



CV of Dr. Alicia DURÁN

Part A. PERSONNEL DATA		Date CV	13th February 2023
Name	Alicia DURÁN		
DNI/NIE/passport	50825138Z/ PAL024571		
Researcher identification	Researcher ID	G-1699-2015	
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A.1. Professional situation

Organism	CSIC		
Dept./Centre	Instituto de Cerámica y Vidrio		
Address	Kelsen 5, Campus de Cantoblanco, 28049 Madrid		
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Professional Category	Research Professor	From:	27/04/2006
Spec. code UNESCO	3312.06		
Key words	Glass, glass-ceramic, sol-gel materials. Transparent nanoglass-ceramics, glass and glass ceramic for sealing, SOFC and PEMFC fuel cells, photocatalytic coatings, bactericides and biocides, corrosion protection and bioactivation of metals, glass-ceramic layers with photonic properties. Energy saving in glass furnaces, recycling, food safety of glass containers.		

A.2. Education

Degree-PhD	University	Year
Graduate in Physics	Universidad Nacional de Córdoba (Argentina)	1974
PhD n Physics	Universidad Autónoma de Madrid	1984

A.3. General Indicators of scientific quality

Scientific productivity (Six-year Terms): Six. Last conceded: 1-1-2020.

PhD thesis directed (2004-2020): 10, 7 internationals, one Extraordinary Prize UAM.

Articles published in WOK/Scopus journals: 270

Total citations in WOK: 7730 (6900 w/o self-citations)

Q1 publications: 200/270

Medium Cites per publication: 27, 8

H index (WOK): 49 (the highest index in Spain in Science Materials, Ceramics).

h index (Scopus): 49

Books: 14 books and 13 book-chapters

International invited talks/key notes (2010-2022): 35

Part B. Free abstract of CV

Leader of the research group Glass of ICV(CSIC), nominated as Excellence group of CSIC, in the first top 10% of the 1600 research groups of CSIC. The general objective of the research group Glass is the design, processing and characterisation of glasses, glass-ceramics and sol-gel materials, going from the structural features to properties (optical, mechanical, chemical, thermal, electrical, etc) and applications.

The research lines are focused on topics related to **glass, glass-ceramics and sol-gel materials** from basic research up to applications in the industrial glass sector and other final users of glassy materials. Topics connected to **energy** and **environment** research were the aim of most projects developed in the last 20 years. Different materials and components

for **fuel cells** (PEMFC membranes, sealing glasses and glass-ceramics for MCFC and SOFC), solid electrolytes and electrodes for **Li-batteries**, low temperature sealing in **solar energy devices**, come together with protective and **environmentally friendly anticorrosive coatings**, mesostructure coatings with **photocatalytic activity** for abatement of water or gas pollutants, solar cells and **nano glass-ceramics** with photonic applications produced by melting, sol-gel and SPS. **Energy saving** is an important issue with different approaches, from industrial glass furnaces to solar and heat control glasses for buildings.

In 2021 the nomination of the **International Year of Glass 2022 (IYOG2022)** was approved by the General Assembly of United Nations. A project supported by more than 2200 institutions in 90 countries and leader by Spanish Mission at UN-NY and coordinated by the researcher.

Part C. Relevant achievements

C.1. Publications

Selection of articles 2005-2022 with more than 50 WOK citations, and representatives of different research lines.

Synthesis and photocatalytic properties of dense and porous TiO₂-anatase thin films prepared by sol-gel, Arconada, N.; Durán, A.; Suarez, S.; Castro, Y.

APPLIED CATALYSIS B-ENVIRONMENTAL Volume: 86, 1-2 (2009) 1-7. Cited: 140

Glass-forming ability, sinterability and thermal properties in the systems RO-BaO-SiO₂ (R = Mg, Zn), Lara, C; Pascual, MJ; Duran, A

JOURNAL OF NON-CRYSTALLINE SOLIDS Volume: 348 (2004) 149-155 . Cited: 124

Preparation and characterization of cerium doped silica sol-gel coatings on glass and aluminium substrates, Pepe, A; Aparicio, M; Cere, S; Durán A.

