

Alejandro Fernandez-Martinez

CNRS Research Scientist

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Nationality: Spanish - Date of Birth: April 11, 1981

1. Research Activities

- **Structure and reactivity of amorphous and nanocrystalline environmental materials.** Environmental mineralogy: study of metal/metalloid and REE retention by poorly crystalline minerals in acid mine drainage settings. Selenium adsorption and reactivity across redox sensitive interfaces.

- **Mineral formation processes.** Mechanisms of homogeneous and heterogeneous nucleation, role of amorphous precursors in biomineralization, pre-nucleation clusters and aggregation-based nucleation and growth. Impact of nano-confinement on the thermodynamics and kinetics of mineral nucleation in pore spaces.

- **Interfacial geochemistry.** In-situ studies of nucleation and dissolution processes at interfaces. Development of synchrotron X-ray techniques for heterogeneous nucleation and dissolution studies (In situ GISAXS and X-ray reflectivity).

2. Research appointments and education

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| 2021 – present | Visiting Scientist, Institut Neel, Grenoble. |
| 2018 | Habilitation á Diriger des Recherches (HDR). “Nanominerals and amorphous precursors of biological and environmental relevance: Nucleation mechanisms, structure, dynamics and chemical reactivity” |
| 2015 – present | Visiting Scientist, ESRF, Structure of Materials Group |
| 2011 – present | CNRS Research Scientist. ISTerre , Grenoble, France. |
| 2010 – 2012 | Postdoctoral fellow. Center for Nanoscale Control of Geologic CO₂ , Lawrence Berkeley National Laboratory, Berkeley, USA. |
| 2009 | Postdoctoral fellow. LGIT-CNRS . RECOSY project . |
| 2006-2009 | Graduate student, University Joseph Fourier and Institut Laue-Langevin , Grenoble, France. |
| 2005-2006 | Fellowship “Large Scale Facilities: training on neutron scattering” funded by the Spanish Minister of Education and Research at the Institut Laue-Langevin , Grenoble, France. |
| 1999 – 2004 | M. Sc. Physics Universidad de Oviedo, Spain |

3. Awards

2021 – [CNRS Bronze Medal](#)

2011 – Lawrence Berkeley National Lab Spot Award

4. Students and postdocs

Postdocs

2022-2023 – [Luis Monasterio Guillot](#) – “Cement carbonation processes: towards a low CO₂ cement world”. Funded by the Spanish Minister of Universities.

2020-2022 – [Alicia Moya Cuenca](#) – “Probing wetting properties of carbonate rocks”. Funded by an industrial collaboration with TOTAL (France).

2020-2021 – [Agnieszka Poulain](#) – “Probing green additives to control carbonate nucleation and growth”. Funded by BASF. Now working at Faure-QEI (France).

2018-2019 – [Sara Goberna Ferron](#) – “Surface chemistry of magnetite nanoparticles”. Funded by an industrial collaboration with BioMerieux (Grenoble, France). Now Marie-Curie fellow at ITQ (Spain).

2018-2021 – [Rogier Besselink](#) – “In situ studies of multi-step nucleation pathways in natural and engineered cements”. Funded by the ANR-JCJC ‘NUANCE’ (French Ministry of Research competitive grant). Now scientist at Eureka (Netherlands).

2018-2020 – [Maria Pilar Asta](#) – “Amorphous precursors in biomineralization”. Marie Curie grant. Now researcher at Univ. Granada (Spain).

2017-2018 – [Christine Browne](#) – “Aggregation of CaSO₄ species from the nanometer scale to the formation of gypsum particles in the presence of polymers”. Funded by BASF Construction Solutions. Now researcher at Univ. Melbourne (Australia).

Ph.D Students

2022-2025 – [Diksha Saini](#) (50%) – “Redox reactivity of selenium in environmental geomedia”. Co-supervised with Norbert Jordan (HZDR, Dresden, Germany). Funded by ANDRA.

