

**Eduardo Torroja Institute for Construction Sciences (IETcc-CSIC)**  
**Department of Materials**  
**Research Group: Chemistry of Cement**

**Dr Francisca Puertas**

BE (Chemistry), Autonomía University of Madrid  
BSE (Chemistry), Autonomía University of Madrid  
PhD (Sciences), Autonomía University of Madrid

**Research Full Professor of CSIC**

Email: [puertasf@ietcc.csic.es](mailto:puertasf@ietcc.csic.es)

**ORCID:** 0000-0002-4215-0184

**Researcher ID:** F-5366-2016



**Summary**

Her work has focused on the physical chemistry of cement manufacture, where she has studied and developed alternative, more energy-efficient manufacturing processes using or re-using industrial waste or by-products as alternative materials. She has also been intensely involved (she was an international pioneer) in the development of new (alkali activated) cements with improved properties, obtained under more favourable environmental conditions (reuse of many and different byproduct and industrial wastes). She is presently also pursuing other lines of research, including the micro- and nanostructural characterization of cement, mortar and concretes; cement-organic admixture compatibility and cement-based materials environmental and durability behaviour.

**Scopus** (citation rating, March, 2024): **cites: 11748, H= 55**

**WoS** (Citation rating, March, 2024): **cites: 10491, H= 52**

**Google Scholar** (Citation rating, March, 2024): **cites: 17480, H= 63**

**ResearchGate** (Citation rating, March, 2024): **cites: 14232m H=59**

**5 years (quinquennios): 6**

**6 years (sexenios): 6**

**Actual and Previous Institutional Positions**

- **Executive Vicepresident** of Women and Sciences Commission of CSIC (2020-2022)
- **Deputy Director** in Eduardo Torroja Institute for Construction Sciences (2010-2013)
- **Head of Department** "Synthesis of Materials" (1999-2005)
- Member of Commission Area of Science and Technology of Materials (CSIC, 2005-2009)
- Member of Commission of Publication (CSIC, 2009-2012)
- Member of Commission Women and Science (CSIC, 2013-2020)

## Awards and Prizes

- **Wards to Main Scientific Carrier by SPANISH SOCIETY OF MATERIALS (SOCIEMAT)** (Zaragoza, 2010)
- **Wards to the best communication** in the I international Congress on Building Research (Madrid, 2009)
- **XXIII National University Edition Awards in the category of "Scientific Disclosure"** to the book "*Gabriella Morreale. Her life and her Time*", of which Dr. Francisca Puertas is co-author (2020)

## Editorial Roles

- **Editor-in Chief** of international Journal *Materiales de Construcción* (CSIC), since 1997-2019. Index in JCR®. **Honorary Editor-in-Chief**, since 2020
- **Associate Editor** of *Cement and Concrete Composites* (Elsevier) (2023)
- **Editorial Board Member** of *Cement and Concrete Composites* (Elsevier), since 2015. Index in JCR®
- **Editorial Board Member** of *Materials (open access)* (MDPI), since 2021. Index in JCR®
- **Co-Editor of Special Issue** of *Molecules (open access)*: 2nd Edition: Advances in Alkali-Activated Materials, since 2021. Index in JCR®
- **Editorial Board Member** of *Cement, Wapno and Beton* (Poland, since 2011). Index in JCR®
- **Scientific Advisory Board** of *Waste and Biomass Valorization* (Springer 2009-2019). Index in JCR®
- **Editorial Board Member** of *Anales de la Edificación* (Open Acces Journal) (UPM, since 2015)

## Professional Memberships

- Member of **Permanent Cement Comission of Spain** (Ministerio de Fomento, Spain) in representation to Eduardo Torroja Institute for Construction Sciences (2004-until now)
- Member of RILEM TG "Quantitative identification of clinkers and cements" (1997).
- Member of RILEM Technical Committee of Alkaline Activated Materials (2007-2013)
- Member of RILEM TC 247-DTA (2013-until now)
- Member of Work Group of ACHE GT 2/3 "Aditivos Químicos para el hormigón estructural", since 2000
- Member of Subcomission nº 2 del CTN-83/AENOR "Admixtures", since 2000
- Member of Subcomission nº4 "Mineral Additions/CTN/83 "Concrete" de AENOR, desde 1994.
- Founding Member of Networks on Cultural Heritage of CSIC (2001) and on Recycling Materials of CSIC (RECIMAT) (2009)
- **Scientific Member of more than 70 National and International Conferences and Congresses**

## Research projects

- Leader and Participation of **38 national (12 as Principal Investigator) and 31 international R&D projects (12 as Principal Investigator plus 3 as Chairwoman and member of Advisory Committee)**

### **(Last projects as Principal Investigator)**

- Principal Investigator. *Cements and concretes prepared with NORM (Naturally Occurring Radioactive Materials) waste. Behaviour, properties and radiological characterization.* MINECO (2016-2020)
- Vice-chairwoman of the **COST-ACTION**. TUI301 NORM *for Building Materials*. More than 30 research groups involved (2014-2017)
- Principal Investigator. *Rheology of alkaline cement and concretes. Scientific and technological basis for optimization and standardization.* MINECO (2014-2107)
- Principal Investigator at IETcc. "*COmputationally Driven design of Innovative CEment-based materials (CODICE)*". European Commission, 7 Framework Programme (2008-2011). Coordinator. Dr J.S Dolado
- Principal Investigator at IETcc. "*Environment friendly technology to produce new cement and thermal insulating materials based on mechano-chemical activation of urban and industrial glass wastes*". CSIC- Russian Foundation for Basic Research (2009-2010)
- Principal Investigator. "*Compatibility between standard cements and superplasticizers based in polycarboxilates. Influence on the properties and characteristics of pastes, mortars and concretes*". Spanish Ministry of Science and Innovation (2007-2010)
- Principal Investigator. "*Re-use of urban and industrial waste glass in alkaline cements. Activation, behaviour and durability*" Spanish Ministry of Science and Innovation (2011-2013)

### **Publications**

#### **Books (27 books and Chapters, 3 as co-Editor and Books and Podcasts and interview on Women and Sciences, to March, 2024)**

- **Editors:** K. Van Balen, E.E. Toumbakari, M.T. Blanco-Varela, J. Aguilera, F. Puertas, A. Palomo, C. Sabbioni, C. Riontino, G. Zappia. "Environmental deterioration of ancient and modern hydraulic mortars". Research Report N° 15, Fith Framework Programme. 194 páginas. European Commission ISBN 92-894-3169-5 (2003)
- **Editors:** F. Puertas, M.T. Blanco-Varela. "SEMINARIO 10 Estudios avanzados sobre cementos, morteros y hormigones" ISBN 978-84-690-5493-3 (2007)
- **Editors:** F.A. López, F. Puertas, F.J. Alguacil. A. Guerrero. "1st Spanish National Conference on Advances in Materials Recycling and Eco-Energy". RECIMAT.09. ISBN 978-84-7292-3980-0 (2009)

#### **Books and Chapters**

- ¿Qué Sabemos de los Cementos y Hormigones? Autora del Libro: Francisca Puertas. Editorial: CSIC y Catarata (2024). ISBN: 978-84-00-11241-7
- Sustainability in Structural Design. Autores del capítulo: Francisca Puertas and Ruby Mejía de Gutiérrez. Título del Capítulo: Chapter 3: Alkali-Activated Concrete Performance. IABSE book (2024).
- The Path to Green Concrete. Autores del capítulo: Francisca Puertas and Manuel Torres-Carrasco. Título del Capítulo: Chapter 3: Alkali-Activated Slag Cements and Concrete. Woodhead Publishing Elsevier (2024).
- Procesos de degradación Físico-Químicos en estructuras de hormigón armado. Autores del capítulo: F. Puertas y J. Payá. Título del Capítulo: Cementos y Hormigones Alcalinos: Definición, Comportamiento y Durabilidad. Universidad de Alicante. UNE. (2021). ISBN: 978-84-9717-XXX-X

