) “An Interdisciplinary Challenge Based Learning Experience Involving Students from Biomedical and Telecommunications Engineering”. Id: 969. 13th annual International Technology, Education and Development Conference. This paper is indexed in IATED Digital Library. INTED2019, Valencia, 11-13th of March, 2019. http://doi.org/10.21125/inted.2019.0969. WOS:000536018103135
- A. Madrid, P.R. Horche. “Development and implementation of a portable low-cost vein finder”. XXXV Congreso Anual de la Sociedad Española de Ingeniería Biomédica (CASEIB). Libro de Actas, pags. 429- 432 Bilbao, 29 Nov – 1 Dic, 2017. ISBN: 978-84-9082-797-0 (2017)
- X. Chen and Paloma R. Horche. "DPSK Signals Demodulation based on a Graded-index Multimode Fiber Mismatch Spliced between Two Single-mode Fibers". *3rd International Conference on Photonics, Optics and Laser Technology*. Proceedings of PHOTOPTICS 2015. Vo. 1, pp. 13-19. Berlín, Alemania, 12-14 March, 2015
- Antonio Consoli; Jorge R. Sanchez; Paloma R. Horche and Ignacio Esquivias. "Web-based interactive educational software introducing semiconductor laser dynamics: Sound of Lasers (SOL)", Proc. of SPIE Vol. 9289, pp. 92891S1- 92891S5 (July 17, 2014);
- X. Chen, P.R. Horche, A. M. Minguez. "DPSK Signals Demodulation Based on a Multimode Fiber with a Central Dip". *IEEE 19th European Conference on Network and Optical Communications*, NOC 2014, pp. 18-22. Milan, Italy. June 4th - 6th, 2014.
- Xiaoyong Chen, Paloma R. Horche, Alfredo M. Minguez. "Analysis of Signal Impairment and Crosstalk Penalty Induced by Different Types of Optical Filters in 100 Gbps PM-DQPSK Based Systems". *IEEE 19th European Conference on Network and Optical Communications*, NOC 2014, pp. 35-40. Milan, Italy. June 4th - 6th, 2014.
- M. Carrero Mora, A.M. Minguez, P.R. Horche. "Design of Equalized ROADMs Devices with Flexible Bandwidth Based on LCoS Technology". NOC 2014, pp.41-46. Milan, Italy. June 4 - 6th, 2014.
- Antonio Consoli, Paloma R. Horche, Ignacio Esquivias: "Web based interactive educational software introducing semiconductor laser dynamics: Sound Of Lasers (SOL)". SPIE - *12th International Conference on Education and Training in Optics & Photonics,* ETOP 2013, University of Porto, Portugal, 23-26 julio 2013.
- Xiaoyong Chen, Paloma R. Horche, Alfredo M. Minguez. "Optical Signal Impairment Study of Cascaded Optical Filters in 40 Gbps DQPSK and 100 Gbps PM-DQPSK Systems". SPIE Optical Engineering + Applications. Conference *Optics and Photonics for Information Processing VII*. Proc. of SPIE Vol. 8855, pp.: 88550C-1-12, 25 - 29 August 2013, San Diego, California, United States. SPIE Paper Number [8855-11].
- Antonio Consoli, Paloma. R. Horche, Ignacio Esquivias, "*Sound Of Lasers (SOL) – An audiovisual approach to semiconductor laser dynamics".* IEEE - *15t International Conference/Interactive Collaborative Learning (ICL/IGIP2012)* en la 41th International Conference on Engineering pedagogy, pp.1-6. Villach, Austria. September 26-28, (2012)
- P.R. Horche, Carmina del Río Campos, Alfredo Martín Minguez. "Interaction of semiconductor laser chirp with fiber dispersion: Impact on WDM directly modulated system performance". Fourth *International Conference on Advances in Circuits, Electronics and Micro-electronics*. Session: Special Circuits and Applications. Proc. CENICS 2011, pp.17-22. Nice/Saint Laurent du Var, France. 21-27 August, 2011.
- Alfredo Martín Mínguez, Carmina del Río, Paloma R. Horche. "Design of Equalized Holographic ROADMs (Reconfigurable Optical Add-Dropp Multiplexers)". 3rd International Workshop on Liquid Crystals for Photonics. Page(s): 59 - 60. Elche (Alicante) Spain. September 8-10, 2010.

