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Plan de
Recuperación,
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AGENCIA
ESTATAL DE
INVESTIGACIÓN

CURRICULUM VITAE (CVA)

Part A. PERSONAL INFORMATION

CV date

06/11/2025

ARTIST PERSONAL INFORMATION			
First name	MARÍA		
Family name	CRIADO SANZ		
Gender (*)	FEMALE	Birth date (dd/mm/yyyy)	05/11/1978
Social Security, Passport, ID number	70241118s		
e-mail	maria.criado@ietcc.csic.es	URL Web https://www.ietcc.csic.es/dpto-construccion/gestion-de-riesgo-y-seguridad/	
Open Researcher and Contributor ID (ORCID)		0000-0002-1027-6233	

(*) Mandatory

A.1. Current position

Position	Senior scientist		
Initial date	02/01/2024		
Institution	CSIC		
Department/Center	Construction	Eduardo Torroja Institute for Construction Science IETcc	
Country	Spain	Teleph. number	+34913020440
Key words	Alkali activated Materials; Durability; Corrosion; Stainless steel; Corrosion inhibitors; Hybrids coatings; Radioactive waste; Thermal energy storage		

A.2. Previous positions (research activity interruptions, art. 13.2.b))

Period	Position/Institution/Country/Interruption cause
2008-2011	Jae-Doc/CENIM-CSIC/Spain
2010	Birth of son/ 16 weeks
2011-2014	Juan de la Cierva/ICMM-CSIC/Spain
2013	Birth of son/ 16 weeks
2015	Contract/ICMM-CSIC/Spain
2015-2018	Research Associate in an ERC Grant/The University of Sheffield/UK
2018-2020	Contract in H2020 project/IETcc-CSIC/Spain
2020-2024	Atracción de Talento Investigador-Modalidad 1 contract /IETcc/CSIC/Spain

A.3. Education

PhD, Licensed, Graduate	University/Country	Year
Licensed	Autonoma University of Madrid	2001
PhD	Autonoma University of Madrid	2007

Part B. CV SUMMARY

The research interests have been focused on the Construction and the Durability assessment of concrete structures. The research work could be summarized as the integration of two main research lines that Dra. Criado has developed throughout her scientific career: 1) Sustainability of Construction, through the development of cementitious products with low energy consumption and recovery and immobilization of wastes; and 2) Durability of Concrete Structures, through corrosion of reinforcements, monitoring technique for prediction of corrosion and developing of preventive corrosion methods.

María Criado received her Ph.D. degree in Chemistry in 2007 at the UAM. This doctoral thesis was carried out at the IETcc-CSIC in “New cementitious materials based on the alkali activation of fly ash. Characterization of N-A-S-H gels based on soluble silica content. Effect of Na_2SO_4 ”. The main objective was the design of alkali-activated cements using industrial byproduct and characterization of reaction products, controlling the micro and nanostructure of these products, different final properties are obtained for certain applications.

Considering the durability problems of Portland cement, she initiated the study of the corrosion of the reinforced steel in alkaline cements. It was carried out during her postdoctoral fellowship “Jae-Doc” (CENIM-CSIC, 2008-2011), her postdoctoral fellowship “Juan de la Cierva” (ICMM-CSIC, 2011-2014) and her postdoctoral stage at the University of Sheffield (2015-2018). During this last period, she was leading and incorporating a new research line for the department, leading her investigations and forming researchers in the topic of the durability of corrosion of reinforcements, focusing on eco-efficient products containing high mineral addition content and alkali-activated binders. In addition, she used for the first time different protection methods to increase the useful life of alkaline cements, such as the use of stainless steel as reinforcements, corrosion inhibitors and protective coatings. Relevant results were obtained, she was involved in an International Bilateral Project with Universidad Militar Nueva Granada (Colombia, 2014-2016) entitled “Corrosion behavior of a structural steel embedded in concrete manufactured from industrial byproducts”. Currently, she continues to work along this research line in the CAMODEL project (COOPA23007) and is leading a doctoral thesis.

