Fecha del CVA	03/06/20

Parte A. DATOS PERSONALES

Nombre y apellidos	Luis Francisco Marsal Garvi		
DNI/NIE/pasaporte	39688257D	Edad	51
Núm. identificación del investigador	Researcher ID	G-8852-2011	
	Código Orcid	0000-0002-5976-1408	

A.1. Situación profesional actual

Organismo	Universitat Rovira i Virgili		
Dpto./Centro	Dpto de Ingeniería Electrónica, Electríca i Automática /Escuela Técnica Superior de Ingeniería		
Dirección	Avda Paisos Catalans 26, Campus Sescelades,		
Teléfono	977559625	correo electrónico	Lluis.marsal@urv.cat
Categoría profesional	Catedrático de Universidad	Fecha inicio	01/08/2009
Espec. cód. UNESCO	330700, 330714, 221211		
Palabras clave	Biosensores, silicio poroso, alumina nanoporosa, nanoestructuras fotónicas, nanotecnología, cristales fotonicos		

A.2. Formación académica *(título, institución, fecha)*

Licenciatura/Grado/Doctorado	Universidad	Año
Licenciado en Ciencias Físicas	Universidad de Barcelona	1991
Doctorado en Ciencias Físicas	Universidad Politécnica de Cataluña	1997

A.3. Indicadores generales de calidad de la producción científica *(JCR articles, h Index, thesis supervised)*

Sexenios de investigación 4: (1992-97), (1998-2003), (2004-2009) and (2010-2015).
International articles -JCR (Web Science) =205
Cited more than 6173 times, h-index =42 and i10-index= 153 according to Google Scholar Citations.
Supervised Ph D thesis: 18 (2005-2020). Currently supervising 3 PhD students (1 defense is scheduled in April 2021).

Parte B. RESUMEN LIBRE DEL CURRÍCULUM *(máximo 3500 caracteres, incluyendo espacios en blanco)*

Prof. Lluis F. Marsal is Distinguished Professor at the University Rovira i Virgili since 2017. He received the Ph.D. degree in physics from the University Politecnica de Cataluña, Spain in 1997. Since 2009, he is full professor at the University Rovira i Virgili, Spain. Between 1998 and 1999, he was a postdoctoral researcher at the Department of Electrical and Computer Engineering, University of Waterloo, Canada.

He has more than 25 years' experience in research and teaching in optoelectronics, photonics and nanotechnology. In the last 15 years, he has successfully created and led NEPHOS, an interdisciplinary research group in nanotechnology, photonic devices based on silicon and micro-nanoporous materials and organic and hybrid materials for biotechnological applications. He has supervised 10 MEng students and 17 Ph.D. students and participated in several Ph.D. committees at other universities. He is currently supervising 4 PhD students and has organized 6 courses of the URV Summer School on nanophotonics and nanotechnology

He has carried out research in the field of organic semiconductor devices, organic solar cells, and nanoporous materials for photonic and optical sensor applications. He has obtained remarkable results in the technological field of structural engineering of macro- and nanoporous silicon and nanoporous alumina, creating new organic and hybrid nanostructures to enhance light-matter interactions for optoelectronic devices and energy applications. This technology was also successfully applied to fabrication of nanostructured organic solar cells, optical biosensors and photoluminescent conductive polymer nanorod arrays and nanowires. He has co-authored more than 270 publications in international refereed journals and conferences (scopus), 2 books, 5 book chapters and holds three

