

Dr. Adrian CARRETERO-GENEVRIER, Chargé de recherche CNRS (CR1) (CNRS-CR1 permanent research position) section 08. Équipe M2A, IES

Born: 27 August 1979, Sevilla, Spain

Adrien Carretero Genevrier is a CNRS Researcher at the Montpellier Institute of Electronic (IES) since January 2016. He obtained his PhD in 2010 in Materials Science from the Universitat Autònoma de Barcelona (Spain) at the Materials Institute of Barcelona (ICMAB) and then moved for three postdoctoral years at the Collège de France in Paris. His research aims at understanding the growth mechanisms of new complex oxides nanostructures synthesized by soft chemistry and the relationship between crystal structure and physical properties. Thus, his scientific interests span over a wide range of fields including soft chemistry routes to grow 1D functional complex oxides, crystal engineering, nanofabrication, template-assisted synthesis of inorganic gels, and crystalline nanostructured oxide coatings for sensor devices. He has been awarded the young researcher award, French National Research Agency (ANR 2016) and the outstanding Award for the PhD in Materials Science from the Universitat Autònoma de Barcelona (2012). To date, he is the joint inventor of two US patents and has published 30 articles in high impact international journals such as Science, Nature Communications, JACS, Chem.Soc.Rev, Advanced Materials or Advanced Functional Materials.

CV

PERSONAL INFORMATION

Family name, First name: **Carretero, Adrian**

Researcher unique identifier(s) (such as ORCID, Research ID, etc. ...): **orcid: 0000-0003-0488-9452**

Date of birth: 27 August 1979, Sevilla, Spain

Nationality: Spanish and French

URL for web site: www.nanochemlab.com

EDUCATION

2007 – 2011 **PhD in Materials Science**, ICMAB-CSIC, University Autònoma of Barcelona, Spain

Director: Prof. Teresa Puig and Narcis Mestres

2006 – 2007 **Master in Nanotechnology**, University Autònoma of Barcelona, Spain

Topic: Synthesis and self-assembly of 1D manganese-based complex oxides from template directed chemical solution deposition

2000 – 2005 **BS in Chemistry**, U. Sevilla, Spain

CURRENT POSITION(S)

2016 – **CNRS (CR1) researcher** at the Institute of Electronics and Systems (IES), UMR5214, Montpellier Université – CNRS, France

PREVIOUS POSITIONS

2013 – 2016 **CNRS (CR1) researcher** at the Nanotechnology Institute of Lyon (INL), France, UMR5270, Ecole Centrale de Lyon – CNRS, France

2012 – 2013 **Collège de France** Postdoctoral Fellows
Clement Sanchez's lab, Department of Material Chemistry, Collège de France, Paris

2011 – 2012 Postdoctoral Fellow at the Université Pierre et Marie Curie (**UPMC**), Paris, France,
Chimie de la Matière Condensée de Paris, France

AWARDS and FELLOWSHIPS

2017 **Front Cover** of *Small*, 77, 1701614 (2017).

2016 – 2019 **Young researcher award, French National Research Agency** (270 k€), France.

2015 – 2016 **BQR (Bonus Qualité Recherche) award**, École centrale de Lyon (ECL), (45 k€), France.

2015 **Inside Front Cover** of *Chemical Communications*, 2015, 51, 4315-4315.

2014 – 2015 **PEPS award, French National Center for Scientific Research (CNRS)** (15 k€), France.

2014 **Cover Picture** of *Advanced Functional Materials*, 24, 35, 5494–5502, (2014).

2014 **Cover Picture** of *Nanoscale journal*, 6, 14025-14043, (2014).

2014 **Cover Picture** of *Chemical Society Reviews*, 43, 2042-2054, (2014).

2013 **1st Classified** at CNRS-CR1 researcher competition recruitment. Paris, France.

2012 – 2013 Research **fellowship** founded by the *Collège de France* Foundation.

2012 **Outstanding Award for the PhD in Materials Science:** to the best PhD Thesis of the Physics Department Universitat Autònoma de Barcelona, Spain.

2012 **Inside Front Cover** of *Chemical Communication*, 48, 6223-6225 (2012).

2010 **Award: to the best scientific photography** sponsored by Universitat Rovira I Virgili. Tarragona, Spain.

2009 **Award: Best poster presentation** at 16th Internacional Workshop on oxide electronics. Tarragona, Spain.

2007 – 2010 **FPI fellowship for Ph.D. students** founded by the MCYT and MEC Spanish ministries.