- Naturally Occurring Radioactive Materials in Construction. Integrating Radiation Protection in Reuse (COST Action Tu 1301 NORM4BUILDING). Ed. W. Schroeyers. Woodhead Publishing (2017). Author of 3 chapters:
  - Chapter 6: From raw materials to NORM by-products, pp 135-182
  - Chapter 7: From NORM by-products to building materials (co-coordinator), pp 183-252
  - Chapter 10. General conclusions and the way forward, pp 301-304
- Los Retos en la Industria del Cemento. Ed. ACHE (Asociación Científico-Técnica del Hormigón Estructural). (2017). Coordinator of the Book
- HANDBOOK OF ALKALI-ACTIVATED CEMENTS, MORTARS AND CONCRETES. Ed. by Pacheco-Torgal, Labrincha, Leonelli, Palomo and Chindaprasit (2014). Chapter 4. F. Puertas, M. Torres-Carrasco, M.M. Alonso. "Reuse of urban and industrial waste glass as a novel activator for alkali-activated slag cement pastes: A case study".
- Alkali-Activated Materials. State-of-the-Art Report, RILEM TC 224-AAM. Ed. John L. Provis, Jannie S.J. van Deventer. (2014) ISBN: 2213-204X ISSN 2213-2031 (electronic); ISBN 978-94-007-7671-5 ISBN 978-94-007-7672-2 (eBook): DOI 10.1007/978-94-007-7672-2. Springer Dordrecht Heidelberg New York London. 3 Chapters of book
  - J.L. Provis, P. Duxson, E. Kavalerova, P.V. Krivenko, Z. Pan, F. Puertas, J.S.J. van Deventer. "Historical Aspect and Overview", pp. 11-58
  - F. Puertas, M. Palacios, J.L. Provis. "Admixtures". pp 145-156
  - S. A. Bernal, V. Bilek, M. Criado, A. Fernández-Jiménez, E. Karavelora, P. Krivenko, M. Palacios, A. Palomo, J.L. Provis, F. Puertas, E. San Nicolas, C. Shi, F. Winnefeld. "Durability and Testing-Degradation via Mass Transport". pp- 223- 278
- F. Puertas, M.S. Hernández, C. Varga, S. Goñi, A. Guerrero. "Proceso de deterioro por descalcificación del cemento. Estudio comparativo de cementos de diferente composición. MONOGRAFIA IETcc, nº 419, pp 49 (2013). ISBN: 978-84-00-09722-6; e-ISBN: 978-84-00-09723-3
- I. García-Díaz, F. Puertas, "Empleo de residuos cerámicos como materia prima alternativa en la fabricación de cemento Pórtland". Monografía del IETcc (CSIC) Nº 417 Ed. CSIC-Instituto de Ciencias de la Construcción Eduardo Torroja (2011). ISBN: 978-84-00-09368-6, NIPO:472-11-163-1
- J. Roncero, F. Puertas y et. Monografía nº 16 (ACHE): "Manual de Tecnología de Aditivos para Hormigón" (2010). ISBN: 978-84-89670-70-9
- M.M. Alonso, F. Puertas, M. Palacios. "Aditivos para el hormigón: Compatibilidad de cemento-aditivos basados en policarboxilatos". Monografía del IETcc (CSIC), Nº 415. Ed. CSIC-Instituto de Ciencias de la Construcción Eduardo Torroja (2009). ISBN 978-84-00-08907-8, NIPO 472-09-163-7
- F. Puertas, A. Fernández-Jiménez, J.G. Palomo. "Mathematical model for the strength behaviour of alkali activated blast furnace slag cements". Modern Concrete materials: binders, additions and admixtures. Ed. R.K. Dhir, T.D. Dyer. Thomas Telford (1999). ISBN 0 7277 2822 9
- M.T. Blanco-Varela, A. Palomo, F. Puertas, T. Vázquez, "Fluxes and mineralizers: fluoro-sulfate cements", Materials Science of Concrete V. Ed J.P. Skalny. American Ceramic Society (1997) ISBN 1-57498-027-0
- F. Puertas "Aplicación de la Instrumentación analítica a la determinación de las agresiones producidas por el agua". La Humedad como Patología frecuente en la edificación. Ed. Colegio Oficial de Aparejadores y Arquitectos Técnicos de Madrid y CSIC. (1993). ISBN 84-86891-16-7
- M.T. Blanco-Varela, S. Giménez, A. Palomo, F. Puertas, T. Vázquez. "Production and behaviour of new white sulphate-resistant cement". CONCRETE 2000. Economic and durable

construction through excellence. Ed. R.K. Dhir, M. R. Jones. E &FN SPON (1993). ISBN 0 419 19000 7

- M.T. Blanco-Varela, F. Puertas "Identificación y caracterización de cemento aluminoso a través de diferentes técnicas analíticas". Jornadas sobre Cemento aluminoso. Ed. CSIC (1992). ISBN 84-7292-357-6
- F. Puertas, M.T. Blanco-Varela, A. Palomo. "Microestructura del hormigón. Influencia sobre sus propiedades". Monografía del IETcc (CSIC) Nº 398 (1989)
- F. Puertas. "Aplicación de los ensayos físico-mecánicos y de la instrumentación analítica aplicada al diagnóstico del estado de deterioro de los materiales pétreos". Jornadas sobre Restauración y Conservación de Monumentos. Ed Ministerio de Cultura (1989) ISBN 84-7483-793-6

### Books and Podcasts on women and science

- **Francisca Puertas. *El papel de las mujeres en la Ciencia y la Tecnología***. Ed. SANTILLANA Educación S.I. (2015). Segunda Edición 2018. **ISBN 978-84-4846-8**
- José Pedro Moreno, Ma Jesus Obregón, Flora de Pablo, **Francisca Puertas. *Gabriella Morrealle. Su vida y su tiempo***. Ed. UNIVERSIDAD AUTONOMA DE MADRID (2019), **isbn: 978-84-8344-701-7. Libro ganador en los XXIII Premios Nacionales de Edición Universitaria en la categoría de "Divulgación Científica" (2020)**
- **Francisca Puertas. *Podium Potcast. Compartir en familia. Mujeres y ciencia. ¿Tienen tus hijas referentes femeninos?***  
<https://www.podiumpodcast.com/compartir-en-familia/> (2020)

### Papers Published in Index Journals (171 papers to March, 2024)

- A.A. Hoyos-Montilla, J. I. Tobón, F. Puertas. "Role of calcium hidroxide in the alkaline activation of fly ash". CEMENT AND CONCRETE COMPOSITES 137, 104925 (2023). <https://doi.org/10.1016/j.cemconcomp.2022.104925>
- P. Krivenko, F. Puertas, V. Gots, A. Gelevera, N. Rogozina. "A comparative study on the influence of whitening additives on structure formation and evolution of properties of decorative alkali-activated slag cements and mortars". MATERIALES DE CONSTRUCCION, Vol 73, nº 350, april-june, e311 (2023). <https://doi.org/10.3989/mc.2023.319622>
- Caño, J.A. Suárez-Navarro, F. Puertas, A. Fernández-Jiménez, M.M. Alonso. "Modelling the activity concentration index in cements, fly ashes and slags on the basis of their chemical composition". MATERIALS, 16, 2677 (2023). <https://doi.org/10.3390/ma16072677>
- P. Pérez-Cortes, I. García-Lodeiro, F. Puertas, M.C. Alonso. "Effect of the incorporation of a molten salt waste from nuclear power plants in the development of geopolymers and Portland cement systems". CEMENT AND CONCRETE COMPOSITES, 142, 105210 (2023). <https://doi.org/10.1016/j.cemconcomp.2023.105210>
- L. Gonzalez-Panicello, I. García-Lodeiro, F. Puertas, M. Palacios. "Influence of accelerating admixtures on the reactivity of synthetic aluminosilicate glases. *Materials*, 15, 818 (2022)
- A. Moreno de los Reyes, J.A. Suárez-Navarro, M.M. Alonso, C. Gascó, I. Sobrados, F. Puertas. "Hybrid cements. Mechanical Strengths, Microstructure and radiological behavior". *Molecules*, 27, 498 (2022).
- A. A. Hoyos-Montilla, F. Puertas, J. Molina Mosquera, J. I. Tobón. "Infrared spectra experimental analyses on alkali-activated fly ash-based binders. *Spectroschimica Acta part A. A Molecular and Biomolecular spectroscopy*, 269, 120698 (2022).