In 2018, Dr. Criado was hired through a European project H2020 at the IETcc, to continue her line of research focused on the durability of cement-based materials, specifically in the evaluation of the durability performance of high-performance concrete (UHPC) exposed to aggressive environments, both chemical and marine, and the monitoring of corrosion damage in these environments. In 2020, Dra. Criado obtained a Research Talent Attraction from the Community of Madrid entitled “Immobilization of Nuclear grade Ion Resins in Alkali-activated Materials” at the IETcc. The research was focused on the immobilization of solid organic waste, ionic resins from nuclear power plants in alkali-activated cements, the durability study in aggressive environments and the leaching of the final product with the immobilized waste. Continuity of this research line focused on the development of sustainable advanced materials with encapsulation capacity are being possible due to the granting of PROMERA project (PID2021-125292OB-I00), EURAD-2 (EURATOM-2023 RADIOWASTE-IBA Project: 101166718) and BIOMATRIX (PID2024-156678OB-I00).

Currently, Dr. Criado and her research group are also focused on the study of the thermal resistance of construction materials at high temperatures, and for thermal energy storage (GEN VERDE project), a line of research which the Juan de la Cierva contract holder will join. Dra Criado has 92 scientific contributions: 64 scientific articles (65% JCR Q1), 2 monographs, 8 book chapters and 25 conference papers. Her work has been cited over 5829 times (data obtained from Scopus on 06/11/2025) and she has an h-index of 36 and an i10-index of 51. Her profile in google scholar has been cited by 8404 times, her h-index is 42 and her i10-index is 63 (Google Scholar: M.Criado). Her Research Interest Score is 3525, with h=40 and 6568 citations (https://www.researchgate.net/profile/Maria_Criado2). She has been PI of 5 research projects: 2 international and 4 national and has participated in six international research projects, ten national projects and three research contracts with companies. She has given invited lectures: 4 keynotes, 6 invited talks, and several lectures in 3 Master or Postgraduate courses and has participated in 76 conferences. She has been supervisor of 1 thesis and 1 thesis ongoing, 1 Marie Curie postdoctoral student, 3 master and 7 undergraduate students and has belong to Transfer Technology commissions: CAM (2018), 296-ECS (2020), EFG TG

on steel corrosion in alkali-activated materials (2017); and CTN-83/SC-10 (2018, role of secretary in 2024).

Part C. RELEVANT MERITS

C.1. Publications

1. M.J. de Hita, E. Torres, D. A. Geddes, J. L. Provis, **M. Criado**. Conditioning of nuclear-grade spent ion-exchange resins in alkali-activated cement. Fresh state properties. *Journal of Nuclear Materials*, 617 (2025) 156169 Cites=0
2. M.J. de Hita, E. Torre, **M. Criado**. Assessment of physical properties developed and leaching capability by binary and ternary cementitious mixtures containing spent ion-exchange resins. *Nuclear Engineering and Technology*, 2024, 103340 Cites=2
3. M.J. de Hita, **M. Criado**. Influence of superplasticizers on the workability and mechanical development of binary and ternary blended cement and alkali-activated cement. *Construction and Building Materials*, 366 (2023) 130272 Cites=30
4. M.C. Alonso, F.J. Luna, **M. Criado**. Corrosion behavior of duplex stainless steel reinforcement in ternary binder concrete exposed to natural chloride penetration. *Construction and Building Materials*, 199 (2019) 385-395 Cites=46
5. M. Vicent, **M. Criado**, J. García-Ten. Alkali-activated materials obtained from asphalt fillers and fluorescent lamps wastes. *Journal of Cleaner Production*, 215 (2019) 343-353 Cites=15
6. U.M. Angst, M.R Geiker, M.C. Alonso, A. Sagüés (13/21). The effect of the steel-concrete interface on chloride-induced corrosion initiation in concrete: a critical review by RILEM TC 262-SCI. *Materials and Structures*, 52 (2019) 88 Cites=156
7. **M. Criado**, S.A. Bernal, P. Garcia-Triñanes, J.L. Provis. Influence of slag composition on the stability of steel in alkali activated materials. *Journal of Materials Science*, 53 (2018) 5016-5035 Cites=68
8. **M. Criado**, I. Sobrados, J.M. Bastidas, J. Sanz. Corrosion behaviour of coated steel rebars in carbonated and chloride-contaminated Portland and fly ash mortars. *Progress in Organic Coatings*, 99 (2016) 11-22 Cites=36
9. **M. Criado**. Handbook of alkali-activated cements, mortars and concretes. Chapter 13: Corrosion behaviour of reinforced steel embedded in alkali-activated mortar. Ed. F. Pacheco-Torgal, J. Labrincha, C. Leonelli, A. Palomo, P. Chindaprasit. Woodhead publishing Ltd, 333-372, 2015. ISBN (print): 978-1-178242-276-1 Cites=13
10. **M. Criado**, C. Monticelli, S. Fajardo, D. Gelli, V. Grassi, J.M. Bastidas. Organic inhibitor mixtures for reinforcing steel corrosion in carbonated alkali-activated fly ash mortar. *Construction and Building Materials*, 35 (2012) 30-37 Cites=49

