

Gervasi Herranz

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SCIENTIFIC CAREER

BS & MS in Physics (University of Barcelona) & BS & MS in Electronic Engineering (University of Barcelona)

2004: Ph. D. Thesis: «Growth Mechanisms and functionalities of epitaxial metallic ferromagnetic oxide thin films» at the Institute of Materials Science of Barcelona ICMAB-CSIC

2004- 2008 : Unité Mixte de Physique CNRS/THALES – Université Paris-Sud XI

2008 - : CSIC Research staff at the Institute of Materials Science of Barcelona ICMAB-CSIC

AWARDS

ESF-THIOX award for outstanding students and young postdocs (Trondheim, Norway, 2006).

PhD and MsC THESIS

MsC Thesis

1. Year: 2007

Title: *Structural and functional characterization of (001) and (110)-oriented epitaxial $La_{2/3}Ca_{1/3}MnO_3$ films and $SrTiO_3$ barriers*

Supervisors: F. Sánchez, co-supervisor G. Herranz

Student: Ingrid Cañero Infante (Universitat Autònoma de Barcelona (UAB) – Institut de Ciència de Materials de Barcelona (ICMAB-CSIC))

2. Year: 2011

Title: *Automatized Control System for Magneto-Optical Spectroscopy.*

Supervisors: G. Herranz

Student: Marco Antonio Orellana Gutiérrez (Universitat Autònoma de Barcelona (UAB))

Supervised PhD Theses

3. *Student:* José Manuel Caicedo
Supervisors: G. Herranz, J. Fontcuberta
Subject: *Magneto-optical spectroscopy of complex systems: photonic crystals and magnetic oxides*
Thesis defence: 8 June 2012

4. *Student:* Oana Pascu
Supervisors: A. Roig, G. Herranz
Subject: *Two- and three-dimensional magneto-photonic crystals*
Thesis defence: 31 May 2012

5. *Student:* Ondrej Vlasin
Supervisors: G. Herranz
Subject: *Spectroscopy and Confocal Imaging of Complex Ferroic Systems*
Thesis defence: 17 February 2014

6. *Student:* Mateusz Scigaj
Supervisors: G. Herranz, F. Sánchez
Subject: *Complex functional oxides heterostructures*
Thesis defence: 2 December 2016

7. *Student:* Blai Casals
Supervisor: G. Herranz
Subject: *Magneto-optical spectroscopy and domain imaging of functional oxides*
Thesis defence: 15 September 2017

8. *Student:* Rafael Cichelero
Supervisor: G. Herranz
Subject: *Diffraction multifunctional plasmonic systems.*
Thesis defence: 25 January 2019

9. *Year: from 2015*
Student: Chen Yu
Supervisor: G. Herranz
Subject: *Neuromorphic Systems based on the LaAlO₃/SrTiO₃ interface*
Thesis defence: expected in Summer/Fall 2019

RESEARCH TOPICS

Oxide interfaces: emerging physics at the interface of dissimilar oxides.

- Electronic and magnetic properties, quantum transport
- Chemical composition, defects

Materials for spintronics:

- Multiferroics (ferroelectric & magnetic) thin films and heterostructures
- Spin filter structures

Magneto-plasmonics & Magneto-photonics:

- Magnetorefractive Effect & Quadratic Magneto-optics
- Magnetic liquids
- Magnetic photonic crystals
- Plasmons in Multifunctional Systems

PROJECTS

Title: “*Materiales avanzados y nanotecnologías para dispositivos y sistemas eléctricos, electrónicos y magnetoeléctricos innovadores/Advanced materials and nanotechnologies for innovative devices and electric, Electronic and magneto-electronic devices*” (NANOSELECT)

Funding agency: Spanish Ministry of Science Education & Innovation (CONSOLIDER)

Project n°: CSD2007-00041

Period: 2007-2011

Main researcher and coordinator: X. Obradors

Title: “*Óxidos multifuncionales para la manipulación de espines y comunicaciones ágiles/Multifunctional oxides for spin manipulation and agile communications*”

Funding agency: Spanish Ministry of Science Education & Innovation

Project n°: MAT2008-06761-C03 (Plan Nacional de Materiales)

Period: 2008-2010

Main researcher and coordinator: J. Fontcuberta

Title: «*POSTIT (Polar Surfaces and Transport Phenomena in Oxide InTerfaces / Surfaces Polaires et Phénomènes de Transport dans des Interfaces d’Oxydes)*»