- F. Puertas, J.A. Suárez-Navarro, A. Gil-Maroto, A.M. Moreno de los Reyes, C. Gascó, M.M. Alonso. "Microstructural, mechanical and radiological characterization fo mortars made with granite sand". *Materials*, 14, 5656 (2021)
- J.A. Suárez-Navarro, M.M. Alonso, C. Gascó, A. Pachón, P.M. Carmona-Quiroga, C. Argiz, M.A. Sanjuán and F. Puertas. "Radiological behaviour of granite sands for mortar preparation. Effect of granulometry and composition". *Boletín de la Real Sociedad de Cerámica y Vidrio* (2021).
- A. A. Hoyos-Montilla, F. Puertas, J.I. Tobon. Study of reaction stages study of Alkali activated cementitious materials using microcalorimetry. *Advances in Cement Research*, Vol 33 (1), pp.1-13 (2021)
- A. M. Moreno de los Reyes, J.A. Suárez-Navarro, M.M. Alonso, C. Gascó, I. Sobrados, F. Puertas. New Approach for the determination of radiological parameters on hardened cement pasts with coal ash. *Materials*, 14, 475. (2021)
- F. Puertas, J.A. Suárez-Navarro, M.M. Alonso, C. Gascó. Wastes NORM, Cements and Concrete. A Review. *Materiales de Construcción*, Vol 71, N° 341, e244 (2021)
- M. Palacios, S. Gismera, M.M. Alonso, J.B. d Espino 'se de Lacaillerie, B. Lothenbach, A. Favier, C. Brumaud, F. Puertas. Early reactivity of sodium silicate-activated slag pastes and its impact on rheological properties. *Cement and Concrete Research*, 140, 106302 (2021)
- S. Gismera, M.M. Alonso, M. Palacios and F. Puertas. Rheology of Alkali-Activated Mortars: Influence of Particle Size and Nature of Aggregates. *Minerals*, 10, 726 (2020)
- W. C. Valencia-Saavedra, R. Mejía de Gutiérrez, F. Puertas. Performance of FA-based geopolymer concretes exposed to acetic and sulfuric acids. *Construction and Building Materials*, 257, 119503 (2020).
- J.A. Suárez-Navarro, A.M. Moreno-Reyes, C. Gascó, M.M. Alonso, F. Puertas. Gamma spectroscopy and LabSOCS-simulated efficiency in the radiological characterisation of quadrangular and cubic specimens of hardened Portland cement pastes. *Radiation Physics and Chemistry*, 171, 108709 (2020)
- C. Gascó, J.A. Suárez-Navarro, E. Escareño-Juárez, S. Fernández, L. García, F. Puertas, M. M. Alonso, C. Pérez. Characteristics limits of  $^{230}\text{Th}$  in alpha spectroscopy with  $^{229}\text{Th}$  as tracer, calculated by simulating interfering tails and overlapping peaks. *Applied Radiation and Isotopes* (2020)
- John L. Provis, Susan A. Bernal, Dali Bondar, Anja Buchwald, Arnaud Castel, Sundararaman Chithiraputhiran, Martin Cyr, Katja Dombrowski-Daube, Ashish Dubey, Vilma Ducman, Andrew Dunster, Gregor J.G. Gluth, Sreejith Nanukuttan, Karl Peterson, Francisca Puertas, Arie van Riessen, Manuel Torres-Carrasco, Guang Ye, Yibing Zuo. RILEM TC 247-DTA Round Robin Test: Mix design and reproducibility of compressive strength of alkali-activated concretes- *Materials & Structures*, 52:99 (2019)
- M.M. Alonso, C. Gascó, M. Martín Morales, J.A. Suárez-Navarro, M. Zamorano, F. Puertas. Olive Biomass ash as an alternative activator in geopolymer formation. Strength, radiological and leaching behaviour. *Cement and Concrete Composites*, Vol 104 (2019)
- J.A. Suarez-Navarro, M. Lanzón, A.M. Moreno-Reyes; C. Gascó, M.M. Alonso, M.T. Blanco-Varela, F. Puertas. Radiological behaviour of pigments and water repellents in cement-based mortars. *Construction and Building Materials*, Vol 225, 879-885 (2019)
- A. Hoyos-Montilla, F. Puertas, J. I. Tobón. Study of the reaction stages of alkali-activated cementitious materials using microcalorimetry. *Advances in Cement Research*, 1-13 (2019)
- V. Pérez-Villar, N. Flores-Medina, M.M. Alonso, S. Gismera Diez, F. Puertas. Assesment parameters governing the steel fiber alignment in fresh cement-bases composites. *Construction and Building Materials*, 207, 548-562 (2019)

- R. A. Robayo-Salazar, R. Mejía de Gutierrez, F. Puertas. Alkali-activated binary concrete based on a natural pozzolan and granulated blast furnace slag: physical, mechanical and microstructural characterization. *Materiales de Construcción* Vol 69, nº 335, e191 (2019)
- M. Palacios, C. Varga, M.M. Alonso, F. Puertas. "Influence of the alkaline solution and temperature on the rheology and reactivity of alkali-activated fly ash pastes". *Cement and Concrete Composites* 85, 22-31 (2019)
- J.A. Suárez-Navarro, C. Gascó, M.M. Alonso, M.T. Blanco-Varela, M. Lanzón, F. Puertas. Use of Genie 2000 and Excel VBA to correct for g-ray interference in the determination of NORM building material activity concentrations. *Applied Radiation and Isotopes* 142, 1-7 (2018)
- F. Puertas, B. González-Fonteboa, I. González-Taboada, M.M. Alonso, M. Torres-Carrasco, G. Rojo, F. Martínez-Abella. "Alkali-activated slag concrete: fresh and hardened behaviour". *Cement and Concrete Composites*, Vol 85, 22-31 (2018)
- M.M. Alonso, A. Rodríguez, F. Puertas. "Use of construction and demolition waste aggregates in alkali-activated mortars. Mechanical strength and performance". *Materiales de Construcción*, Vol. 68, Issue 331, July–September, e164 (2018).
- M.M. Alonso, A. Pasko, C. Gascó, J.A. Suárez, O. Kovalchuk, P. Krivenko, F. Puertas. "Radioactivity and Pb and Ni immobilization in SCM-bearing alkali-activated matrices". *Construction and Building Materials*, Vol 159, 20, 745-754 (2018).
- A. Hoyos-Montilla, F. Puertas, J.I. Tobón. "Microcalorimetric study of the effect of calcium hydroxide and temperatura on the alkaline activation of coal fy ash". *Journal of Thermal Analysis and Calorimetry* 131:2395–2410 (2018).
- B. Quintana, M.C. Pedrosa, L. Vázquez-Canela, R. Santamaría, M. A. Sanjuán, F. Puertas. "A method of the complete analysis of NORM building materials by  $\gamma$ -ray spectrometry with HPGe detectors". *Applied Raditation and Isotopes*. Vol 134, 470-476 (2018).
- R. Robayo-Salazar, R. Mejía de Gutierrez, F. Puertas. "Study of synergy between a natural volcanic pozzolan and a granulated blast furnace slag in the production of geopolymeric pastes and mortars". *Construction and Building Materials*, 157, 151-160 (2017).
- C. Varga, M.M. Alonso, F. Puertas. "Acid media induced leaching in fly ash alkali-activated pastes: effect of fly ash nature. *Cement Wapno Beton*, Nº 2, 97-112 (2017)
- D. E. Angulo-Ramirez, R. Mejía de Gutierrez, F. Puertas. "Alkali-activated portland blast-furnace slag cement: Mechanical properties and hydration". *Construction and Building Materials*, 140, 118-128 (2017)
- M.M. Alonso. S. Gismera, M.T. Blanco, M. Lanzón, F. Puertas. "Alkali-activated mortars: Workability and rheological behaviour". *Construction and Building Materials*, 145, 576-587 (2017)
- M. Torres-Carrasco, F. Puertas. "Waste glass as a precursor in alkaline activation: Chemical process and hydration products". *Construction and Building Materials*, 139, 342-354 (2017)
- M.M. Alonso, R.Martínez-Gaitero, S.Gismera-Díez, F. Puertas. "PCE and BNS admixture adsorption in sands with different composition and particle size distribution". *Materiales de Construcción*, 67, nº 326, e121 (2017)
- M. Torres-Carrasco, F. Puertas. "Alkaline activation of aluminosilicate as an alternative to Portland cement: A review. *Romanian Journal Materials*, 47, 3-15 (2017)
- R.A. Robayo-Salazar, R. Mejía de Gutierrez, F. Puertas. "Effect of metakaolin on natural volcanic pozzolan-based geopolymer cement. *Applied Clay Science*, 132-133, 491-497 (2016)
- F. Puertas, R. Santos, M. Del Río, M.M. Alonso. "Alkali-activated cement mortars containing recycled clay-based construction and demolition waste". *CERAMIC-SILIKATY* 59(3) 202-210 (2015)