- A. Consoli, F.J. López Hernández, P.R. Horche, C.del Río Campos. "Transmission performance improvement of directly modulated 1.5 µm VCSEL: simulation and experiments". IEEE *International Conference on Advances in Circuits, Electronics and Micro-electronics*. Session: Design, Models, Languages & Semiconductors/Applications. Proc. CENICS 2010, pp. 56 - 60 Venice/Mestre, Italy. 18-25 July 2010.
- Carmina del Río Campos, Paloma R. Horche, Alfredo Martín Minguez. "Effects of Modulation Current Shape on Laser Chirp of 2.5 Gb/s Directly Modulated DFB-Laser". IEEE *International Conference on Advances in Circuits, Electronics and Micro-electronics*. Session: Design, Models, Languages & Semiconductors/Applications. Proc. CENICS 2010, pp. 51-55. Venice/Mestre, Italy. 18-25 July 2010.

C.2. Research projects and grants

- "A new virtual reality learning paradigm for medical education" (CONTRACT – 18638). European institute of innovation & technology in Health, eitHealth. Incorporación: mayo 2018. IP: Patricia Sánchez González.
- "EASIER: Technology-enhanced learning of surgical and interventional technical and nontechnical skills". (Ref. 588404-EPP-1-2017-1-ES-EPPKA2-KA) ERASMUS+ - Knowledge Alliances. 2019. IP: Enrique J. Gómez Aguilera.
- "LIDERA: Advanced LIDAR systems based on Optical Frequency Combs, Coherent Technologies and Chaotic Signals". (Ref. RTI2018-094118-B-C21) - Convocatorias 2018. IP: Ignacio Esquivias y José Manuel TIjero.
- "Arquitecturas Ópticas Hibridas para Ciudades Inteligentes – OSCAR (Optical Smart Cities based on hybrid ARchitectures)". (Ref. TEC2017-84065-C3-1-R). 1 enero 2017 – 31 diciembre 2019 (3 años). IP: Rafael Pérez.
- COMBINA: "Peines de Frecuencia Generados por Láseres de Semiconductor". (Ref. TEC2015-65212-C3-2-P). 1 enero 2016 – 31 diciembre 2018 (3 años). IP: J. M. García Tijero
- "Aplicación de Técnicas y Dispositivos de Multiplexación Óptica Reconfigurable en Redes WDM-PON". Ministerio de Ciencia e Innovación (Ref. TEC2010-18540). 1 enero 2011 - 31 diciembre 2011 (12 meses). IP: Paloma Rodríguez Horche

C.3. Contracts

- "Estudio de viabilidad del desarrollo de biosensores ópticos". BIOLAN MICROBIOSENSORES S.L. 7/05/2011 – 7/05/2012. PI: **Paloma Rodríguez Horche.**
- "Estudio de viabilidad del desarrollo de sensores ópticos para la medida de corriente y temperatura". LUMIKER APLICACIONES TECNOLÓGICAS S.L. Duración: 24 de julio de 2011 a 24 de mayo de 2012. PI: **Paloma Rodríguez Horche**.
- "Medida de la respuesta de un fotodetector de VPD PbSe a diferentes longitudes de onda en la zona del espectro del infrarrojo cercano". New Infrared Technologies. S.L. 1 Junio 2011 - 30 Septiembre 2011 (4 meses). PI: **Paloma Rodríguez Horche**.
- "Estudio de viabilidad técnica sobre la realización de un sensor basado en fibra óptica -Sefoc- para la medida del gas SF6". FANOX ELECTRONIC S.L. 4 marzo 2011 - 4 octubre 2011 (8 meses). PI: **Paloma Rodríguez Horche**.

C.4. Institutional responsibilities, memberships of scientific societies

- **ANEP evaluator:** 1996-2020
- **Reviewer of JCR journals:** IEEE/OSA J. of Lightwave Technology (JCR, 2.784), J. of ElectroMagnetic Waves and Applications, JEMWA (JCR, 2.965), Progress In Electromagnetics Research, PIER (JCR, 5.298), Optics Communications (JCR, 1.486), Optical Fiber Technology (JCR, 1.554), Optica Applicata (JCR, 0.541), China Communications (JCR, 0.344)
- **Technical Program Committee Member (TCP)** de las conferencias: International Conference on Advances in Circuits, Electronics and Micro-electronics (CENICS 2011), International Conference on Wireless Communications and Networks (CWCN2011), International Conference on Engineering Education (CEE2011), International Conference on Electronics and Electrical Engineering (CEEE2011), the World Congress on Engineering and Technology (CET).
- **Editorial Board Member:**
- Wireless Sensor Network WSN. Desde 2012. ISSN Print: 1945-3078, ISSN Online: 1945-3086. Website: http://www.scirp.org/journal/wsn
- Open Journal of Applied Sciences. Desde 2012. ISSN Print: 2165-3917, ISSN Online: 2165-3925. Website: http://www.scirp.org/journal/ojapps
- International Journal on Advances in Systems and Measurements. Desde 2012, ISSN: 1942-261x, website: http://www.iariajournals.org/systems_and_measurements/index.html