Funding Agency: Project for Scientific Cooperation PICS CNRS-CSIC

Project n°: PICS2008FR1

Period: 2009-2011

Main researcher and coordinator: Gervasi Herranz (CSIC) / Manuel Bibes (CNRS)

Budget: 15 k€

Title: “*Metaferroeléctricos: hacia una nueva generación de ferroeléctricos/“Metaferroelectrics: towards a new generation of ferroelectrics”*”

Funding Agency: Acción Complementaria EXPLORA from Spanish Ministry of Science Education & Innovation

Project n°: MAT2009-06885-E

Period: 2010- 2011

Main researcher and coordinator: Gervasi Herranz

Budget: 70 k€

Title: “*Hacia una nueva generación de cristales fotónicos sintonizables/Towards a new generation of tunable photonic crystals*”

Funding agency: Proyectos Intramurales de Frontera (Spanish National Research Council)

Project n°: PIF08-016

Period: 2008-2010

Coordinator: A. Blanco, **Area sub-coordinator:** G. Herranz & Anna Roig

Budget: 77 k€

Title: “*Responsive Multifunctional Oxides and Hybrid Structures*”
Funding agency: Spanish Ministry of Science Education & Innovation
Project n°: MAT2011-29269-C03-01 (Plan Nacional de Materiales)
Period: 2012-2014
Main researcher and coordinator: Florencio Sánchez
Budget: 350 k€

Title: “*Metals and Oxides for a Sustainable Electronics*”
Funding agency: Spanish Ministry of Economy & Competitiveness
Project n°: MAT2014-56063-C2-1-R (Plan Nacional de Materiales)
Period: 2015-2017
Main researcher and coordinator: Gervasi Herranz
Budget: 423.5 k€

Title: “*Oxide Responses Inspired by Nature*”
Funding agency: Spanish Ministry of Economy & Competitiveness
Project n°: MAT2017-85232-R (Plan Nacional de Materiales)
Period: 2018-2020
Main researcher and coordinator: Florencio Sánchez & Gervasi Herranz
Budget: 242 k€

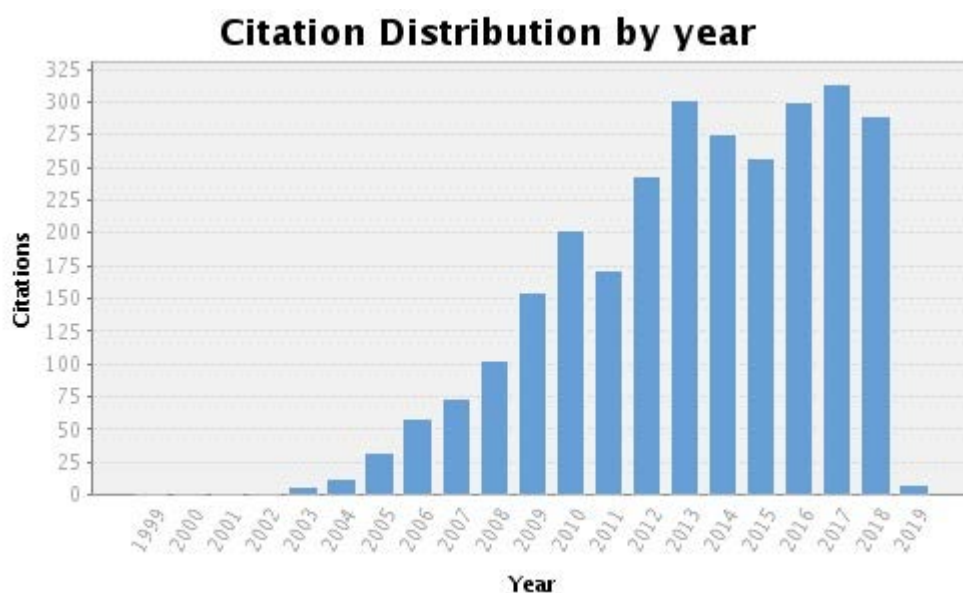
Title: “*Enabling Multifunctional Plasmonics on Hybrid Artificial Si-integrated Systems*”
Funding agency: Spanish Ministry of Economy & Competitiveness
Project n°: Severo Ochoa (SEV-2015-0496), Frontier Interdisciplinary Projects (FUNMAT-FIP2017)
Period: 2017-2019
Main researcher and coordinator: Gervasi Herranz
Budget: 70 k€