- M. Torres-Carrasco, A. Tagnit-Hamou, M. T. Tognonvi, F. Puertas. "Mechanical and durability behaviour of alkali-activated slag concretes prepared using waste glass as alternative activator". *ACI Materials Journal*. (2015)
- F. Puertas, M.M. Alonso, M. Torres-Carrasco, P. Rivilla, C. Gasco, J.L. Yague, J.A. Suárez, N. Navarro. "Radiological determination in anhydrous and 1 hydrated cements". *Construction and Building Materials*. 101, 1105-112 (2015). Doi: <http://dx.doi.org/10.1016/j.conbuildmat.2015.10074>
- F. Puertas, C. Varga, M.M. Alonso, M.A. Díaz-Bautista, S. Lizarraga. "Alternative pozzolanic additions for Portland cement from abandoned landfills". *CEMENT-WAPNO-BETON*, Vol 20, nº 2, 88 (2015)
- M. Torres-Carrasco, C. Rodríguez-Puertas, M.M. Alonso, F. Puertas. "Alkali activated slag cements using waste glass as alternative activators. Rheological behaviour". *Boletín de la Sociedad Española de Cerámica y Vidrio*. Vol 54 (2), 45-57 (2015). Doi: <http://dx.doi.org/10.1016/j.bsecv.2015.03.004>
- M.M. Alonso, F. Puertas. "Adsorption of PCE and PNS superplasticisers on cubic and orthorhombic  $C_3A$ . Effect of sulfate". *Construction and Building Materials*, 78, 1, 324-332. DOI:10.1016/j.conbuildmat.2014.12.050 (2015)
- C. Varga, M.M. Alonso, R. Mejía de Gutierrez, J. Mejía, F. Puertas. "Decalcification of alkali-activated slag pastes. Effect of slag chemical composition". *Materials & Structures*. DOI: 10.1617/s11527-014-0422-4 (2015)
- M. Torres-Carrasco, F. Puertas. "Glass waste in geopolymer preparation. Mechanical and microstructural characterization". *Journal of Cleaner Production*. 10.1016/j.jclepro.2014.11.074 (2015)
- K. Ludovít, S.C. Mojumdar, I. Janotka, F. Puertas, M. Palacios, M. Kuliffayova. "Performance of composites with metakaolin-blended cements". *J. Thermal. Anal. And Calorim.* 119 (2), 851-863. Doi. 10.1007/s10973-014-4119-2 (2015)
- S, A. Bernal, R. San Nicolas, R.J. Myers, R. Mejía de Gutierrez, F. Puertas, J.S.J. van Deventer, J.L. Provis. "Slag chemistry controls phase evolution and structural changes induced by accelerated carbonation in alkali-activated binders". *Cement and Concrete Research*, 57, 33-43 (2014)
- F. Puertas, M. Torres-Carrasco. "Use of glass waste as an activator in the preparation of alkali-activated slag cements. Mechanical strength and paste characterisation". *Cement and Concrete Research*, 57, 95-104 (2014)
- F. Puertas, C. Varga, M.M. Alonso. "Rheology of alkali-activated slag pastes. Effect of the nature and concentration of the activating solution. *Cement and Concrete Composite*, 53, 279-288 (2014)
- M. Torres-Carrasco, J.G. Palomo, F. Puertas. "Re-use of urban and industrial waste glass in the preparation of alkaline cements. Glass solubility and statistical analysis". *Materiales de Construcción*, 64, 314 (2014). DOI: 10.3989/mc.2014.0521
- L. Krajci, I. Janotka, F. Puertas, M. Palacios, M. Kuliffayova. "Long-Term Properties of cement composites with various metakaolin content". *Ceramics-Silikaty*, 57 (1), 74-81 (2013)
- M. J. Mejía, R. Mejía de Gutierrez, F. Puertas, "Rice husk ash as silica source in fly ash and ground blast furnace slag cementitious alkali activated systems. *Materiales de Construcción*, 63, nº 311, 361-375 (2013)
- O. Burgos-Montes, M.M. Alonso, F. Puertas. "Viscosity and water demand in limestone- and fly ash-blended cement pastes in the presence of superplasticisers". *Construction and Building Materials*, 48, 417-423 (2013)
- M.M. Alonso, M. Palacios, F. Puertas. "Interaction between polycarboxylate-ether-admixtures and calcium aluminate cement pastes. Part 1: Compatibility studies". *Industrial and Engineering Chemistry Research*, 52, 17323-17329 (2013). DOI: [dx.doi.org/10.1021/ie401615t](http://dx.doi.org/10.1021/ie401615t)