JOURNAL OF NON-CRYSTALLINE SOLIDS Volume: 348 (2004)162-171. Cited: 117

Effects of Ce-containing sol-gel coatings reinforced with SiO₂ nanoparticles on the protection of AA2024, Rosero-Navarro, N. C.; Pellice, S. A.; Duran, A.; et ál..

CORROSION SCIENCE Volume: 50, 5 (2008) 1283-1291 Cited: 116

Bioactive coatings prepared by sol-gel on stainless steel 316L

Garcia, C; Cere, S; Duran, A,

JOURNAL OF NON-CRYSTALLINE SOLIDS Volume: 348 (2004) 218-224 Cited: 97

Sintering of glasses in the system RO-Al₂O₃-BaO-SiO₂ (R=Ca, Mg, Zn) studied by hot-stage microscopy, Lara, C; Pascual, MJ; Prado, MO; Durán, A. SOLID STATE IONICS Volume: 170, 3-4 (2004) 201-208 Cited: 92

Optimization of glass-ceramic sealant compositions in the system MgO-BaO-SiO₂ for solid oxide fuel cells (SOFC)., Pascual, M. J.; Guillet, A.; Duran, A.

JOURNAL OF POWER SOURCES Volume: 169, 1, (2007) 40-46 Cited: 79

Sol-gel coatings for protection and bioactivation of metals used in orthopaedic devices

Duran, A; Conde, A; Coedo, AG; Ceré, S.M.

JOURNAL OF MATERIALS CHEMISTRY Volume: 14, 14 (2004)2282-2290 Cited: 73

Nanocrystallisation in oxyfluoride systems: mechanisms of crystallisation and photonic properties, de Pablos-Martin, A.; Duran, A.; Pascual, M. J.

INTERNATIONAL MATERIALS REVIEWS Volume: 57, 3 (2012)165-186 Cited: 71

Synthesis and characterisation of proton conducting styrene-co-methacrylate-silica sol-gel membranes containing tungstophosphoric acid, Aparicio, M; Castro, Y; Duran, SOLID STATE IONICS Volume: 176, 3-4 (2005)333-340. Cited: 60

Electrochemical and in vitro behaviour of sol-gel coated 316L stainless steel

Gallardo, J; Duran, A; de Damborenea, JJ

CORROSION SCIENCE, Volume: 46, 4 (2004) 795-806, Cited: 60

Coatings produced by electrophoretic deposition from nano-particulate silica sol-gel suspensions, Castro, Y; Ferrari, B; Moreno, R; Durán, A. SURFACE & COATINGS TECHNOL. Volume: 182, 2-3 (2004)199-203 Cited: 58

Electrical behaviour of glass-ceramics in the systems RO-BaO-SiO₂ (R = Mg, Zn) for, sealing SOFCs, Lara, C.; Pascual, M. J.; Keding, R.; Durán, A.

JOURNAL OF POWER SOURCES Volume: 157, 1 (2006)377-384. Cited: 57

SiO₂ based hybrid inorganic-organic films doped with TiO₂-CeO₂ nanoparticles for corrosion protection of AA2024 and Mg-AZ31B alloys

Zaharescu, M.; Predoana, L.; Barau, A.; et ál..CORROSION SCIENCE Volume: 51, 9 (2009) 1998- 2005. Cited: 56

Bioactive coatings deposited on titanium alloys, Garcia, C.; Cere, S.; Duran, A.