2006 – 2007 **Fellowship founded by the CSIC**, to work in the superconductor and magnetic materials department of the ICMAB-CSIC, Barcelona, Spain.

2005 – 2006 **Fellowship founded by the CSIC**, to work in the organic department of the ICQ-CSIC, Sevilla, Spain.

2004 – 2005 **ERASMUS fellowship** from the European Community to study at the *Ecole Nationale Supérieure de Chimie de Rennes* ENSC.

FUNDING (PI)

- 2017 Project PI, European network for electron microscopy **ESTEEM**, “Interfacial magnetism and conductivity in epitaxial $\text{La}_{0.7}\text{Sr}_{0.3}\text{MnO}_3$ heterostructures on silicon” (20.000 €).
- 2017 Project PI, Nanoscience foundries and fine analysis (**NFFA**), “Assisting Multifunctional Oxide Nanoelectronics On Si-Integrated Systems (**AMONOSIS**)”. (25,000)
- 2016 – 2019 Project PI, ANR JCJC 2016-Challenge 3, Theme 5 **QNOSS** “Quartz-based Nanomaterials On Silicon for a Sensorized world” (270,000 €).
- 2015 – 2016 Project PI, Ecole Centrale de Lyon (ECL), Functional oxides for Bio-Sensors (45.000 €).
- 2014 – 2015 Project PI, (Cellule Energie - CNRS – INSIS) **1D-RENOX** “Development of harvesting energy devices based on oxide nanowires integrated on silicon”. (15.000 €)
- 2014 – 2019 Research PI, Plan for **CSC Scholarship Program**, (UAB). (100.000 €) (Supervision of a PhD student)

ORGANISATION OF SCIENTIFIC MEETINGS

- 2018 Scientific committee at the EMRS, symposium T / Strasbourg, France
- 2017 Chairman at the EMRS, symposium Q / Strasbourg, EEUU
- 2016 Scientific committee at the EMRS, symposium AA / Strasbourg, France
- 2015 Scientific committee at the EMRS, symposium M / Lille, France
- 2014 Chairman at the MRS, symposium RR / San Francisco, EEUU

COMMISSIONS OF TRUST

Reviewer for **Chemistry, Physics and Nanotechnology** journals: Chemistry of Materials, Journal of Materials Chemistry, RSC advance, Physica Status Solidi and Nanotechnology.

Reviewer for **crystallographic journals**: CrystEngComm and Journal of applied crystallography

Reviewer for **research funding agencies**: French National Research Agency (ANR) and European Commission (FET projects within H2020, Area 4)

MEMBERSHIPS OF SCIENTIFIC SOCIETIES

Member of the Spanish **Royal Society of Chemistry** and of the **Spanish Royal Society of Physics**

Member of the board of the group of **solid state physics** of the Spanish Royal Society of Physics

Member of the **Material Research Society** (MRS)

PUBLICATIONS (*corresponding author, †equal contribution)