- M.M. Alonso, M. Palacios, F. Puertas. "Interaction between polycarboxylate-ether-admixtures and calcium aluminate cement pastes. Part 2: Hydration studies". *Industrial and Engineering Chemistry Research*, 52, 17330-17340 (2013). DOI: dx.doi.org/10.1021/ie401616f
- M.M. Alonso, M. Palacios, F. Puertas. "Compatibility between polycarboxylate-based admixtures and cement pastes with mineral additions". *Cement and Concrete Composites*, nº 35, 151-162 (2013) DOI: 10.1016/j.cemconcomp.2012.08.020
- M. Palacios, P. Bowen, M. Kappl, H-J. Butt, M. Stuer, C. Pecharrmán, U. Aschauer, F. Puertas. "Repulsion forces of superplasticizers on alkali-activated slag pastes; from AFM measurement and interparticle potentials to rheological properties". *Materiales de Construcción*, nº 308, Vol 62, 489-513 (2012). DOI: 10.3989/mc.2012.01612.
- F. Puertas, S. Goñi, MS Hernandez, A. Guerrero." Comparative Study of Accelerated Decalcification Process among C<sub>3</sub>S, Grey and White Cement Pastes". *Cement and Concrete Composite*, Vol. 34, 384-391 (2012). DOI:10.1016/j.cemconcomp.2011.11.002
- O. Burgos-Montes, M. Palacios, P. Rivilla, F. "Compatibility between superplasticizer admixtures and cements with mineral additions". *Construction and Building Materials*, Vol. 31, 300-309 (2012) DOI. 10.1016/j.conbuildmat.2011.12.092
- I. Higuera, C. Varga, J.G Palomo, T. Vázquez, F. Puertas. "Comportamiento mecánico de mezclas de escorias vítreas de horno alto y metacaolin activadas alcalinamente. Estudio estadístico". *Mater. Construcc.* Vol. 62, nº 306 (2012)
- F. Puertas, M. Palacios, H. Manzano, J.S. Dolado A. Rico, J. Rodríguez. "A model of the C-S-A-H gel formed in alkali-activated slag cements". *J. Eur. Ceram. Soc.* Vol 31, pp 2043-2056. Doi: 10.1016/j.jeurceramsoc2011.04.036 (2011)
- M.S. Hernández, S. Goñi, F. Puertas, A. Guerrero, M Palacios, J.S. Dolado. "Synergy of T1-C<sub>3</sub>S and βC<sub>2</sub>S hydration reactions". *J. Am. Ceram. Soc.* Vol 94 (4), pp 1265-1271. Doi: 10.1111/j.1551-2916.2010.04214.x (2011)
- I. García-Díaz, J.G. Palomo, F. Puertas. "Belite Cements obtained from Ceramic Wastes and Fluxing and Mineralized pair CaF<sub>2</sub>/CaSO<sub>4</sub>". *Cem. Concr. Comp.* Vol 33, pp1063-1070 Doi: 10.1016/j.cemconcomp.2011.06.003 (2011)
- R. Sanchez, M. Palacios, F. Puertas. "Oilwell cements based on blast furnace slag. Characteristics and properties". *Mater. Construcc.* Vol 61, nº 302, pp 185-211. Doi: 10.3989/mc.2010.54110 (2011)
- M. Palacios, F. Puertas. "Effectiveness of Mixing Time on Hardened Properties of Waterglass-Activated Slag Pastes and Mortars". *ACI Material Journal*, Vol 108, Nº 1(January-February), pp 73-78 (2011)
- S. Goñi, A. Guerrero, F. Puertas, M.S. Hernández, M. Palacios, J.S. Dolado, W. Zhu, T. Howind. "Textural and Mechanical Characterization of C-S-H gels from Hydration of Synthetic T1-C<sub>3</sub>S, β-C<sub>2</sub>S and their Blends". *Mater. Construcc.* , Vol 61, nº 302, pp. 169-183. Doi: 10.3989/mc.2011.00511 (2011)
- I. Janotka, F. Puertas, M. Palacios, C. Vargas, L. Krajci. "Metakaolin sand- promising addition for Portland cement". *Mater. Construcc.* Vol 60, nº 298, pp 73-88. Doi: 10.3989/mc2010509 (2010)
- I. Janotka, F. Puertas, M. Palacios, M. Kuliffayoya. "Metakaolin sand-blended cement pastes: rheology, hydration and mechanical properties". *Constr. Build. Mater.* Vol 24, pp. 791-802. Doi:10.1016/j.conbuildmat.2009.10.028 (2010)
- F. Puertas, I. García-Díaz, M. Palacios, M.F. Gazulla, M.P. Gómez, M. Orduña. "Clinkers and cements obtained from raw mix containing ceramic waste as a prime material. Characterization, hydration and leaching studies". *Cem. Concr. Comp.*, Vol 32, pp 175-186 Doi. 10.1016/j.cemconcomp.2009.11011 (2010)
- A.V. Gorokhovskii, D.V. Meshcheryakov, I.N. Burmistrov, D.S. Spiricheva, J.I. Escalante-García, F. Puertas. "Heat-Insulating material based on cullet subjected to mechanochemical activation". *Glass and Ceramics.* , Vol 67, Nº 1-2, pp 6-9 (2010)

- S. Goñi, F. Puertas, M.S. Hernández, M Palacios, A. Guerrero, J.S. Dolado, B Zanga, F. Baroni. "Quantitative study of hydration of C<sub>3</sub>S and C<sub>2</sub>S by thermal analysis. Evolution and composition of C-S-H gels formed". *J. Therm. Anal. Calorm.* Vol 102, nº 3, pp. 965-973 Doi. 10.1007/s10973-010-0816-7 (2010)
- S. Bernal, R. Mejía de Gutierrez, E. Rodríguez, S. Delvasto, F. Puertas. "Mechanical behaviour of Alkali-activated slag concretes reinforced with steel fibres". *Mater. Construcc.* Vol 59, nº 293, pp. 53-62 . Doi. 10.3989/mc2009.41807 (2009)
- M. Palacios, F. Puertas, P. Bowen, Y. F. Houst. "Effect of PCs superplasticizers on the rheological properties and hydration process of slag portland cement pastes". *J. Mater. Sci.*, Vol 44, pp. 2714-2723 Doi. 10.1007/s10853-009-3356-4 (2009)
- I. García-Díaz, F. Puertas, M.F. Gazulla, P. Gómez, M. Palacios. "Effect of ZnO, ZrO<sub>2</sub> y B<sub>2</sub>O<sub>3</sub> on the clinker process. Part II. Clinker phases distribution". *Mater. Construcc.*, Vol 59, nº 294, pp 53-74. Doi. 10.3989/mc2009.46308 (2009)
- F. Puertas, M. Palacios, A. Gil-Maroto, T. Vazquez. "Alkali-aggregate behaviour of álcali-activated slag mortars. Effect of nature of aggregate". *Cem. Concr. Res.*, Vol 31, pp 277-284 Doi: 10.1016/j.cemconcomp.2009.02.008 (2009)
- I. Elkhadiri, M. Palacios, F. Puertas. "Effect of curing temperatura on hydration process of different cement". *Ceramics Silikaty*, Vol 53 (2), pp 65-75 (2009)
- M. Palacios, Y.F. Houst, P. Bowen, F. Puertas. "Adsorption of superplasticizing admixtures on alkali-activated slag pastes". *Cem. Concr. Res.* Vol 39, pp 670-677 (2009)
- M. Palacios, P. Banfill, F. Puertas. Rheological behaviour of alkali-activated cement pastes and mortars. Effect of admixtures. *ACI Materials Journal* Vo 105, pp 140-148 (2008).
- I. Elkhadiri, F. Puertas "Effect of curing temperature on the hydration and behaviour of sulfate-resistant cement". *Const. Build. Mater.*, Vol 22, pp1331-1341 (2008)
- R. Mejía de Gutierrez, S. Bernal, E. Rodríguez, F. Puertas. "Alternative concrete based on alkali-activated slag". *Mater. Construcc.*, Vol 58, nº 291, pp 53-67 (2008)
- F. Puertas, I. García, A. Barba, M.F. Gazulla, M. Palacios. "Reactivity and burnability of raw mixes made with ceramic wastes". *Cem. Concr. Comp.* Doi.10.1016/j.cemconcomp.2008.06.003.; Vol 30, pp 798-805 (2008)
- I. García-Díaz, F. Puertas, M.F. Gazulla, P. Gómez, M. Palacios. "Effect of ZnO, ZrO<sub>2</sub> y B<sub>2</sub>O<sub>3</sub> on the clinkerization process. Part I. Mineralogical composition". *Mater. Construcc.* Vol 58, nº 292, pp 81-99 (2008)
- M. Palacios, F. Puertas. "Effect of shrinkage-reducing admixtures on the properties of alkali-activated slag mortars and pastes". *Cem. Concr. Res.*, Vol 37, 691-702 (2007)
- J. Torres, R. Mejía de Gutierrez, F. Puertas. "Effect of kaolin treatment on mortar chloride permeability". *Mater. Construcc.*, Vol 57, nº 285, 61-69 (2007)
- M.M. Alonso, M. Palacios, F. Puertas, A.G. de la Torre, M.A.G. Aranda. "Effect of polycarboxylate admixture structure on cement paste rheology". *Mater. Construcc.*, Vol 57, nº 286, 65-81 (2007)
- J.S. Alcaide, E.G<sup>a</sup> Alcocel, F. Puertas, R. Lapuente, P. Garcés. "Carbon fibre-reinforced in álcali-activated slag mortars", *Mater. Construcc.*, Vol 57, nº288, 33-48 (2007)
- F. Puertas, A. Barba, M.F. Gazulla, M.P. Gómez, M. Palacios, S. Martínez.Ramírez. "Ceramic wastes as raw materials in pórtland cement clinker fabrication: characterization and alkaline activation". *Mater. Construcc.*, Vol 54 nº 281, pp. 71-83 (2006).
- F. Puertas, M. Palacios, T. Vázquez. "Carbonation process of alkali-activated slag". *J. Mater. Sci.*, Vol 41, Nº 10, pp. 3071-3082 (2006)
- F. Puertas, A. Gil-Maroto, M. Palacios, T. Amat. "Alkali-activated slag mortars reinforced with AR glassfibre. Performance and properties". *Mater. Construcc*, Vol 54 Nº 283, pp. (2006)
- M. Palacios, F. Puertas "Effect of carbonation on alkali-activated slag paste". *J. Am. Ceram. Soc*, Vol 89 (10), pp 3211-3221 (2006)