patents. He has presented over 30 invited lectures in international conferences and has participated in over than 80 national and international projects.
In 2008, he is awarded with one Research Grant from the URV for the research intensification and in 2009, obtained a Grant for Consolidated Research Groups from the Research Management Agency. In 2012, he received a research award in recognition for the high quality of the scientific career of outstanding researchers from the URV. In 2005, he received a Research Fellowship from Spanish Ministry of Science to research at the ICMM-Spanish National Research Council. Since 2007, he is a visiting research fellow at the CINVESTAV - Instituto Politécnico Nacional, Mexico.
Prof. Marsal was the organizer and General Chairman of the 1st Spanish Nanophotonics Conference in 2008. He is a recipient of the 2014 UniSA Distinguished Researcher Award from the University of South Australia (UniSA) and the ICREA Academia Award 2014. He is also member of the Advisory Board of the Reseach Center on Engineering Materials and Micro/Nanosystems (URV Research Center). Prof. Marsal serves as member of the Distinguished Lecturer program of the Electron Devices Society (EDS-IEEE) since 2008 and as a member of Advisory or Technical Committees in several international and national conferences (ECS, PSST, CDE, ICOOPMA, CEN). He is senior member of the IEEE (Electron Devices Society and Photonics Society) and the Optical Society of America (OSA). He is also an active member of the Electrochemical Society (ECS). From 2013 to 2018, he was the Chair of Spain Chapter of the IEEE Electron Devices Society. Since 2019, he is the Chair of the Subcommittee for Regions/Chapters (SRC) – Regions 8, Electron Devices Society - Institute of Electrical and Electronics Engineers.

Parte C. MÉRITOS MÁS RELEVANTES *(ordenados por tipología)*

C.1. Publicaciones

Artículos (JCR):

1. Remote biosensor for the determination of trypsin by using nanoporous anodic alumina as a three-dimensional nanostructured material, Amouzadeh Tabrizi, M., Ferré-Borrull, J., Marsal, L.F., (2020) Scientific Reports, 10 (1), art. no. 2356, .
2. Tunable Nanoporous Anodic Alumina Photonic Crystals by Gaussian Pulse Anodization, Acosta, L.K., Bertó-Roselló, F., Xifre-Perez, E., Law, C.S., Santos, A., Ferré-Borrull, J., Marsal, L.F., (2020) ACS Applied Materials and Interfaces, 12 (17), pp. 19778-19787.
3. Highly sensitive IRS based biosensor for the determination of cytochrome c as a cancer marker by using nanoporous anodic alumina modified with trypsin, Amouzadeh Tabrizi, M., Ferré-Borrull, J., Marsal, L.F., (2020) Biosensors and Bioelectronics, 149, art. no. 111828, .
4. Remote sensing of Salmonella-specific DNA fragment by using nanoporous alumina modified with the single-strand DNA probe, Amouzadeh Tabrizi, M., Ferré-Borrull, J., Marsal, L.F., (2020) Sensors and Actuators, B: Chemical, 304, art. no. 127302, .
5. Stacked Nanoporous Anodic Alumina Gradient-Index Filters with Tunable Multispectral Photonic Stopbands as Sensing Platforms, Acosta, L.K., Bertó-Roselló, F., Xifre-Perez, E., Santos, A., Ferré-Borrull, J., Marsal, L.F., (2019) ACS Applied Materials and Interfaces, 11 (3), pp. 3360-337.
6. Highly sensitive aptasensor based on interferometric reflectance spectroscopy for the determination of amyloid β as an Alzheimer's disease biomarkers using nanoporous anodic alumina, Amouzadeh Tabrizi, M., Ferré-Borrull, J., Marsal, L.F., (2019) Biosensors and Bioelectronics, 137, pp. 279-286.
7. Rational Management of Photons for Enhanced Photocatalysis in Structurally-Colored Nanoporous Anodic Alumina Photonic Crystals, Lim, S.Y., Law, C.S., Markovic, M., Marsal, L.F., Voelcker, N.H., Abell, A.D., Santos, A., (2019) ACS Applied Energy Materials, 2 (2), pp. 1169-1184.
8. Selective and Sensitive Probe Based in Oligonucleotide-Capped Nanoporous Alumina for the Rapid Screening of Infection Produced by Candida albicans, Ribes, À., Aznar, E.,

Santiago-Felipe, S., Xifre-Perez, E., Tormo-Mas, M.A., Pemán, J., Marsal, L.F., Martínez R., (2019) ACS Sensors, 4 (5), pp. 1291-1298