Title: « *ELECTRONIC SPECTROSCOPY IN OXIDE QUANTUM WELLS Project "ESOQ"* »
Funding Agency: Project for Scientific Cooperation PICS CNRS-CSIC
Project n°: PICS2008FR1
Period: 2017-2019
Main researcher and coordinator: Gervasi Herranz (CSIC) / Nicolas Bergeal (ESPCI Paris)
Budget: 15 k€

Title: « *Enabling Multifunctional Plasmonics on Hybrid Artificial Scale-Integrated Systems* »
Funding Agency: EU- Horizon 2020 Framework, H2020-MSCA-IF-2016 Fellowship (Dr. M. Kataja)
Project n°: 748429 — EMPHASIS
Period: 2018-2020

PUBLICATIONS

On the whole I have published 89 articles. The list includes 1 Nature, 1 Nature Materials, 1 Nature Physics, 2 Nature Communications, 10 Physical Review Letters, 1 ACS Appl. Mater. Interfaces, 2 Langmuir, 13 Applied Physics Letters and 15 Physical Review B, among others. My h-index is 26 and I have 2802 citations (as of January 2019). I have also published two book chapters.



Average Citations per Item: 32.21

h-index: 26

(DATA OBTAINED FROM WOK- January 2019)

YEAR 2003

1. *Thickness dependence of magnetic and transport properties of epitaxial SrRuO₃ films.* G. Herranz, F. Sánchez, M. V. García-Cuenca, C. Ferrater, M. Varela, B. Martínez y J. Fontcuberta, *Mat. Res. Soc. Symp. Proc., Spintronics* **690**, p. 43 (2002), ed. by T. J. Klemmer, J. Z. Sun, A. Fert, J. Bass
2. *Impact of microstructure on transport properties of nanometric epitaxial SrRuO₃ films.* G. Herranz, F. Sánchez, M. V. García-Cuenca, C. Ferrater, M. Varela, B. Martínez y J. Fontcuberta, *Applied Physics Letters* **82** pp. 85-87 (2003)
3. *SrRuO₃/SrTiO₃/SrRuO₃ heterostructures for magnetic tunnel junctions.* G. Herranz, F. Sánchez, M. V. García-Cuenca, C. Ferrater, M. Varela, B. Martínez y J. Fontcuberta, *Journal of Applied Physics* **93** pp. 8035-8037 (2003)
4. *Transition from three- to two-dimensional growth in strained SrRuO₃ films on SrTiO₃(001).* F. Sánchez, M.V. García-Cuenca, C. Ferrater and M. Varela, G. Herranz, B. Martínez y J. Fontcuberta, *Applied Physics Letters* **83** pp. 902-904 (2003)

5. *Charge localization in nanometric $\text{La}_{2/3}\text{Ca}_{1/3}\text{MnO}_3$ thin films grown on perfectly matching substrates.* G. Herranz, M. Berkowski, E. Jedryka, M. Wojcik, F. Sánchez, M. Bibes y J. Fontcuberta, *Journal of Applied Physics* **93** pp. 8065-8067 (2003)
6. *Enhanced electron-electron correlations in nanometric SrRuO_3 epitaxial films.* G. Herranz, F. Sánchez, M. V. García-Cuenca, C. Ferrater, M. Varela, B. Martínez y J. Fontcuberta, *Physical Review B* **67**, 174423 pp. 1-8 (2003)