2021-2024 – [Annet Baken](#) (33%) – “ Understanding how green additives control crystallization at the nanoscale”. Co-supervised with Alexander Van Driessche (CSIC) and Marco Di Michiel (ESRF).

2021-2024 – [Rajkumar Chowdhury](#) (50%) – “Chemical and physical characterization of Nannoconus, the main planktonic producer of carbonates in the Cretaceous oceans”. Co-supervised with Fabienne Giraud (ISTerre).

2019-2022 – [Michela La Bella](#) (50%) – “In situ studies of cement hydration and alteration using in situ nanoscale X-ray diffraction-tomography techniques”. Co-supervised with Carlotta Giacobbe (ESRF).

2019-2022 – [Andrew Lauer](#) (33%) – “Mineral nucleation in confined media”. Co-supervised with Alexander Van Driessche (ISTerre) and Roland Hellmann (ISTerre).

2018-2021 – [Kaifeng Wang](#) (50%) – “Reactivity of radionuclides in cement media”. Co-supervised with Laurent Charlet (ISTerre). Funded by CSC (China) and ANDRA (2 years in France + 1 year in China).

- 2017-2021 – Zhanar Zhakiyeva (33%) – “Structure and dynamics of water in ordinary Portland and low CO₂ cements”. Co-supervised with Alexander Van Driessche (ISTerre) and Gabriel J. Cuello (ILL). Thesis finishes in November 2021. Now postdoc at Princeton Univ. (USA).
- 2017-2021 – Lina Atar Bouzouaid (33%) – “Impact of small organic molecules on the nucleation of calcium silicate hydrate”. Co-supervised with Christophe Labbez (CNRS Dijon) and Barbara Lothenbach (EMPA, Switzerland). Thesis finished in November 2021.
- 2015-2019 – Alba Lozano-Letellier (50%) – “REE mineralogy and recovery from Acid Mine Drainage remediation systems”. Co-supervised with Carlos Ayora (IDAEA, CSIC, Spain). Now researcher at Univ. Leon (Spain).
- 2014-2017 - Ayumi Koishi (100%) – “Carbonate mineral nucleation pathways: The amorphous precursor strategy”. Co-supervised with German Montes-Hernandez (ISTerre). Thesis finished in October 2017. Now postdoc at University Berkeley (USA).
- 2014-2017 - Bin Ma (50%) – “Structure and reactivity of double layer hydroxides in the context of nuclear waste disposal”. Co-supervised with Laurent Charlet (ISTerre). Thesis finished in December 2017. Now research scientist at PSI (Switzerland).
- 2011-2015 - Sergio Carrero-Romero (50%) – “Structural and geochemical characterization of Al and Fe Minerals with low crystallinity: Implication for contaminant mobility”. Co-advised with Rafael Perez-Lopez and Jose Manuel Nieto Liñan (Univ. Huelva, Spain). Thesis finished in June 2016. Now project scientist at IDAEA (Spain).

Master and License students

- 2021 – Lena Bulle – IUT Chimie. "Cement carbonation".
- 2020 – Rohan Parmar – Erasmus Mundus M2 Marine Chemistry. "Development of a new UV-vis based method to study heterogeneous mineral nucleation". Co-supervised with F. Giraud (ISTerre).
- 2017 – Antoine Bourdin - IUT Mesures Physiques. "Development of a new UV-vis based method to study heterogeneous mineral nucleation". Co-supervised with A. Van Driessche (ISTerre).
- 2016 – Ruben Soria Martinez – M2 Chemistry, Universidad de Oviedo (Spain). "Understanding wettability properties of mineral nanotubes of environmental and geological interest with Molecular Dynamics simulations"
- 2015 - Hugo Lopez Martinez - M1 Physics, Universidad de Oviedo (Spain). "Structural characterization of amorphous precursors and nanoparticles of environmental interest"
- 2014 - Nawel Adoui - IUT Chimie. "Chemical characterization of amorphous carbonates"
- 2014 - William Degouy - L3 Geosciences. "Precipitation of amorphous carbonates in porous media"
- 2014 - Boris Metral - M1 Chimie. "Interactions of selenium oxyanions with barite"
- 2013 - Benjamin Bataille - IUT Mesures Physiques. "Synthesis and characterization of hydrated carbonates"

5. Teaching

Since 2019 (every year): Member of the organizing committee of the ‘European [HERCULES School](#), Neutrons & Synchrotron Radiation for Science’. In charge of the organization of synchrotron practicals and tutorials at the ESRF (~30 hours year).