C.2. Congress

1. **M. Criado**, E. Torres, A. Pachón-Montaño. Combined protection strategy applied to metallic drums intended for direct conditioning of decontamination sludges. European Corrosion Congress 2024. Paris (France) 1st-5th September 2024, Oral
2. M.J. de Hita, D. Geddes, J.L. Provis, **M. Criado**. Rheological and microstructural study of alkali-activated materials intended for the immobilisation of nuclear grade ion-exchange resins. 7th International Conference Non-Traditional Cement & Concrete. Brno (Czech Republic) 25th-28th June 2023, Oral
3. M.J. de Hita, E. Torres, **M. Criado**. Physical properties of alkali-activated cement formulations for the safe immobilization of spent nuclear-grade ion-exchange resins. The Nuclear Materials Conference. Ghent (Belgium) 24th-28th October 2022, Keynote lecture.
4. **M. Criado**, M. Vicent, F. J. García-Ten. Design the alkali-reactivated fly ash matrixes to encapsulate ion exchange resin radioactive wastes. 2nd VitrogeoWaste Conference: Vitrification, Geopolymerization, Wastes Management, Green Cements and Circular Economy. Baeza (Spain) 24th-26th May 2021, Oral
5. M. J. de Hita, **M. Criado**. Cementitious matrixes for nuclear waste management: effect of admixtures on fresh state properties. Engineered Materials for Sustainable Structures Conference. Modena (Italy) 26th-28th April 2021, Oral
6. **M. Criado**, M. Gimenez, E. Menéndez, M.C. Alonso. Durability performance of uncracked and cracked nanoadded UHPFRCs in a dynamic leaching system. 74th RILEM Annual

Week & 40th Cement and Concrete Science Conference. Sheffield (United Kingdom) 30th August-4th September 2020, Oral

7. **M. Criado**, J.L. Provis. Effect of curing time on binder development and steel corrosion in alkali activated slag mortars. 15th International Congress on the Chemistry of Cement. Prague (Czech Republic) 16th-20th September 2019, Oral.

8. E. Cuenca, **M. Criado**, M. Giménez, E. Gastaldo-Brac, S. Sideri, A. Tretjakov, M.C. Alonso, L. Ferrara. Concept of Ultra High Durability Concrete for improved durability in chemical environments: Preliminary results. Conference on Durable Concrete for Infrastructure under Severe Conditions. Ghent (Belgium) 10th-11th September 2019, Oral.

9. **M. Criado**, X. Ke, J.L. Provis, S.A. Bernal. Structural changes in sodium carbonate activated slag binders induced by CO₂ exposure. 39th Annual Cement and Concrete Science Conference. Bath (England) 10th-11th September 2019, Oral.

10. **M. Criado**, S.A. Bernal, J.L. Provis. Steel passive state stability in activated slag mortars and white Portland cement mortars. European Corrosion Congress 2017, 20th International Corrosion Congress & Process Safety Congress 2017. Prague (Czech Republic) 3rd-7th September 2017, Oral.

C.3. Research projects

1. Impact of microbiological degradation on the long-term performance of novel cementitious matrices for radioactive waste disposal (BIOMATRIX). (97.875€) Ministerio de Ciencia, Innovación y Universidades. 2025-2028 PI: **María Criado Sanz**.