YEAR 2004

7. *Relevance of the 3D to 2D growth mode transition for the transport properties of nanometric SrRuO_3 films.* G. Herranz, F. Sánchez, B. Martínez, J. Fontcuberta, M.V. García-Cuenca, C. Ferrater y M. Varela, *Materials Science & Engineering B* **109** pp. 221–225 (2004)
8. *Critical effects of substrate terraces and steps morphology on the growth mode of epitaxial SrRuO_3 films.* F. Sánchez, G. Herranz, I.C. Infante, J. Fontcuberta, M.V. García-Cuenca, C. Ferrater y M. Varela, *Applied Physics Letters* **85** pp. 1981-1983 (2004)
9. *Self-interference of the charge carriers in ferromagnetic SrRuO_3 .* G. Herranz, F. Sánchez, B. Martínez, J. Fontcuberta, M.V. García-Cuenca, C. Ferrater y M. Varela, *Journal of Applied Physics*, **95** pp. 7213-7215 (2004)
10. *Weak localization effects in some metallic perovskites.* G. Herranz, F. Sánchez, B. Martínez, J. Fontcuberta, M.V. García-Cuenca, C. Ferrater y M. Varela, *European Physical Journal B* **40** pp. 439–444 (2004)
11. *Anisotropic magnetoresistance in SrRuO_3 ferromagnetic oxide.* G. Herranz, F. Sánchez, M.V. García-Cuenca, C. Ferrater, M. Varela, B. Martínez y J. Fontcuberta, *Journal of Magnetism and Magnetic Materials* **272–276** pp. 517–518 (2004)
12. *Band filling versus bond bending in substituted $\text{L}_x\text{Sr}_{2-x}\text{FeMoO}_6$ ($\text{L} = \text{Ca}, \text{La}, \text{Nd}$) compounds.* D. Rubí, C. Frontera, G. Herranz, J. L. García-Muñoz, J. Fontcuberta y C. Ritter, *Journal of Applied Physics* **95** pp. 7082-7084 (2004)

YEAR 2005

13. *Magnetic field effect on quantum corrections to the low temperature conductivity in metallic perovskite oxides.* G. Herranz, F. Sánchez, and J. Fontcuberta, V. Laukhin, J. Galibert, M.V. García-Cuenca, C. Ferrater y M. Varela, *Physical Review B* **72**, 014457 pp. 1-6 (2005)
14. *Magnetoresistance of SrRuO_3 ultra-thin films.* G. Herranz, F. Sánchez, B. Martínez, J. Fontcuberta, M.V. García-Cuenca, C. Ferrater y M. Varela, *Journal of Magnetism and Magnetic Materials* **290-291** pp. 1123-1126 (2005)
15. *Kerr measurements on single-domain SrRuO_3 thin films.* G. Herranz, N. Dix, F. Sánchez, B. Martínez, J. Fontcuberta, M.V. García-Cuenca, C. Ferrater, M. Varela, D. Hrabovsky y A. R. Fert, *Journal of Applied Physics* **97** 10M321 pp. 1-3 (2005)

16. **Domain structure of epitaxial SrRuO₃ thin films.** G. Herranz, F. Sánchez, J. Fontcuberta, M.V. García-Cuenca, C. Ferrater, M. Varela, T. Angelova, A. Cros y A. Cantarero, *Physical Review B* **71**, 174411 pp. 1-8 (2005)
17. **Self-organization in complex oxide thin films: from 2-D to 0-D nanostructures of SrRuO₃ and CoCr₂O₄.** F. Sánchez, U. Lüders, G. Herranz, I.C. Infante, J. Fontcuberta, M.V. García-Cuenca, C. Ferrater y M. Varela, *Nanotechnology* **16** pp. S190-S196 (2005)