1. Andrés Gómez, José Manuel Vila-Fungueiriño, Rahma Moalla, Guillaume Saint-Girons, Jaume Gázquez, María Varela, Romain Bachelet, Martí Gich, Francisco Rivadulla, **Adrián Carretero-Genevri***. Electric and mechanical switching of ferroelectric and resistive states in semiconducting BaTiO_{3-δ} films on silicon. *77, 1701614. (2017)*.
2. Andres Gomez, Marti Gich, **Adrian Carretero-Genevri***, Teresa Puig, Xavier Obradors. Piezo-generated charge mapping revealed through direct piezoelectric force microscopy. *Nature Communications*,
3. J. Fan, M. Guerrero, **A. Carretero-Genevri***, M. D. Baró, S. Suriñach, E. Pellicer and J. Sort, Evaporation-induced self-assembly synthesis of Ni-doped mesoporous SnO₂ thin films with tunable room temperature magnetic properties. *J. Mater. Chem. C. 5, 5517, (2017)*.
4. Mihai Apreutesei, Régis Debord, Mohamed Bouras, Philippe Regreny, Claude Botella, Aziz Benamrouche, **Adrian Carretero-Genevri***, Jaume Gázquez, Geneviève Grenet, Stéphane Pailhès, Guillaume Saint-Girons, and Romain Bachelet. Thermoelectric La-doped SrTiO₃ epitaxial layers with single-crystal quality: from nano to micrometers. *Science and Technology of Advanced Materials Vol. 18, Iss. 1, (2017)*.
5. Guillaume Saint-Girons, Romain Bachelet, Rahma Moalla, Benjamin Meunier, Lamis Louahadj, Bruno Canut, **Adrian Carretero-Genevri***, Jaume Gázquez, Philippe Regreny, Claude Botella, José Penuelas, Mathieu G Silly, Fausto Sirotti, Geneviève Grenet. Epitaxy of SrTiO₃ on silicon: the knitting machine strategy. *Chemistry of Materials 28, 15, 5347-5355, (2016)*.
6. **A. Carretero-Genevri***, R. Bachelet, G. Saint-Girons, R. Moalla, J. M. Vila-Fungueiriño, B. Rivas-Murias, F. Rivadulla, J. Rodriguez-Carvajal, A. Gomez, J. Gázquez, M. Gich, N. Mestres. Development of epitaxial oxide ceramics nanomaterials based on chemical strategies on semiconductor platforms. *Advanced Materials Books series. Wiley. Accepted manuscript (2016)*.
7. **A. Carretero-Genevri***, Martí Gich. Preparation of Macroporous Epitaxial Quartz Films on Silicon by Chemical Solution Deposition. *JoVE, Journal of visualized experiments, JoVE53543R1, pp.1.(2015)*
8. J. M. Vila-Fungueiriño, R. Bachelet, G. Saint-Girons, M. Gendry, M. Gich, J. Gázquez, E. Ferain, F. Rivadulla, J. Rodriguez-Carvajal, N. Mestres and **A. Carretero-Genevri***. Integration of functional complex oxide nanomaterials on silicon. *Frontiers in Physics, Frontiers. (2015). 3, pp.38*.
9. **A. Carretero-Genevri***, N. Mestres, Growth of 1-D Oxide Nanostructures. *Encyclopedia of Nanotechnology 3, pp., pp.1–17. (2015)*.
10. Glenna L. Drisko†, **A. Carretero-Genevri†***, Martí Gich, Jaume Gázquez, David Grosso, Cédric Boissière, Juan Rodriguez-Carvajal, and Clément Sanchez*. Crystallization of hollow mesoporous silica nanoparticles. *Chem. Comm. 51, 4164 – 4167 (2015)*.
11. **A. Carretero-Genevri***, Martí Gich†*, L.Picas, Clément Sanchez, Juan Rodriguez-Carvajal*. Chiral habit selection on nanostructured epitaxial quartz films. *Faraday Discussions, Royal Society of Chemistry, 179, 227–233. (2015)*

12. **A. Carretero-Genevri***, C. Frontera, A.Hassini, C.Moreno, J.Oró, T.Puig, X. Obradors, N.Mestres. Chemical solution growth of $\text{La}_{0.7}\text{Sr}_{0.3}\text{MnO}_3$ nanotubes in confined geometries, *Journal of Sol–Gel Science and Technology, Springer Verlag (Germany), Volume 73, Issue 3, pp 620–627. (2015).*
13. **A. Carretero-Genevri***, G. L. Drisko, D. Grosso, C. Boissiere and C. Sanchez. Mesoscopically structured nanocrystalline metal oxide thin films. *Nanoscale* ,6, 14025-14043. (2014).
14. G. L. Drisko†, **A. Carretero-Genevri†***, Martí Gich, Jaume Gàzquez, Djawhar Ferrah, David Grosso, Cédric Boissière, Juan Rodriguez-Carvajal, and Clément Sanchez*. Water-Induced Phase Separation Forming Macrostructured Epitaxial Quartz Films on Silicon. *Adv. Funct. Mater. (2014) 24, Issue 35, pages 5494–5502.*
15. Jaume Gazquez, **A. Carretero-Genevri***, Martí Gich, Narcís Mestres, and María Varela. Electronic and Magnetic Structure of $\text{LaSr-2}\times 4$ Manganese Oxide Molecular Sieve Nanowires. *Microscopy and Microanalysis. Volume 20, Issue 03, (2014).*
16. **A. Carretero-Genevri***, J. Gazquez, J. Oró , L. Miranda, T. Puig, J. Rodriguez-Carvajal, X. Obradors, Clement Sanchez and N. Mestres. Direct Monolithic Integration of Vertical Single Crystalline Octahedral Molecular Sieve Nanowires on Silicon, *Chem.Mater. 26 (2), pp 1019–1028 (2014).*
17. **A. Carretero-Genevri***, T. Puig, X. Obradors and N. Mestres*. Ferromagnetic 1D oxide nanostructures grown from chemical solutions in confined geometries, *Chem.Soc.Rev. 43, 2042-2054, (2014).*
18. **A. Carretero-Genevri***, M.Gich, L.Picas, J.Gazquez, J.Rodriguez-Carvajal, D.Grosso, C.Boissiere, and Clement Sanchez Soft-Chemistry-Based Routes to Epitaxial Quartz Thin Films with Tunable Textures. *Science. Vol 340. Pp 827-831 (2013).*
19. J.Mosa, **A.Carretero-Genevri***, D.Grosso, Crystel Laberty-Robert, and Clement Sanchez. Pt||ZrO₂ nanoelectrode array synthesized through the sol–gel process: evaluation of their sensing capability, *Journal of Solid State Electrochemistry. 1, (2012).*
20. **A. Carretero-Genevri***, Cédric Boissiere, Lionel Nicole, David Grosso. Distance Dependence of the Photocatalytic Efficiency of TiO_2 Revealed by in Situ Ellipsometry. *J.Am.Chem.Soc,134 (26) pp 10761-10764, (2012).*
21. **A. Carretero-Genevri***, J.Gazquez, N.Mestres, T.Puig, J.Oró, F.Sandiumenge, X. Obradors. Chemical synthesis of oriented ferromagnetic $\text{LaSr-2}\times 4$ manganese oxide molecular sieve nanowires, *Chem.Commun, 48, 6223-6225. (2012).*
22. **A. Carretero-Genevri***, Jaume Gàzquez, Juan Carlos Idrobo, Judith Oro, Jordi Arbiol, Maria Varela, Etienne Ferain, Juan Rodriguez-Carvajal, Teresa Puig, Narcis Mestres, and Xavier Obradors. Single Crystalline $\text{La}_{0.7}\text{Sr}_{0.3}\text{MnO}_3$ Molecular Sieve Nanowires with High Temperature Ferromagnetism. *J.Am.Chem.Soc., 133 (11), pp 4053-4061 (2011).*
23. Picas L, **Carretero-Genevri A**, Montero MT, Vázquez-Ibar JL, Seantier B, Milhiet PE, Hernández-Borrell Preferential insertion of lactose permease in phospholipid domains: AFM observations. *J Biochim Biophys Acta. 1798, 1014-1019. (2010).*