9. Structural tailoring of nanoporous anodic alumina optical microcavities for enhanced resonant recirculation of light, Law, C.S., Lim, S.Y., Abell, A.D., Marsal, L.F., Santos, A., (2018) Nanoscale, 10 (29), pp. 14139-14152.
10. Nanoporous Anodic Alumina Surface Modification by Electrostatic, Covalent, and Immune Complexation Binding Investigated by Capillary Filling, Eckstein, C., Acosta, L.K., Pol, L., Xifré-Pérez, E., Pallares, J., Ferré-Borrull, J., Marsal, L.F., (2018) ACS Applied Materials and Interfaces, 10 (12), pp. 10571-10579..
11. Advances in Nanoporous Anodic Alumina-Based Biosensors to Detect Biomarkers of Clinical Significance: A Review, Rajeev, G., Prieto Simon, B., Marsal, L.F., Voelcker, N.H., (2018) Advanced Healthcare Materials, 7 (5), art. no. 1700904,.
12. Large-Scale Plasmonic Pyramidal Supercrystals via Templated Self-Assembly of Monodisperse Gold Nanospheres, Hanske, C., González-Rubio, G., Hamon, C., Formentín, P., Modin, E., Chuvilin, A., Guerrero-Martínez, A., Marsal, L.F., Liz-Marzán, L.M., (2017) Journal of Physical Chemistry C, 121 (20), pp. 10899-10906..
13. Optical Monitoring of the Capillary Filling Dynamics Variation in Nanoporous Anodic Alumina toward Sensing Applications, Eckstein, C., Xifré-Pérez, E., Porta-I-Batalla, M., Ferré-Borrull, J., Marsal, L.F., (2016) Langmuir, 32 (41), pp. 10467-10472.
14. Low-cost fabrication technologies for nanostructures: state-of-the-art and potential, Santos, A.; Deen, M. J.; Marsal, L. F., (2015) Nanotechnology, 26 article nº: 042001
15. Design, fabrication and charge recombination analysis of interdigitated heterojunction nanomorphology on P3HT/PC_{70}BM solar cells, Balderrama, V.S., Albero, J., Granero, P., Ferre-Borrull, J., Pallares, J., Palomares E.J., Marsal, L.F., Nanoscale, (2015), 7 (33), pp. 13848-13859.
16. All-silicon spherical-Mie-resonator photodiode with spectral response in the infrared region, Garin, M., Fenollosa, R., Alcubilla, R., Shi, L., Marsal, L. F., Meseguer, F., (2014) Nature Communications, 5, art. no. 3440.
17. Nanoporous anodic alumina barcodes: Toward smart optical biosensors, Santos, A., Balderrama, V.S., Alba, M., Formentín, P., Ferré-Borrull, J., Pallarès, J., Marsal, L.F. (2012) Advanced Materials, 24 (8), pp. 1050-1054.
18. Optimal tunability of waveguides based on silicon photonic crystals infiltrated with liquid crystals, Cos, J., Ferré-Borrull, J., Pallarès, J., Marsal, L.F., (2011) Optical and Quantum Electronics, 42 (8), pp. 487-497.
19. Photonic stop bands of two-dimensional quasi-random structures based on macroporous silicon, Rahman, M.M., Ferré-Borrull, J., Pallarès, J., Marsal, L.F., (2011) Physica Status Solidi (C) Current Topics in Solid State Physics, 8 (3), pp. 1066-1070.
20. Low refractive index contrast porous silicon omnidirectional reflectors, Xifré-Pérez, E., Marsal, L.F., Ferré-Borrull, J., Pallarès, J., (2009) Applied Physics B: Lasers and Optics, 95 (1), pp. 169-172.
21. Mid-IR characterization of photonic bands in 2D photonic crystals on silicon, Král, Z., Ferré-Borrull, J., Trifonov, T., Marsal, L.F., Rodriguez, A., Pallarès, J., Alcubilla, R., (2008) Thin Solid Films, 516 (22), pp. 8059-8063.
22. Optical properties of 3D macroporous silicon structures, Garín, M., Trifonov, T., Rodríguez, A., Marsal, L.F., Alcubilla, R., (2008) Materials Science and Engineering B: Solid-State Materials for Advanced Technology, 149 (3), pp. 275-280.
23. Macroporous silicon: A versatile material for 3D structure fabrication, Trifonov, T., Rodríguez, A., Marsal, L.F., Pallarès, J., Alcubilla, R., (2008) Sensors and Actuators, A: Physical, 141 (2), pp. 662-669.
24. Characterization of 2D macroporous silicon photonic crystals: Improving the photonic band identification in angular-dependent reflection spectroscopy in the mid-IR, Král, Z., Ferré-Borrull, J., Pallarès, J., Trifonov, T., Rodriguez, A., Alcubilla, R., Marsal, L.F.,