YEAR 2006

18. **Giant step bunching from self-organized coalescence of SrRuO₃ islands.** F. Sánchez, G. Herranz, J. Fontcuberta, M.V. García-Cuenca, C. Ferrater y M. Varela, *Physical Review B* **73**, 073401 pp. 1-4 (2006)
19. **Giant step bunching in epitaxial SrRuO₃ films on vicinal SrTiO₃(001).** F. Sánchez, G. Herranz, C. Ferrater, M.V. García-Cuenca, M. Varela y J. Fontcuberta, *Thin Solid Films* **495**, pp.159-164 (2006)
20. **Growth modes and self-organization in the epitaxy of ferromagnetic SrRuO₃ on SrTiO₃(001).** F. Sánchez, G. Herranz, I.C. Infante, C. Ferrater, M.V. García-Cuenca, M. Varela y J. Fontcuberta, *Progress in Solid State Chemistry* **34** pp. 213-221 (2006)
21. **La_{2/3}Sr_{1/3}MnO₃-La_{0.1}Bi_{0.9}MnO₃ heterostructures for spin-filtering.** M. Gajek, G. Herranz, M. Bibes, S. Fusil, K. Bouzheouane, M. Varela, J. Fontcuberta y A. Barthélémy, A. Fert, *Journal of Applied Physics* **99** 08E504 pp. 1-3 (2006)
22. **Hybrid perovskite-spinel magnetic tunnel junctions based on conductive ferrimagnetic NiFe₂O₄.** U. Lüders, G. Herranz, M. Bibes, K. Bouzheouane, E. Jacquet, J.-P. Contour, S. Fusil, J.-F. Bobo, J. Fontcuberta, A. Barthélémy y A. Fert, *Journal of Applied Physics* **99**, 08K301 1-3 (2006).
23. **Co-doped (La,Sr)TiO_{3-δ}: a high-Curie temperature diluted magnetic system with large spin-polarization.** G. Herranz, R. Ranchal, M. Bibes, H. Jaffrès, E. Jacquet, J.-L. Maurice, K. Bouzheouane, F. Wyczisk, E. Tafra, M. Basletic, A. Hamzic, C. Colliex, J.-P. Contour, A. Barthélémy y A. Fert, *Physical Review Letters* **96** 027207 pp. 1-4 (2006)
24. **Full oxide heterostructure combining a high-T_C diluted ferromagnet with a high-mobility conductor.** G. Herranz, M. Basletic, M. Bibes, R. Ranchal, A. Hamzic, E. Tafra, K. Bouzheouane, E. Jacquet, J. P. Contour, A. Barthélémy y A. Fert, *Physical Review B* **73**, 064403 pp. 1-7 (2006)
25. **Combining half-metals and multiferroics into epitaxial heterostructures for spintronics.** H. Béa, M. Bibes, M. Sirena, G. Herranz, K. Bouzheouane, E. Jacquet, S. Fusil, P. Paruch, M. Dawber, J.-P. Contour y A. Barthélémy, *Applied Physics Letters* **88**, 062502 pp. 1-3 (2006)
26. **Ferroelectricity down to at least 2 nm in multiferroic BiFeO₃ epitaxial thin films.** H. Béa, M. Bibes, M. Sirena, G. Herranz, S. Fusil, K. Bouzheouane, E. Jacquet, J.-P. Contour y A. Barthélémy, *Japanese Journal of Applied Physics* **45**, pp. L187-L189 (2006)

27. *Controlled magnetic anisotropy of SrRuO₃ thin films grown on nominally exact SrTiO₃(001) substrates.* G. Herranz, F. Sánchez, N. Dix, D. Hrabrovsky I. C. Infante, J. Fontcuberta, M.V. García-Cuenca, C. Ferrater y M. Varela, *Applied Physics Letters* **89**, 152501 pp. 1-3 (2006)
28. *Tunnel magnetoresistance and exchange bias with multiferroic BiFeO₃ epitaxial thin films.* H. Béa, S. Fusil, M. Bibes, S. Cherifi, A. Locatelli, B. Warot-Fonrose, G. Herranz, C. Deranlot, E. Jacquet, K. Bouzehouane and A. Barthélémy, *Applied Physics Letters* **89**, 242114 pp. 1-3 (2006)

YEAR 2007

29. *High-spin polarized Co-doped (La,Sr)TiO₃ thin films on high-mobility SrTiO₃ substrates.* G. Herranz, M. Basletić, M. Bibes, R. Ranchal, A. Hamzić, H. Jaffrès, E. Tafra, K. Bouzehouane, E. Jacquet, J.P. Contour, A. Barthélémy y A. Fert, *Journal of Magnetism and Magnetic Materials* **310**, pp. 2111–2113 (2007)
30. *Structural and functional characterization of (110)-oriented epitaxial La_{2/3}Ca_{1/3}MnO₃ electrodes and SrTiO₃ tunnel barriers.* I.C. Infante, F. Sánchez, J. Fontcuberta, S. Fusil, K. Bouzehouane, G. Herranz, A. Barthélémy, S. Estradé, J. Arbiol, F. Peiró, R.J.O. Mossaneck, M. Abbate y M. Wojcik, *Journal of Applied Physics* **101**, 093902 pp. 1-8 (2007)
31. *High Mobility in LaAlO₃/SrTiO₃ Structures: Origin, Dimensionality and Perspectives.* G. Herranz, M. Basletic, M. Bibes, C. Carretero, E. Tafra, E. Jacquet, K. Bouzehouane, J. L. Maurice, A. Hamzic, A. Barthélémy y A. Fert, *Physical Review Letters* **98**, 216803 pp. 1-4 (2007)
32. *Charge imbalance at oxide interfaces: how nature deals with it.* J.-L. Maurice, I. Devos, M.-J. Casanove, C. Carrétéro, G. Gachet, G. Herranz, D.-G. Crété, D. Imhoff, A. Barthélémy, M. Bibes, K. Bouzehouane, C. Deranlot, S. Fusil, É. Jacquet, B. Domengès, D. Ballutaud, *Materials Science and Engineering B* **144**, pp. 1-6 (2007)