Since 2016 (every two years): Lecturer 'Surface-interface characterization methods', Doctoral course 'Methodes physiques de characterization', Univ. Grenoble Alpes.

2015: Lecturer 'Nanoparticle characterization methods', Master 2 on 'Biotechnology', UFR Pharmacie, Universite Joseph-Fourier de Grenoble.

2014: Lecturer 'Nanoparticle characterization methods', Master 2 on the 'Toxicology of Nanoparticles', UFR Pharmacie, Universite Joseph-Fourier de Grenoble.

6. Academic and industrial research contracts

- 2022-2025 – ANDRA (PI; 340.5 k€). "Redox reactivity of Selenium in environmental geomeia"
- 2022-2026 – Heidelberg Cement (PI; 281.7 k€). "CO₂ mineralization of cement materials"
- 2022-2026 – Spanish Ministry of Science and Innovation (co-PI; 250 k€). "Transferencia de metales al Oceano Atlantico desde el estuario de Huelva: estabilidad de los precipitados de drenaje acido de mina (TRAMPA)".
- 2020-2022 – TOTAL (PI; 268 k€). "Probing wetting properties of carbonate rocks"
- 2019-2023 – ANR-PRCE (co-PI; 608 k€). "Dynamic characterization and modeling of coupled structural - chemical - and transport processes: a multiscale approach"
- 2018-2019 – BioMerieux (industrial contract) (PI; 100 k€). "Synthesis of inorganic nanoparticles". Including funding for one postdoc.
- 2018-2021 – ANR-JCJC (PI; 279 k€). "Multi-step nucleation pathways in natural and engineered cements"
- 2018-2020 – Marie Curie Slowdoska Fellowship project (PI; 173 k€). "Amorphous precursors in biomineralization". Maria Pilar Asta postdoc.
- 2017 – Project Atomic Force Microscopy (co-PI; 80 k€). Acquisition of an AFM at ISTERre. Funded by LABEX OSUG@2020.
- 2016-2018 - BASF (industrial contract) (PI; 165 k€). Development of in situ methods to study the heterogeneous nucleation.
- 2017-2018 - BASF Construction Materials (industrial contract) (co-PI; 120 k€). Face-specific interactions between gypsum crystals. This project funds the postdoc of Christine Browne, started in July 2017.
- 2017-2021 - NANOCEM (co-PI; 350 k€). Activities and nucleation processes in the SiO₂-CaO-H₂O-Organics system. Project devoted to the study of nucleation processes in C-S-H in the presence of small organic molecules. Including a 4-year Ph.D. thesis.
- 2015-2016 - Project EC2CO NUCLEATION (PI; 28 k€). Understanding mineral nucleation and precipitation in environmental and porous media. Funded by CNRS-INSU.
- 2015-2016 - Project WetNanotube (PI; 25 k€). Understanding wettability properties of mineral nanotubes of environmental and geological interest. Funded by AGIR (Univ. Grenoble Alpes).
- 2015 - Project TGA-DSC (PI; 40 k€). Acquisition of a TGA-DSC at ISTERre. Funded by LABEX OSUG@2020.
- 2015-2017 - PICS ISTERre-ORNL (PI; 5 k€ / year): Funding trips to and from Oak-Ridge National Laboratory (USA).
- 2014-2015 - Defi NEEDS – Mission interdisciplinaire du CNRS (PI; 40 k€). "Anionic exchange of radionuclides in sulfate-bearing cement phases"
- 2013-2015 – "AMICO" (PI; 19 k€). "Nucleation, growth and aggregation behavior of Al and Fe sulfate oxyhydroxide mineral colloids from Acid Mine Drainage". Funded by LABEX OSUG@2020 and BQR (ISTERre internal call).
- 2013 - "Nano-Espagne" - Campus France (PI ; 10 k€). Travel support between Grenoble and Univ. Huelva (Rio Tinto site).