24. **A. Carretero-Genevri**, Jaume Gázquez, Teresa Puig, Narcís Mestres, Felip Sandiumenge, Xavier Obradors, Etienne Ferain Vertical (La,Sr)MnO₃ Nanorods from Track-Etched Polymers Directly Buffering Substrates. *Adv.Funct.Mater. Volume 20 Issue 6* , Pages 892-897. (2010).
25. **A. Carretero-Genevri**, N.Mestres, T.Puig, A.Hassini, J.Oró, A.Pomar, F.Sandiumenge, X. Obradors, and E. Ferain.Single-Crystalline La_{0.7} Sr_{0.3}MnO₃ Nanowires by Polymer-Template-Directed Chemical Solution Synthesis. *Adv. Mater*, 20, 3672–3677. (2008). *Impact Factor: 15.4*
26. Françoise Damay, **A. Carretero-Genevri**, Alain Cousson, Wouter Van Beeck, Juan Rodriguez-Carvajal and François FillauxSynchrotron and neutron diffraction study of 4-methylpyridine- N -oxide at low temperature. *Acta Cryst B62, Structural Science*, 627-633, (2006).

Patents

1. Process for preparing an epitaxial alpha-quartz layer on a solid substrate, material obtained and uses. Number: *PCT/FR2013/051766. WO2014/016506A1* (2014).
2. Device and method for mapping ferroelectric samples. Number: EP16382398.2

2. Conference contributions and invited talks

- **60** international conferences contributions
 - **45** as selected speaker
 - **10** as invited speaker: EMN Meeting on Epitaxy 2017 (Barcelone, Spain), ACCGE-21 OMVPE-18 2017 (Santa Fe Mexico, USA). EMN meeting on Advanced materials 2016 (Dubrovnik, Croatia), MRS 2014 (San Francisco, CA), EMRS 2013, 2015, 2017 (Strasbourg and Lille, France), JNTE 2015 (Lyon, France), GEFES (2014), Ciudad Real, Spain, Workshop Oxydes fonctionnels pour l'integration en micro- et nano- électronique 2013 (Autrans, France).
- **15** seminars as invited speaker in national and international institutions like the University of California, Berkeley; the LPMC, Paris; the University of Barcelona, or the faculty of Mathematics and Natural Sciences, Goningen University, Holland.

4. **Languages:** Spanish and French (proficient), English, and Catalan (fluent).