YEAR 2008

33. *Effect of disorder on the temperature dependence of the resistivity of SrRuO₃.* G. Herranz, V. Laukhin, F. Sánchez, P. Levy, C. Ferrater, M.-V. García-Cuenca, M. Varela, J. Fontcuberta, *Physical Review B* **77**, 165114 (2008)
34. *Electron energy loss spectroscopy determination of Ti oxidation state at the (001) LaAlO₃/SrTiO₃ interface as a function of LaAlO₃ growth conditions.* J.-L. Maurice, G. Herranz, C. Colliex, I. Devos, C. Carretero, A. Barthelemy, K. Bouzehouane, S. Fusil, D. Imhoff, E. Jacquet, F. Jomard, D. Ballutaud, M. Basletic, *Europhysics Letters* **82**, pp. 17003(2008)
35. *Mapping the spatial distribution of charge carriers in LaAlO₃/SrTiO₃ heterostructures.* M. Basletic, J.-L. Maurice, C. Carrétéro, G. Herranz, O. Copie, M. Bibes, É. Jacquet, K. Bouzehouane, S. Fusil, A. Barthélémy, *Nature Materials*, **7**, p. 621-625 (2008)

36. **Integration of multiferroic BiFeO_3 thin films into heterostructures for spintronics.** H. Bea, M. Bibes, G. Herranz, XH Zhu, S. Fusil, K. Bouzehouane, E. Jacquet, C. Deranlot, A. Barthélémy, *IEEE TRANSACTIONS ON MAGNETICS* 44, 1941-1945 (2008)

YEAR 2009

37. **Controlling high-mobility conduction in SrTiO_3 by oxide thin film deposition.** G. Herranz, M. Basletic, O. Copie, M. Bibes, A. N. Khodan, C. Carrétéro, E. Tafra, E. Jacquet, K. Bouzehouane, A. Hamzic, and A. Barthélémy, *Applied Physics Letters*, *Appl. Phys. Lett.* 94, 012113 (2009)
38. **Jahn-Teller contribution to the magneto-optical effect in thin-film ferromagnetic manganites.** D. Hrabovský, J. M. Caicedo, G. Herranz, I. C. Infante, F. Sánchez, and J. Fontcuberta, *Phys. Rev. B* 79, 052401 (2009)
39. **Structural and magnetic properties of Co-doped (La, Sr)TiO₃ epitaxial thin films probed using x-ray magnetic circular dichroism.** O Copie, K Rode, R Mattana, M Bibes, V Cros, G Herranz, A Anane, R Ranchal, E Jacquet, K Bouzehouane, M-A Arrio, P Bencok, N B Brookes, F Petroff and A Barthélémy, *J. Phys.: Condens. Matter* 21, 406001 (2009)
40. **Optical sensing of magnetic field based on magnetorefractive effect in manganites.** D. Hrabovský, G. Herranz, K. Postava, I. C. Infante, F. Sánchez, and J. Fontcuberta, *SPIE* 7356, 73560R (2009)
41. **Towards Two-Dimensional Metallic Behavior at $\text{LaAlO}_3/\text{SrTiO}_3$ Interfaces .** O. Copie, V. Garcia, C. Bödefeld, C. Carrétéro, M. Bibes, G. Herranz, E. Jacquet, J.-L. Maurice, B. Vinter, S. Fusil, K. Bouzehouane, H. Jaffrès, and A. Barthélémy, *Phys. Rev. Lett.* 102, 216804 (2009)
42. **Effects of thickness on the cation segregation in epitaxial (001) and (110) $\text{La}_{2/3}\text{Ca}_{1/3}\text{MnO}_3$ thin films .** S. Estradé, J. M. Rebled, J. Arbiol, F. Peiró, I. C. Infante, G. Herranz, F. Sánchez, J. Fontcuberta, R. Córdoba, B. G. Mendis, and A. L. Bleloch, *Appl. Phys. Lett.* 95, 072507 (2009)