7. Consulting activities

- 2016-2018- **Biomerieux**: consulting activities related to the synthesis of inorganic nanomaterials.

8. Invited seminars and conferences

- **Invited seminar**. 'Carbonate mineral nucleation pathways'. Peking University (China), 13th January 2022.
- **Invited seminar**. 'Nanominerals in acid mine waters'. Umea University (Sweden). 17th December 2021.
- **Invited seminar**. 'Multi-step nucleation pathways in natural and engineered systems'. Institut Neel, CNRS, Grenoble (France). 9th November 2021.
- **Invited seminar**. 'Nanominerals in acid mine waters'. University Texas El Paso (USA) 20th September 2021.
- **Invited speaker**. 'C-S-H nucleation pathways'. Nanocem Workshop on Mineral Nucleation & Growth. 21st June 2021.
- **Invited speaker**. "Probing the structure and reactivity of iron and aluminum minerals towards rare earth elements in acid mine drainage". Fundamental Reactions Driving Macroscopic Geochemical Processes. American Chemical Society National Meeting, Online meeting, 5-30 April 2021.
- **Keynote speaker**. "In situ X-ray scattering studies of mineral formation". 13th Colloque Rayons X et Matiere, Nancy (France). 19-22 Novembre 2019.
- **Invited seminar**. 'Observing crystallization with in situ techniques: How do additives and foreign substrates control the nucleation process at the nanoscale?'. Institut de Chimie Separative de Marcoule (France), 6th September 2019.
- **Invited seminar**. 'Amorphous precursors in biomineralization'. EPFL (Switzerland), February 2019.
- **Invited seminar**. 'C-S-H nucleation pathways'. Seminar at the Civil and Environmental Engineering Department of Princeton University (USA), August 2018.
- **Invited speaker**. "Nanoscope dynamics in amorphous carbonates: Insights into crystallization inhibition mechanisms". 1st ILL Users Meeting, Symposium on "Neutron Vibrational Spectroscopy". Grenoble, 10-12 October 2018.
- **Invited seminar**. 'C-S-H research at ISTERre'. BASF Construction Materials. Trotsberg, Germany. 22 June 2018.
- **Invited speaker**. "*Water and ionic dynamics in amorphous carbonates probed by neutron and X-ray scattering*". Nanoscale interfacial geochemistry in extreme environments. Goldschmidt Conference 2018. Boston, 13-18 August 2018.
- **Invited speaker**. "*C-S-H nucleation pathways*". Calcium-silicate hydrates containing aluminium: C-A-S-H II". EMPA, Dubendorf, 23-24 April 2018.
- **Invited speaker**. "*Multi-step crystallization pathways in natural and engineered cements*". Seminar on crystallization under extreme conditions. Sociedad Española de Mineralogía. Oviedo (Spain), 4 July 2017.
- **Invited Speaker**. "[*Microscopic dynamics in amorphous carbonates : The significance of ACC polymorphism*](#)", Carbonate & Sulfate Minerals: Nucleation, Growth and Control of Scale

Formation, 251st American Chemical Society National Meeting. San Diego, USA, 13-17 March 2016.