(2008) Materials Science and Engineering B: Solid-State Materials for Advanced Technology, 147 (2-3), pp. 179-182.

25. Fabrication of two- and three-dimensional photonic crystals by electrochemical etching of silicon, Trifonov, T., Marsal, L.F., Rodríguez, A., Pallarès, J., Alcubilla, R., (2005) Physica Status Solidi C: Conferences, 2 (8), pp. 3104-3107.
26. Porous silicon mirrors with enlarged omnidirectional band gap, Xifré-Pérez, E., Marsal, L.F., Pallarès, J., Ferré-Borrull, J., (2005) Journal of Applied Physics, 97 (6), art. no. 064503, .

Capítulos de libro:

1. Electrochemically engineered nanoporous photonic crystal structures for optical sensing and biosensing, Law, C.S., Marsal, L.F., Santos, A., (2019) Handbook of Nanomaterials in Analytical Chemistry: Modern Trends in Analysis, pp. 201-226.
2. Methods, properties and applications of porous silicon, Xifré-Pérez, E., Ferré-Borrull, J., Pallarés, J., Marsal, L.F., (2015) Springer Series in Materials Science, 220, pp. 37-63.
3. Engineering and understanding of nanoporous materials by electrochemical techniques, Santos, A., Marsal, L.F., (2013) Handbook of Functional Nanomaterials, 4, pp. 409-437.

C.2. Proyectos

1. Project title: “Micro and nanoporous structures for sensing devices and polymer solar cells (MINASENSOL)” (RTI2018-094040-B-I00)
   Funding entity: Ministry of Science, Innovation and Universities
   Project leader: Lluís F. Marsal
   Duration, from: 2019 to: 2021
2. Project title: “Desarrollo de células solares orgánicas fotovoltaicas y biosensores fotónicos basados en micro -nanoestructuras porosas y polímeros nanoestructurados” (PHOTONACELL)” (TEC2015-71324-R)
   Funding entity: Ministry of Economy and Competitiveness
   Project leader: Lluís F. Marsal
   Duration, from: 2015 to: 2018
3. Project title: “Development of new technologies based on micro- and nanoporous materials for applications in energy and health”
   Funding entity: Institució Catalana de Recerca i Estudis Avançats.
   Project leader: Lluís F. Marsal
   Duration, from: 2015 to: 2019
4. Project title: “Technology of third generation photovoltaic devices: nanostructured organic and hybrid solar cells (NANOHITEC)” (TEC2012-34397)
   Funding entity: Ministry of Economy and Competitiveness
   Project leader: Lluís F. Marsal
   Duration, from: 2013 to: 2015
5. Project title: “Photovoltaic solar cells and active photonic crystals based on hybrid organic-inorganic micro-and nanostructures” (TEC2009-09551)
   Funding entity: Ministry of Science and Innovation
   Project leader: Lluís F. Marsal
   Duration, from: 2009 to: 2012
6. Project title: “Development of tecnology for nanostructured organic solar cells” (A/024560/09)
   Funding entity: “Programas de Cooperación Interuniversitaria e Investigación”, Ministry of Foreign Affairs and Cooperation
   Participating entities: URV, CINVESTAV-INP (Mexico)
   Project leader: Lluís F. Marsal