- L. Fernández-Carrasco, F. Puertas, M.T. Blanco-Varela, T. Vázquez, J. Rius. "Synthesis and crystal structure solution of potassium dawsonite: an intermediate compound in the alkali hydrolysis of calcium aluminate cements". *Cem. Concr. Res.*, Vol 35, pp 641-46 (2005)
- F. Puertas, M.M. Alonso, T. Vázquez. "Effect of polycarboxylate admixtures on Portland cements paste setting and rheological behaviour". *Mater. Construcc* nº 277, pp 61-73 (2005)
- M. Palacios, F. Puertas. "Effect of superplasticizer and shrinkage-reducing admixtures on alkali-activated slag pastes and mortars". *Cem. Concr. Res.*, Vol 35, pp. 1358-1367 (2005)
- F. Puertas, H. Santos, M. Palacios, S. Martínez-Ramírez. "Polycarboxylate superplasticiser admixtures: effect on hydration, microstructure and rheological behaviour in cement pastes" *Adv. Cem. Res.*, Vol 17, nº 2 pp 77-89 (2005)
- F. Puertas, A. Fernández-Jiménez, M.T. Blanco-Varela. "Pore solution in alkali-activated slag cement pastes. Relation to the composition and structure of calcium silicate hydrate". *Cem. Concr. Res.*, Vol 34, pp. 139-148 (2004)
- F. Puertas, M.T. Blanco-Varela. "Use of alternative fuels in cement manufacture. Effect on clinker and cement characteristics and properties". *Mater. Construcc* Nº 274, 51-64 (2004)
- M. Palacios, F. Puertas. "Stability of superplasticizers and shrinkage-reducing admixtures in high basic media". *Mater. Construcc*, Nº 276, 65-86 (2004)
- F. Puertas, A. Palomo, A. Fernández-Jiménez, J.D. Izquierdo, L. Granizo. "Effect of superplasticizers on the behaviour and properties of alkaline cements" *Adv. Cem. Res.*, Vol 15, nº 1, pp. 23-28 (2003)
- F. Puertas, A. Fernández-Jiménez. "Mineralogical and microstructural characterization of alkali-activated fly ash/slag pastes". *Cem. Concr. Comp.*, Vol 23, pp. 287-293 (2003)
- M. Palacios, F. Puertas, C. Sierra. "Techniques and methods of characterization of admixtures for the concrete". *Mater. Construcc*, Vol 53, nº 269, pp. 89-104 (2003)
- I. Elkhadiri, A. Diori, A. Boukhari, F. Puertas, T. Vázquez. "Obtaining a sulfoaluminate belite cement by industrial wastes". *Mater. Construcc*, Vol 53, nº 270, pp.57-69 (2003)
- A. Fernández-Jiménez, F. Puertas, J. Sanz, I. Sobrados. "Structure of calcium silicate hydrate formed in alkaline activated slag. Influence of the type alkaline activator". *J. Am. Ceram. Soc.*, Vol 86 (8), pp. 1389-94 (2003)
- A. Fernández-Jiménez, F. Puertas. "Effect of activator mix on the hydration and strength behaviour of alkali-activated slag cements". *Adv. Cem. Res.*, Vol 15 nº 3, pp. 129-136 (2003)
- F. Puertas, T. Amat, A. Fernández-Jiménez, T. Vázquez. "Mechanical and durable behaviour of alkaline cement mortars reinforced with polypropylene fibres". *Cem. Concr. Res.*, Vol 33, pp. 2031-2036 (2003)
- M.T. Blanco-Varela, J. Aguilera, S. Martínez-Ramírez, F. Puertas, A. Palomo, C. Sabbioni, G. Zappia, C. Riontino, K. Van Balen, E.E. Toumbakari. "Thaumasite formation due to SO<sub>2</sub>/Hydraulic mortar interaction". *Cem. Concr. Comp.*, Vol 35, pp. 983-990 (2003)
- A. Fernández-Jiménez, F. Puertas. "The alkali-aggregate reaction in alkali-activated slag mortars". *Cem. Concr. Res.*, Vol 32, pp. 1019-1024 (2002)
- I. Elkhadiri, A. Diori, A. Boukhari, J. Aride, F. Puertas. "Mechanical behaviour of various mortars made by combined fly ash and limestone in Moroccan Portland cement". *Cem. Concr. Res.* Vol 32, pp 1597-1603 (2002)
- F. Puertas, R. M. Gutierrez, A. Fernández-Jiménez, S. Delvasto, J. Maldonado. "Alkaline cement mortars. Chemical resistance to sulphate and seawater attack". *Mater. Construcc*, No 267, pp 55-71 (2002)

- I. Pajares-Colomo, A. G. de la Torre, S. Martínez-Ramírez, F. Puertas, M.T. Blanco-Varela, M.A.G. Aranda. "Quantitative analysis of mineralised white Portland clinkers: the structure of fluorellesteadite". *Powder Diffraction*. 17 (4), pp. 281-286 (2002)
- A. Fernández-Jiménez, F. Puertas. "Alkaline activated slag cements. Determination of reaction degree". *Mater. Construcc.*, Vol 51, Nº 261, pp. 53-66 (2001)
- F. Puertas, T. Vázquez. "Early hydration cement. Effect of admixtures superplasticizers". *Mater. Construcc.*, Vol 51, Nº 262, pp.53-61 (2001)
- F. D. Tamas, J. Abony, F. Puertas. "Trace elements based classification on clinkers. Application to Spanish clinkers". *Mater. Construcc.*, VOL 51, Nº 263-264, (2001)
- L. Fernández-Carrasco, F. Puertas, M.T. Blanco-Varela, T. Vázquez. "Carbonation of calcium aluminate cement pastes". *Mater. Construcc.*, VOL 51, Nº 263-264 (2001)
- A. Fernández-Jiménez, F. Puertas. "Setting of alkali-activated slag cement. Influence of activator nature". *Adv. Cem. Res.* Vol 13, Nº 3, pp 115-121 (2001)
- C. Sabboini, G. Zappia, C. Riontino, M.T. Blanco-Varela, J. Aguilera, F. Puertas, K. Van Balen, E.E. Toumbakari. "Atmospheric deterioration of ancient and modern hydraulic mortars". *Atmos. Environ.*, Vol 35, pp. 539-548 (2001)
- L. Fernández-Carrasco, M.T. Blanco-Varela, F. Puertas, T. Vázquez. "Hydration of high alumina cement in presence of alkalis". *Adv. Cem. Res.*, Vol 12 nº 4, pp. 143-152 (2000)
- F. Puertas, S. Martínez-Ramírez, A. Alonso, T. Vázquez. "Alkali-activated fly ash/slag cement. Strength behaviour and hydration products". *Cem. Concr. Res.*, Vol 30, pp. 1625-1632 (2000)
- F. Puertas, T. Amat, T. Vázquez. "Behaviour of alkaline cement mortars reinforced with acrylic and polypropylene fibres". *Mater. Construcc.*, Vol 50, Nº 259, pp. 69-84 (2000)
- L. Fernández-Carrasco, F. Puertas, M.T. Blanco-Varela, T. Vázquez. "New advances in the carbonation of aluminous cement. Alkaline hydrolysis". *Mater. Construcc.*, Vol 49, nº 253, pp.47-55 (1999)
- G. Dumitri, T. Vázquez, F. Puertas, M.T. Blanco-Varela. "Influencia de la adición de BaCO<sub>3</sub> sobre la hidratación del cemento portland". *Mater. Construcc.* Vol 49, nº254, 43-48 (1999)
- F. Puertas, M.T. Blanco-Varela, T. Vázquez. "Behaviour of cement mortars containing an industrial waste from aluminium refining. Stability in Ca (OH)<sub>2</sub> solutions". *Cem. Concr. Res.*, Vol 29 (1999)
- A. Fernández-Jiménez, J.G. Palomo, F. Puertas, "Alkali-activated slag mortars: mechanical strength behaviour". *Cem. Concr. Res.*, Vol 29 , 1313-1321(1999)
- A.Palomo, M.T. Blanco-Varela, M.L. Granizo, F. Puertas, T. Vázquez, M.W. Grutzeck. "Chemical stability of cementitious materials based on metakaolin". *Cem. Concr. Res.*, Vol 29, 997-1004 (1999)
- S. Martínez-Ramírez, F. Puertas, M.T. Blanco-Varela, G.E. Thompson. "Effect of dry deposition of pollution on the degradation of lime mortars with sepiolite". *Cem. Concr. Res.* Vol 28, nº1, pp. 125-133 (1998)
- S. Martínez-Ramírez, F. Puertas, M.T. Blanco-Varela, G.E. Thompson, P. Almedros. "Behaviour of repair lime mortars by wet deposition process". *Cem. Concr. Res.*, Vol 28, nº 2, pp. 221-229 (1998)
- F. Puertas, M.T. Blanco-Varela, A. Palomo, T. Vázquez. "Behaviour of a new cement fabricated with raw materials containing CaF<sub>2</sub> and CaSO<sub>4</sub>.2H<sub>2</sub>O. Part II. Durability and chemical resistance to aggressive solutions". *Zement-Kalk-Gips*, nº 2, pp. 94-100 (1998)
- A.Diouiri, A. Boukhari, J. Aride, F. Puertas, T. Vázquez. "Elaboration of α-C<sub>2</sub>S form of belite in phosphatic clinker. Study of hydraulic activity". *Mater. Construcc.*, Vol 148, nº 249 pp.23-32 (1998)
- A. Fernández-Jiménez, F. Puertas, A. Arteaga. "Determination of kinetic equations of alkaline activation of blast furnace slag by means of calorimetric data". *J. Therm. Anal. Calorm.*, Vol 52 (1998)