- **Keynote Speaker.** *“Calcium carbonate nucleation in pores and on flat substrates : understanding interfacial energy controls”*. British Association for Crystal Growth, Annual General Meeting. Queen Mary, University of London, UK. June 2015.
- **[Invited seminar.](#)** *“New insights into carbonate mineral nucleation pathways”*. School of Earth and Environment, University of Leeds, UK. May 2015.
- **Invited seminar.** *“[CaCO₃ amorphous precursors](#)”*. Laboratoire LIONS, CEA Saclay, France. April 2015.
- **Invited speaker.** *“Deciphering the role of water in amorphous carbonate precursors”*. Goldschmidt Conference 2014, Sacramento, USA. June 2014.
- **Invited seminar.** *“Carbonate mineral nucleation on flat surfaces and in pores”*. University of Lausanne, Switzerland. October 2013.
- **Invited seminar.** *“Carbonate mineral nucleation pathways”*. Institut de Minéralogie et Physique des Milieux Condensés. Paris, France. October 2013.
- **Invited seminar.** *“Carbonate Mineral Nucleation on Flat Mineral Substrates and in Confinement”*. School of Earth Sciences, Stanford University, USA. September 2012.
- **Invited speaker.** *“Carbonate Mineral Nucleation Pathways in Geological Carbon Sequestration”*. Young Engineers + Scientists Symposium. Session on CO₂ Capture and Sequestration. Berkeley, USA. March 2012.
- **Invited speaker.** *“Carbonate mineral nucleation pathways”*. Energy Frontier Research Centers Forum. Washington DC, USA. May 2011.
- **Invited speaker.** *“Structure and reactivity of natural nanoparticles”*. V Meeting of the Spanish Neutron Scattering Society. Gijon, Spain, June 2010.

9. Professional responsibilities and services for the academic community

Symposium organizer

2019: User Dedicated Symposium on “X-ray microscopy in biology: recent applications, challenges and opportunities”. ESRF Users Meeting, Grenoble, 4-6 February 2019.

2018: “Fluid/Biomatrix-Mineral Interactions: Interfacial Processes”. Session at Goldschmidt Conference, August 2018. Co-conveners: Adam Wallace (Delaware Univ.), Henry Teng (George Washington Univ.), Juliane Weber (ORNL).

2018: User Dedicated Symposium on “Metallurgy and Materials Processing”. ESRF Users Meeting, Grenoble, 5-7 February 2018.

2017: “Reactivity of Cementitious Materials from Advanced Characterization Techniques”. Session at the 253rd American Chemical Society Meeting. San Francisco (USA) April 2-7 2017. Co-conveners: Bin Ma (ISTerre), N. Gang and Claire White (U. Princeton).

2017: User Dedicated Symposium on “Operando structural studies in materials science”. ESRF Users Meeting, Grenoble, 6-8 February 2017.

2016: User Dedicated Symposium on “X-ray coherence and diffraction”. ESRF Users Meeting, Grenoble, 8-10 February 2016.

- 2015:** "Precipitation, Dissolution and Adsorption under Confinement", 249th American Chemical Society Meeting, Denver (USA) March 22-26 2015. Co-convenor: Andrew Stack (ORNL).
- 2015:** "Classical and non-classical perspectives on mineral nucleation and growth". Session at the Goldschmidt Conference, Prague, August 2015. Co-convenors: Denis Gebauer, Matthias Kellermeier and Alexander van Driessche.
- 2014:** Member of the Scientific Committee of the Biomineralization School (December 2014), organized by LABEX MATISSE and the IMPMC.
- 2014:** "Nanoparticles, colloids and environnement". Session at the Reunion de Sciences de la Terre, Pau, October 2014. Co-convenors: Sylvain Grangeon (BRGM), Philippe Le Coustumer (U. Bordeaux), Gaëtane Lespès (IPREM, Pau) and Serge Stöll (U. Genève).
- 2013:** "Reactivity of Water-(Gas)-mineral Interfaces from the Nano to the Macroscopic Scale: Implications for Weathering, CO₂ Sequestration and Energy-Related Studies". Session at Goldschmidt Conference, August 2013. Co-convenors: Damien Daval (CNRS) and Kate Maher (Stanford University).
- 2011:** "Water Structure and Hydrogen Bonding on Mineral and Nanoparticle Surfaces". Session at Goldschmidt Conference, August 2011. Co-convenor: Glenn A. Waychunas (LBNL).