Duration, from: 2010 to: 2011

7. Project title: “Organic devices, photonic crystals and nanoelectronic devices” Program to promote quality research (2010PFR-URV-B2-10)
   Funding entity: University Rovira i Virgili (URV)
   Project leader: Lluís F. Marsal
   Duration, from: 2009 to: 2013

8. Project title: “Network of excellence for building up knowledge for improved systems integration for flexible organic and large area electronics (FOLAE) and its exploitation” (contract: 247745).
   Funding entity: Comissió de la Comunitat Europea
   Participating entities: URV, VDI/VDE Innovation, CEA, VTT, TUL, UNICT, AUTH, CNRS, TUC, UPB, UAB, Univ. Patras.
   Project leader: Josep Pallares (URV)
   Duration, from: 2010 to: 2012

C.3. Contratos

1. Codeveloper of an OTFT model implemented in the commervial version of the SmartSpice circuit simulator (tool developed by Silvaco International).

C.4. Patentes

1. Santos, A.; Pallares, J.; Ferré, J.; Marsal L.F., (2008): Procedimiento para disolver in situ la capa-barrera de óxido de aluminio en el procedimiento de fabricación de alúminia porosa, Spanish Patent, (Patent No 200801448).
2. Alvarez-Puebla, R.; Marsal L.F.; Alba M.; Formentin P.; Granero P.; Ferré-Borrull, J.; Pallares. J.; Vaz B.; Álvarez R.; de Lera A.; Correa-Duarte M.A.; Fery A.; Pazos-Perez, N.; Tebbe, M., (2013): Macroscaled nanocolloidal stamping for reversible optical biosensor mimics, Spanish – European Patent, (Patent No P26763ES00-27032013).
3. Ribes, A; Aznar, E.; Martínez-Mañez, R.; Sancenón, F; Marcos, M.D,; Tormo, M.A.; Pemán, J.; Marsal, L.F.; Xifré Pérez, E. (2017): Material poroso para la detección de Candida albicans, método de diagnóstico que lo utiliza y método de preparación del mismo. Spanish Patent, (Patent No WO/2019/048722). Patente en explotación.

C.5, C.6, C.7… OTROS

- Post-doctoral fellowship, University of Waterloo, ON, Canada, 1998-1999.
- Invited Visiting Fellow, CINVESTAV-IPN, Mexico, 2007.
- Invited Visiting Professor, BiomaGUNE, Spain, 2014.
- Invited Visiting Professor, Mawson Inst., University of South Australia, Australia, 2015.
- Invited Visiting Professor, McMaster University, ON, Canada, 2015.
- Invited Visiting Fellow, ICMM-Spanish National Research Council, 2005
- ICREA Academia Adward 2014
- Fellow the Optical Society of America (OSA) since 2021
- URV research award for the high quality scientific career, 2012
- Chair of the Spain Chapter of the IEEE Electron Device Society (EDS) since 2013-2018
- Senior Member of the Institute of Electrical and Electronics Engineers (IEEE) since 2008
- Member of the Electrochemical Society (ECS), Member of the European Optical Society (EOS) and Member of the Spanish Optical Society (SEDOPTICA)
- IEEE Electron Device Society Distinguished Lecturer, since 2008.
- Distinguisehd professor at Univeristy Rovira i Virgili, 2017.
- Editor in Chief, Optica Pura y Aplicada (2019-present)
- Editorial Member, Sensors (2019 – present).
- Associate Editor for Nanomaterials, Frontiers in Nanotechnology (2019-present)
- Member of the IEEE EDS Education Committee (2019–present)
- Member of IEEE EDS Technical Committee on Photovoltaic Devices (2019–present)