- M.T. Blanco-Varela, A. Palomo, F. Puertas, T. Vázquez. "CaF<sub>2</sub> and CaSO<sub>4</sub> in cement clinker production". *Adv. Cem. Res.* Vol 9, Nº35, July 1-9(1997)
- M.T. Blanco-Varela, F. Puertas, A. Palomo. "Rendering mortars in Medina Azahara. Part I. Material characterization and alteration process". *Mater. Construcc.* Vol 47, nº 245, pp. 29-43 (1997)
- A. Diouri, A. Boukhari, J. Aride, F. Puertas, T. Vázquez. "Stable Ca<sub>3</sub>SiO<sub>5</sub> solid solution containing manganese and phosphorus". *Cem. Concr. Res.* Vol 27, (1997)
- F. Puertas, M.T. Blanco-Varela, A. Palomo, T. Vázquez. "Behaviour of a new cement fabricated with raw materials containing CaF<sub>2</sub> and CaSO<sub>4</sub>.2H<sub>2</sub>O. Part I. Hydration Processes". *Zement-Kalk-Gips*, nº 4, pp. 232-239 (1997)
- A. Fernández-Jiménez, F. Puertas. "Alkali-activated slag cements: kinetic studies". *Cem. Concr. Res.*, Vol 27, pp. 359-368 (1997)
- S. Martínez-Ramírez, F. Puertas, M.T. Blanco-Varela, G.E. Thompson. "Studies on degradation of lime mortars in atmospheric simulation chambers". *Cem. Concr. Res.* Vol 27, pp. 777-784 (1997)
- A. Fernández-Jiménez, F. Puertas. "Influence of the activator concentration on the kinetics of the alkaline activation process of a blast furnace slag". *Mater. Construcc.*, Vol 47, No 246, pp. 31-42 (1997)
- S. Martínez-Ramírez, F. Puertas, M.T. Blanco-Varela. "Sepiolite behaviour in neutral and alkaline medium". *Clay Minerals*, Vol 31, pp. 225-232 (1996)
- F. Puertas, L. Fernández-Carrasco, M.T. Blanco-Varela, T. Vázquez, A. de la Fuente. "Influence of KOH solution on the hydration and carbonation of high alumina cement mortars". *J. Mater. Sci.* No. 31, 2819-2827 (1996)
- M.T. Blanco-Varela, F. Puertas, T. Vázquez, A. Palomo. "Modelling of the burnability of white cement raw mixes made with CaF<sub>2</sub> and CaSO<sub>4</sub>". *Cem. Concr. Res.*, Vol 26, No. 3, 457-464 (1996)
- A. Fernández-Jiménez, F. Puertas, L. Fernández-Carrasco. "Alkaline-sulphate activation processes of a Spanish blast furnace slag". *Mater. Construcc.* Vol 46, No 241 (1996)
- F. Puertas, M.T. Blanco-Varela, T. Vázquez, A. Palomo. "Influence of sand nature on burnability of white cement raw mixes made using CaF<sub>2</sub> and CaSO<sub>4</sub> fluxing/mineralizer pair". *Cem. Concr. Res.*, Vol 26, No 9, pp. 1361-1367 (1996)
- F. Puertas. "Cementos de escorias activadas alcalinamente: situación actual y perspectiva de futuro". *Mater. Construcc.* Vol 45, Nº 239, pp. 53-64, (1995)
- M.T. Blanco-Varela, A. Palomo, F. Puertas, T. Vázquez. "Influence of the joint incorporation of CaF<sub>2</sub> and CaSO<sub>4</sub> in the clinkerization process. Obtainment of new cements". *Mater. Construcc.* Vol 45, Nº 239, pp. 29-47, (1995)
- S. Martínez-Ramírez, F. Puertas, M.T. Blanco-Varela. "Carbonation process and properties of lime mortars with sepiolite". *Cem. Concr. Res.*, Vol 25, nº 1, pp. 39-50 (1995)
- A. Diouri, A. Boukhari, J. Aride, F. Puertas, T. Vázquez. "Research of the lime rich portions of the system CaO-SiO<sub>2</sub>-P<sub>2</sub>O<sub>5</sub>". *Mater. Construcc.* Vol 45, Nº 237 pp 3-9, (1995)
- S. Martínez-Ramírez, F. Puertas, M.T. Blanco-Varela. "Repair mortars based on lime. Accelerated aging tests". *Mater. Construcc.* Vol 45, Nº 238 pp 35-45, (1995)
- F. Puertas, M.T. Blanco-Varela, S. Giménez. "Kinetics of the Thermal Decomposition of C<sub>4</sub>A<sub>3</sub>S in Air". *Cem. Concr. Res.*, Vol 25, nº 3, pp. 572-580 (1995)
- A. Diouri, A. Boukhari, J. Aride, F. Puertas, T. Vázquez. "Research of the lime rich portions of the system CaO-SiO<sub>2</sub>-P<sub>2</sub>O<sub>5</sub>". *Mater. Construcc.* Vol 45, Nº 237 pp 3-9, (1995)
- M.T. Blanco-Varela, S. Giménez, A. Palomo, F. Puertas, T. Vázquez. "Reply to the Discussion by J. Bensted of the paper "Studies about a sulfate resistant cement: Influence of admixture". *Cem. Concr. Res.* Vol 25, nº 5, pp. 1131-1132 (1995)
- M.T. Blanco S. García, S. Giménez, A. Palomo, F. Puertas, T. Vázquez. "Studies about a sulphate resistant cement. Influence of admixtures". *Cem. Concr. Res.* Vol.14, nº 6, pp1177-1184, (1994)