Member of PhD Thesis and Habilitation (HDR) committees

- Baptiste Dazas (PhD)** – "Influence de la cristalochimie des smectites sur la structuration de l'eau et des cations interfoliaires". Univ. Grenoble Alpes - ISTERre, 24th Octobre 2014.
- Nithavong Cam (PhD)** – "Biominéralisation intracellulaire par des cyanobactéries : du modèle aux cellules". Sorbonne Université – IMPMC (Paris), 13th November 2015 (PhD)
- Bastien Wild (PhD)** – "Changements microstructuraux et diversité microbienne associés à l'altération des silicates : influence sur les cinétiques de dissolution du laboratoire au terrain". Université de Strasbourg - LHyGES, 22nd February 2017 (PhD)
- Marie Collin (PhD)** – "Géochimie en milieu nanoporeux : application aux verres nucléaires". Université de Montpellier – CEA Marcoule, 26th June 2018 (PhD)
- Markus Baum (PhD)** – "The role of water properties and specific ion effects on the evolution of silica nanoconfinement". Université de Montpellier – Institut de Chimie Separative de Marcoule, 9th November 2018 (PhD)
- Estelle Poupelloz (PhD)** – "Etude des processus de germination-croissance de l'ettringite, seule ou dans un système aluminat tricalcique/sulfate de calcium". Université de Bourgogne Franche Comte – ICB, 29th Octobre 2019 (PhD)
- Geoffrey Monet (PhD)** – "Nanotubes géo-inspirés : structure atomique, transformation en température et dynamiques corrélées nanotube-eau moléculaire". Université Paris-Saclay – LPS, 4 November 2019 (PhD)
- Dr. David Carriere (HDR)** – "Emergence de l'ordre à l'échelle nanométrique". Université Paris-Saclay – LIONS (CEA), 18th November 2019.
- Andrea Mancini (PhD)** – "Thermodynamic and spectroscopic investigations of ferric and ferrous iron in cementitious systems". ETH Zurich – PSI, 18th March 2020 (PhD)
- Camille Baya (PhD)** – "Mécanismes d'incorporation des éléments traces dans la pyrite diagenétique". Sorbonne Université, 16th December 2021 (PhD)

Member of Hiring Committees

- Sorbonne Université, IMPMC Laboratory, Associate Professor position. April 2019
- Poitiers Université, Associate Professor position. May 2019
- Université Aix-Marseille, Associate Professor position. April 2021.

Professional services

2015-2019: ESRF user representative for the 'Surfaces & Interfaces' scientific community.

2016-2020: Elected member of the laboratory council at ISTerre.

2020-present: Chargé de mission 'Groupe Parité', ISTerre.

2020-2024: Member of the PRC6 Proposal Review Panel, Synchrotron SOLEIL.

2021-2023: Member of the C11 Proposal Review Panel, European Synchrotron Radiation Facility (ESRF).

2022-2025: International Mineralogical Association (IMA) working group on 'Nanomineralogy'.

Editorial work

2012-2019: Associate Editor, American Mineralogist

2014-2019: Coordinator of the Special Collection 'Nanominerals and Mineral Nanoparticles' at the American Mineralogist.

2017-present: Associate Editor, Frontiers in Earth Sciences journal

2018-present: Associate Editor, PLOS One

Reviewer

- External Reviewer for the Canadian Light Source (CLS) synchrotron since 2012 (~15 proposals/year).
- Reviews for the National Science Foundation (NSF), USA (~1 proposal/year) and ANR (~1 proposal/year).
- Scientific journals (~20 reviews / year): Science, PNAS, ACS Nano, Angewandte Chemie Int. Ed., Geochimica et Cosmochimica Acta, Chemical Geology, Environmental Science & Technology, American Mineralogist, European Journal of Mineralogy, Clays and Clay Minerals, Applied Crystallography, Geoderma, Applied Clay Sciences, Journal of Contaminant Hydrology, Journal of Physical Chemistry, Applied Physics A, Crystal Growth and Design, Physics and Chemistry of Minerals & Engineering Chemistry Research...