JOURNAL OF NON-CRYSTALLINE SOLIDS Volume: 352, 32-35 (2006) 3488-3495 Cited: 56

Laser cladding of bioactive glass coatings

Comesana, R.; Quintero, F.; Lusquinos, F.; Pascual, MJ, Durán, A. ACTA BIOMATERIALIA Volume: 6, 3 (2010) 953-961 Cited: 55

A new method for determining fixed viscosity points of glasses

Pascual, MJ; Duran, A; Prado, MO

PHYSICS AND CHEMISTRY OF GLASSES Volume: 46, 5 (2005) 512-520 Cited: 54

Increased electrical conductivity of LiPON glasses produced by ammonolysis

Munoz, F.; Duran, A.; Pascual, L.; Marchand, R.

SOLID STATE IONICS Volume: 179, 15-16 (2008) 574-579 Cited: 54

Design of oxy-fluoride glass-ceramics containing NaLaF₄ nano-crystals

de Pablos-Martin, A.; Mather, G. C.; Muñoz, F.; Durán A., Pascual, MJ..

JOURNAL OF NON-CRYSTALLINE SOLIDS Volume: 356, 52-(2010) 3071-3079 Cited: 52

Multilayer silica-methacrylate hybrid coatings prepared by sol-gel on stainless steel 316L: Electrochemical evaluation.

Lopez, D. A.; Rosero-Navarro, N.C.; Ballarre, J.; Ceré, SM, Durán A., Aparicio, M.

SURFACE & COATINGS TECHNOLOGY Volume: 202, 10 (2008) 2194- Cited: 51

Protection and surface modification of metals with sol-gel coatings

Duran, A.; Castro, Y.; Aparicio, M.; Conde A. Damborenea, JJ..

INTERNATIONAL MATERIALS REVIEWS Volumen: 52, 3 (2007) 175-192 Cited: 50

C.2. International Projects (last 10 years)

1. FP6 –NMP3-CT-2006-033200. “Interface Controlled Nucleation and Crystallisation (INTERCONY)”. IP: Alicia Durán. FP6 2006-2009. 1.399.807 €. (226.471 € CSIC).

2. P-AMB-000406-0505. “Desarrollo de un nuevo sistema de eliminación de compuestos tóxicos y corrosivos generados en depuradoras de aguas residuales (DETOX-H2S)”. IP: Alicia Durán. Proyectos I+D CAM. 2006-2010. 150.225 € + contrato personal en formación.

3. PIF08-009-1. Proyectos Intramurales de Frontera. “Obtención de materiales porosos avanzados (mesoporosos y meso/macroporosos) por autoagregación en sistemas tensoactivos (MESOMACROPOR)”. IP: Alicia Durán, CSIC (PIF 2008) 2008-2013. 107.800€.

4. FP7-278525 FCH-JU-2010-1. “Working towards Mass Manufactured, Low Cost and Robuts SOFC stacks (MMLRC=SOFC)”. IP: M^a Jesús Pascual. FP7-JTI-CP-FCH. 2012-2014. 2.067.976 € (162.740 € CSIC).

5. FP7-ECO/12-333104. “Eco-friendly corrosion protecting coating of aluminium and magnesium alloys (ECOPROT)”. IP: Alicia Durán. FP7-CIP-EIP-Eco-Innovation-2012. 2014-2016. 668.533 € (185.291 € CSIC).

6. MAT2013-48246-C2-1-P. “Efecto del procesamiento sobre la estructura y propiedades de vidrios y vitrocerámicos con aplicaciones fotónicas”. IP: Alicia Durán/Francisco Muñoz. Coordinado Rolindes Balda. 2014-2017. 165.630 € (118.530 € CSIC)

7. H2020-WIDESPREAD-01-2016-2017-TeamingPhase2-SGA-CSA. Proposal 739566. “Centre for functional and surface-functionalized glasses (Fun GLASS)”. IP: Alicia Durán (ICV) - 2017-2023. 25 million € (687.724 € CSIC + 1,2 M€ en personal)

C.3. Industrial Contracts

Relevant contracts with results & products in the market

1. “Elaboración del informe IPPC sobre nivel de emisiones y tecnologías utilizadas en los sectores de fabricación de vidrio y de fritas”. Empresa contratante: TGI/Fundación Entorno. IP: Alicia Durán. Años: 1998-1999. “Guía de las

Mejores Técnicas Disponibles en España del Sector de la Fabricación del Vidrio”. Empresa contratante: Ministerio de Medio Ambiente, ANFEVI, Vidrio España. 2005-2006.