2. Research on renewable generation sources and smart, modular, thermal storage systems (GEN VERDE). (2.301.006,54€). Comunidad de Madrid. 2025-2026 PI: Empresarios Agrupados S.L. Participation: **PI from CSIC**

3. Evolution of reaction products and compressive strength of alkali-activated cements using computational modelling techniques (CAMODEL). (24.000€) CSIC. ICOOP-Modalidad A 2023. 2024-2025 PI: **María Criado Sanz**.

4. Corrosion protection of metal containers for the storage of low-active waste (PROMERA). (44.770€) Ministerio de Ciencia e Innovación. 2022-2024 PI: **María Criado Sanz**.

5. Immobilization of nuclear grade ion resins in alkaline-activated materials (IRINEMA), (305.750€) Comunidad de Madrid 2020-2024 PI: **María Criado Sanz**.

6. Rethinking coastal defence and green-energy service infrastructures through enhanced-durability high-performance cement-based materials (ReSHEALience), Grant Agreement nº. 760824. (5.557.595,50€). European Union. H2020-NMBP-06-2017. 2018-2021 PI: Liberato Ferrara Participation: Researcher.

7. Durability of geopolymers as 21st century concretes (GeopolyConc)", ERC Grant Agreement nº. 335928". (1.500.000€) ERC under the European Union's Seventh Framework Programme (FP/2007-2013) 2013-2018 PI: John L. Provis Participation: Researcher.

8. Corrosion behavior of reinforced steel embedded in concrete made from industrial by-products. (70.000€) Departamento Administrativo de Ciencia, Tecnología e Innovación (COLCIENCIAS) 2014-2016 PI: William Aperador Chaparro, **María Criado Sanz**, María Isabel Sobrados de la Plaza.

C.4. Contracts, technological or transfer merits

1. Patent: "Method for the immobilization of nuclear grade spent resins in a cementitious matrix and kit for carrying out said method", M. Criado and M.J. de Hita. WO 2024/189251, 19/09/2024

2. Technical reports of the D8.1 – Key Performance Success Indicators, and common testing conditions, the D5.1 – Verification of durability of UHDCs under XA and XS accelerated tests, the D5.2 – Verification of sensitivity and reliability of nondestructive methods and sensors, the D5.3 – Particularisation of durability criteria for design of UHDCs to extend service life of infrastructures in XS and XA environments from ReSHEALience project (H2020-NMBP-2016-2017, 760824), 2019-2020.

3. Basic knowledge of Nuclear Magnetic Resonance of solids and its application to the characterization of cement pastes. Enterprise: CIMPORTEC, S.A. (2700€) 2012 PI: María Isabel Sobrados de la Plaza. Participation: Researcher.

4. Comparative study of the corrosion resistance of austenitic low nickel stainless steel. Enterprise: ACERINOX, S.A. (40000€) 2010-2011 PI: Jose María Bastidas Rull. Participation: Researcher.

5. Atmospheric corrosion of ferritic stainless steels. Enterprise: ACERINOX, S.A. (€45,000) 2008-2009 PI: Jose María Bastidas Rull. Participation: Researcher.

C.5. Training of teaching and research staff

1. Yibing Zuo. Performance of alkali-activated slag binder in immobilizing heavy metals (PASS). HORIZON-MSCA-2024-PF-01 (nº 101206107). Instituto de Ciencias de la Construcción Eduardo Torroja. 2025-2027 (2 años)

2. Jaime Hinojosa. Programa INVESTIGO 2023 de la Comunidad de Madrid. Instituto de Ciencias de la Construcción Eduardo Torroja. 2024-2025 (1 año)

3. María Jimena de Hita Fernández. Alkali-Activated Cements for safe and sustainable immobilisation of nuclear-grade spent ion exchange resins. Tesis doctoral. Universidad Autónoma de Madrid. 2024

4. Supervision of 3 TFM at the Universidad Militar Nueva Granada (Colombia) and the University of Sheffield (UK)

5. Supervision of 7 TFG at the University of Sheffield (UK), the Universidad Carlos III de Madrid (Spain) and the Universidad Autónoma de Madrid (Spain).

6. Supervision of student internships of 2 students at the Universidad Autónoma de Madrid (Spain).