9. Publications

See complete list here: <https://www.isterre.fr/annuaire/pages-web-du-personnel/alex-fernandez-martinez/article/publications.html>

Google scholar profile: https://scholar.google.fr/citations?user=rwx9d_sAAAAJ&hl=en

H-index = 30; Total citations = 3442 (January 2022)

Main 10 publications:

Curvature-induced hydrophobicity at imogolite-water interfaces. Alejandro Fernandez-Martinez, Jinhui Tao, Adam F. Wallace, Ian C. Bourg, Mark R. Johnson, James J. De Yoreo, Garrison Sposito, Gabriel J. Cuello and Laurent Charlet. [Environmental Science : Nano, 7, 2759-2772 \(2020\).](#)

Surface wetting controls calcium carbonate crystallization kinetics. Ayumi Koishi, Alejandro Fernandez-Martinez, Alexander E. S. Van Driessche, Laurent J. Michot, Carlos M. Pina, Carlos Pimentel, Byeongdu Lee, German Montes-Hernandez. [Chemistry of Materials \(2019\) 31 \(9\), pp 3340–3348.](#)

The role of impurities in the kinetic persistence of amorphous calcium carbonate: a nanoscopic dynamics view. Ayumi Koishi, Alejandro Fernandez-Martinez, Beatrice Ruta, Mónica Jiménez-Ruiz, Roberta Poloni, Devis di Tommaso, Federico Zontone, Glenn A. Waychunas and German Montes-Hernandez. [Journal of Physical Chemistry C \(2018\) 122 \(29\), pp 16983–16991.](#)

Solid and aqueous speciation of yttrium in passive remediation systems of acid mine drainage. Alba Lozano, Alejandro Fernández-Martínez, Carlos Ayora, Devis Di Tommaso, Agnieszka Poulain, Mauro Rovezzi and Carlo Marini. [Environmental Science & Technology \(2019\), 53, 19, 11153-11161.](#)

Quantitative X-ray pair distribution function analysis of nanocrystalline calcium silicate hydrates: a contribution to the understanding of cement chemistry. Sylvain Grangeon, Alejandro Fernandez-Martinez, Alain Baronnet, Nicolas Marty, Agnieszka Poulain, Erik Elkaim, Cedric Roosz, Stephane Gaboreau, Pierre Henocq and Francis Claret. [Journal of Applied Crystallography \(2017\) 50, 14-21.](#)

Linear topology in amorphous metal oxide electrochromic networks obtained via low-temperature solution processing. A. Llordes, Y. Wang, A. Fernandez-Martinez, P. Xiao, T. Lee, A. Poulain, O. Zandi, C. A. Saez Cabezas, G. Henkelman, and D. J. Milliron. [Nature Materials \(2016\) 15 \(12\), 1267.](#)

Microscopic Evidence for Liquid-Liquid Separation in Supersaturated CaCO₃ Solutions. Wallace A. F., Hedges L. O., Fernandez-Martinez A., Raiteri P., Whitlam S., Waychunas G. A., Gale J. D., Banfield J. F., De Yoreo J. J. [Science \(2013\) 341, 885-889](#)

Pressure-induced polyamorphism and formation of 'aragonitic' amorphous calcium carbonate. Fernandez-Martinez A., Kalkan B., Clark S. M. and Waychunas G. A. [Angewandte Chemie Int. Ed. \(2013\) 52, 8354-8357](#)

In situ determination of interfacial energies between heterogeneously nucleated CaCO₃ and quartz substrates: Thermodynamics of CO₂ mineral trapping. Fernandez-Martinez A., Hu Y., Lee B., Jun Y.-S. and Waychunas G. A. [Environmental Science & Technology \(2013\) 47, 102-109.](#)

The structure of schwertmannite, a nanocrystalline iron oxyhydroxysulfate. Fernandez-Martinez A., Timon V., Roman-Ross G., Cuello G. J., Daniels J. E. and Ayora C. [American Mineralogist, \(2010\) 95, 1312-1322.](#)