2. “Recubrimientos vítreos con propiedades fungicidas y bactericidas”. IP: Alicia Durán. Empresa asociada: TOGAMA. Proyecto CDTI. 2012-2014. 65.000 €

3. “Estudio y diseño de un horno de vidrio con alto rendimiento energético y medioambiental”. IP: Alicia Durán. Empresa asociada: VICRILA. Proyecto CDTI. 2013-2015. 60.000 €

4. “Mejoras de calidad, energéticas, económicas y medioambientales en hornos de vidrio”. IP: Alicia Durán. CDTI-IDI-20111421. 2011-2013. 157.000 €.

C.4. Patents

1. “Decoloración atípica para vidrio de envases”

Inventores: R.Jordán, A.Durán. Año de petición: 2002. Clase: patente de invención (Cuba). Patent applied in Cuban glass industry from 2004.

2. “Horno y proceso de fusión de fritas en dos fases”

Inventores: A.Durán, M.J.Pascual, C.Baudín, P.Pena, E.Criado, J.Bakali, J.C.Fueyo
Año de petición: 2003. N° P200301984. PCT/ES2004/000274. WO 2005/016836 A1.

3. “Glass-like environmentally friendly sol-gel coatings for corrosion protection of metals” Inventores: C.Rosero-Navarro, Y.Castro, M. Aparicio, A. Durán. Año petición: 2009. P200930982. PCT: PCTES2010070726.

In process of commercialization through EcoInnovation ECOPROT FP7-CIP-EIP-Eco-Innovation-2012.

C.5. Evaluation and Editorial Committees

. Co-Editor in chief International Journal on Glass Applied Science, edited by the American Ceramic Society.

. Regional Editor del European Journal on Glass: Physics and Chemistry of Glasses.

. Editorial Board del Journal of Sol-gel Science and Technology.

. Evaluator FP4-FP7 European projects, H2020. Evaluator Plan Nacional de I+D+i, Plan Estatal de I+D+i, Plan Regional de Investigación de la Comunidad de Madrid y del CDTI (2000-2019)

. External evaluator CONICET (Argentina), CONICYT (México) and COLCIENCIAS (Colombia), CNRS, Danish projects, Finland projects and personnel, Swedish agency, DAAD, etc.

C.6 Institutional Participation

. President of the International Commission on Glass (ICG). 2018-2021

. Management Board & Steering Committee (ICG).

. Treasurer (ICG) 2002 - 2015.

. Vice President European Society of Glass (ESG) (1999 - 2002)

. Spanish representative Comité Permanente de las Industrias Vidrieras Europeas.

. Responsible of Research Group Glass – Group of Excellence 2018 (ICV - CSIC)

. Member of Commission Women and Science. 2008-2012

. Member of the Governing Council of CSIC & y Governing Council of Spanish R&D Agency

C.7 Selected International Prizes

1974. Prize Universidad Nacional de Córdoba, Honour Diploma.

1988. Internacional Prize Vittorio Gottardi 1988. Instituted by the International Commission on Glass (ICG) for young researchers in the field of glass science and technology.

2014. Prize RAICES (ROOTS) of International Cooperation in Science and Technology, granted by the Ministry of Science, Technology and Productive Innovation of Argentina.

2018: Guest Professor Wuhan University of Technology, China

2019. Glass person of the Year 2019. Phoenix Award International Glass Industry

2021. Fellow American Ceramic Society

2022- Prize to Research life SOCIEMAT-Spanish Chapter American Ceramic Society

2022. Otto Schott Award 2022, the most prestigious prize in glass science

2022. President's Award ICG, instituted by ICG to relevant work for the association

2022. Honorary member of The Worshipful Company of Glass Sellers of London