- A. Diouri, A. Boukhari, J. Aride, F. Puertas, T. Vázquez. "Formation d'hydroxyapatite  $\text{Ca}_5(\text{PO}_4)_3$  on en milieu silicate". *Mater. Construcc.*, Vol 44, nº 236, pp. 5-13 (1994)
- F. Puertas, M.T. Blanco-Varela, A. Palomo, J.J. Ortega, X. Ariño, C. Saíz-Jiménez. "Decay of Roman and Repair Mortars of the Mosaics of Itálica, Spain". *Sci. Total Environ.* 153, pp. 123-131 (1994)
- F. Puertas, M.T. Blanco-Varela, A. Palomo. "Stuccos and roman concretes of the Baelo Claudia city (Cádiz)". *Mater. Construcc.* Vol 44, nº 236, pp. 15-29 (1994)
- F. Puertas, M.T. Blanco, R. Dominguez. "Hydration of  $\text{C}_4\text{AM}_n$  in absence and presence of gypsum a comparative study with the hydration of  $\text{CaAF}$ ". *Cem. Concr. Res.* Vol. 23, nº 1, pp 30-42 (1993)
- F. Puertas. "Escorias de alto horno: Composición y comportamiento hidráulico". *Mater. Construcc.* Vol 43, nº 229 pp. 37-48 (1993)
- M.T. Blanco, F. Puertas, T. Vázquez, A. de la Fuente. "The most suitable techniques and methods to identify high alumina cement and based portland cement in concretes". *Mater. Construcc.*, Vol 42, Nº 228, pp. 51-64 (1992)
- S. Martínez-Ramírez, F. Puertas, A. Palomo. "Solid solubility of MgO in the calcium silicates of Portland clinker. The effect of  $\text{CaF}_2$ ". *Mater. Construcc.* Vol 42, Nº 225, pp. 13-21 (1992)
- S. Martínez-Ramírez, F. Acción, F. Puertas. "Characterization of alkali-metal and alkaline-earth nitrates by vibrational spectroscopy". *Mater. Construcc.* Vol 42, nº 227 pp. 25-36 (1992)
- S. Gimenez, M.T. Blanco, A. Palomo, F. Puertas. "Production of low energy requirements cement. An industrial test". *Zement-Kalk-Gips* Nº 11, pp. 12-15 (1991)
- F. Puertas, A. Palomo, M.T. Blanco. "Interface microstructure in concrete". *Mater. Construcc.*, Vol 41, nº 221 pp. 91-106 (1991)
- F. Puertas, M.T. Blanco, R. Dominguez. "Characterization of  $\text{Ca}_2\text{AlMnO}_5$ . A comparative study between  $\text{Ca}_2\text{AlMnO}_5$  and  $\text{Ca}_2\text{AlFeO}_5$ ". *Cem. Concr. Res.* Vol. 20 pp 429-438 (1990)
- F. Puertas, M.T. Blanco, T. Vázquez. "Manganese substitutions into the Portland cement clinker phases". *Mater. Construcc.*, Vol 39, Nº 214, pp. 19-30 (1989)
- F. Puertas, F.P. Glasser, M.T. Blanco, T. Vázquez. "Influence of the kiln oxidant-reducer conditions in the solid solution of Mn in  $\text{C}_3\text{S}$  and  $\text{C}_2\text{S}$ ". *Cem. Concr. Res.* Vol. 18 nº 5 pp. 783-788 (1988)
- F. Puertas, J. Soria, M. T. Blanco, T. Vazquez. "Modification on the tricalcium aluminate phase in cements by manganese substitution". *Cem. Concr. Res.* Vol. 18, pp. 837-842 (1988)
- F. Puertas, M<sup>a</sup> T. Blanco, A. Palomo y T. Vazquez. "Reactivity and burnability of raw mixes made with crystallized blastfurnace slags. Part I". *Zement-Kalk-Gips*, Vol. 41 (8) pp. 398-402 (1988)
- F. Puertas, M.T. Blanco, A. Palomo, T. Vázquez. "Reactivity and burnability of raw mixes made with crystallized blastfurnace slags. Part II". *Zement-Kalk-Gips*, Vol. 41 (12) pp. 628-631 (1988)
- F. Puertas, M.T. Blanco, T. Vázquez, A. Palomo. "Reactivity and burnability of cement raw materials with high manganese content". *Mater. Construcc.*, Vol 28, Nº 10, pp. 39-48 (1988)
- F. Puertas, F.P. Glasser. "Modification of the ferrite phase in cements by manganese substitution". *Adv. Cem. Res.* Vol 1, Nº 1, pp. 31-34 (1987)
- F. Puertas, F. Triviño. "Modifications clinker phase and mechanical strength in relation to type of quenching". *Mater. Construcc.*, Vol 37, Nº 205, pp. 23-35 (1987)
- F. Puertas, F. Triviño. "Examinations by infra-red spectroscopy for the polymorphs of dicalcium silicate". *Cem. Concr. Res.*, Vol 15, pp. 127-133 (1985)
- F. Puertas, M.T. Blanco, J.L. SAGRERA. "Estudio de la fluorellestadita por DRX: Propuesta de nuevas líneas de difracción". *Mater Construcc.*, Vol 35 Nº 198, pp. 43-47 (1985)

## Technological Activities

- Leader and participation in more than **55 R&D Contracts** with national and international companies (**Principal investigator in more than 30 of them**).
- **4 Patents :**
  - M.T. Blanco, T. Vázquez, A. Palomo, **F. Puertas**, S. Gimenez. "Proceso de obtención de un clinker blando de bajo coste energético usando fluoruro cálcico y yeso como componentes del clinker". **Number: 9001906**, (1990).
  - S. Martínez, **F. Puertas**, M. T. Blanco "Mortero con propiedades biocidas". **Number: 9401732** (1994)
  - A. Palomo, M.T. Blanco Varela, **F. Puertas**. "Procedimiento de obtención de un conglomerante hidráulico basado en la activación cáustica de cenizas volantes". **ES 2154539 B1. P9901161** (1999)
  - **F. Puertas**, J.J. Torres, C. Varga, M. Torres. "Procedimiento para la fabricación de cementos alcalinos reutilizando residuos vítreos urbanos e industriales". **Solicitud 2011131023 (2011)**. Internacionalización de la patente (PCT **PCT/ES2012/070408**).

## PhD Supervised

- Dr Ana Moreno de los Reyes. *Cementos preparados con residuos NORM (Normally Occurring Radioactive Materials). Nueva metodología de caracterización radiológica*. Universidad Castilla la Mancha (2022)
- Dr Sara Gismsera. *Rheology behaviour of alkali-activated pastes and mortars. Influence of variables of process*. Universidad Complutense de Madrid (2019)
- Dr Manuel Torres. *"Reuse of urban an industrial waste glass in the preparation of alkaline cements. Activation, behaviour and durability"*. Universidad Autónoma de Madrid (2015)
- Dr. Celia Varga. *"Alkali-activated cements. Rheological behaviour and durability in acid media"*. UNED (2015)
- Dr M<sup>a</sup> del Mar Alonso. *"Behaviour and compatibility of cements and chemicals admixtures superplasticizers. Effect of cement nature and admixture structure"*. Universidad Autonoma de Madrid (2011)
- Dr Irene García-Díaz. *"Preparation of eco-efficient cements using ceramic wastes as alternative prime materials"*. Universidad Autonoma de Madrid (2010)
- Dr Marta Palacios. *"Effect of organic admixtures on properties and behaviour of alkali-activated slag cements and mortars"*. Universidad Autonoma de Madrid (2006)
- Dr Ana Fernández-Jiménez. *"Alkali-activated cements. Influence and modelling of parameters involved in the process"*. Universidad Autonoma de Madrid (2000)
- Dr Sagrario Martínez-Ramírez. *"Development of new repair mortars to biological attack. Use of sepiolite as biocide support material"*. Universidad Complutense de Madrid (1995)

## Other activities

- **33 papers published in Journals no included in JCR-Web of Knowledge (to Marc, 2024)**
- **7 Opinion and outreach articles** in Journals as El Pais, Science Media Centre (SMC)-España, Hábitat y Futuro, Arquitectura y Construcción, etc.)
- **26 Invited lectures** (by Alicante University, Polytechnic University of Madrid, Del Valle University-Colombia, Helwan University-Egypt, OFICEMEN, Holcim, Universidad La Salle-México, CINVESTAD- México, RILEM, Universidad Autónoma de Nuevo Leon-México, etc.)

- **Participation in 71 National and 173 International Conferences (to March, 2024)**
- Supervisor of 13 TFG/TFM
- Supervision of research works of Spanish and foreign students
- Organizer and teacher of several courses of specialization, workshop, scientific meetings
- Referee of more than 30 scientific journals
- Author of divulgation books on Women & Science
- Interviews in TV and Radio programmes (ej. TVE, RNE, Onda Cero, etc.)