YEAR 2010

43. **Facile route to magnetophotonic crystals by infiltration of 3D inverse opals with magnetic nanoparticles.** J.M. Caicedo, E.Taboada, D.Hrabovský, M.López-García, G.Herranz, A.Roig, A.Blanco, C. López , J.Fontcuberta, *Journal of Magnetism and Magnetic Materials* 322, 1494-1496 (2010)
44. **Strong magnetorefractive effect in epitaxial $\text{La}_{2/3}\text{Ca}_{1/3}\text{MnO}_3$ thin films.** D. Hrabovsky, G. Herranz, J. M. Caicedo, I.C: Infante, F. Sánchez, J. Fontcuberta, *Journal of Magn. and Magn. Mater.* 322, 148 (2010)
45. **Dynamical Response and Confinement of the Electrons at the $\text{LaAlO}_3/\text{SrTiO}_3$ Interface.** A. Dubroka, M. Rössle, K. W. Kim, V. K. Malik, L. Schultz, S. Thiel, C. W. Schneider, J. Mannhart, G. Herranz, O. Copie, M. Bibes, A. Barthélémy, and C. Bernhard, *Phys. Rev. Lett.* 104, 156807 (2010)
46. **Point defect distribution in high-mobility conductive SrTiO_3 crystals.** A. Gentils, O. Copie, G. Herranz, F. Fortuna, M. Bibes, K. Bouzehouane, É. Jacquet, C. Carrétéro, M. Basletic, E. Tafra, A. Hamzić, and A. Barthélémy, *Phys. Rev. B* 81, 144109 (2010)

47. **Vacancy defect and carrier distributions in the high mobility electron gas formed at ion-irradiated SrTiO₃ surfaces.** G. Herranz, O. Copie, A. Gentils, E. Tafra, M. Basletic, F. Fortuna, K. Bouzehouane, S. Fusil, E. Jacquet, C. Carretero, M. Bibes, A. Hamzic, A. Barthelemy, *J. Appl. Phys.* 107, 103704 (2010)
48. **Magneto-Optical Characterization of Colloidal Dispersions. Application to Nickel Nanoparticles.** O. Pasqu, J. M. Caicedo, J. Fontcuberta, G. Herranz and A. Roig, *Langmuir* 26, 12548 (2010)
49. **Strong magnetorefractive and quadratic magneto-optical effects in (Pr_{0.4}La_{0.6})_{0.7}Ca_{0.3}MnO₃.** J. M. Caicedo, M. C. Dekker, K. Dörr, J. Fontcuberta, and G. Herranz, *Phys. Rev. B* 82, 140410(R) (2010)
50. **Large magnetorefractive effect in magnetite.** J M Caicedo, S K Arora, R Ramos, I V Shvets, J Fontcuberta and G. Herranz, *New Journal of Physics* 12, 103023 (2010)

YEAR 2011

51. **Two-dimensional electron gas with universal subbands at the surface of SrTiO₃.** A. F. Santander-Syro, O. Copie, T. Kondo, F. Fortuna, S. Pailhès, R. Weht, X. G. Qiu, F. Bertran, A. Nicolaou, A. Taleb-Ibrahimi, P. Le Fèvre, G. Herranz, M. Bibes, N. Reyren, Y. Apertet, P. Lecoeur, A. Barthélémy and M. J. Rozenberg, *Nature* 469, 189 (2011)
52. **Magnetophotonic Response of Three-Dimensional Opals.** J. M. Caicedo, O. Pasqu, M. López-García, V. Canalejas, A. Blanco, C. López, J. Fontcuberta, A. Roig, G. Herranz, *ACS Nano*, 2011, 5 (4), pp 2957–2963
53. **Ultrathin conformal coating for complex magneto-photonic structures** O. Pasqu, J. M. Caicedo, M. López-García, V. Canalejas, A. Blanco, C. López, J. Arbiol, J. Fontcuberta, A. Roig, G. Herranz, *Nanoscale* 3, 4811 (2011)
54. **X-ray interference effects on the determination of structural data in ultrathin La_{2/3}Sr_{1/3}MnO₃ epitaxial thin films.** D. Pesquera, X. Marti, V. Holy, R. Bachelet, G. Herranz, and J. Fontcuberta, *Applied Physics Letters*, 99, 221901 (2011)
55. **Magnetoelastic coupling in La_{2/3}Sr_{1/3}MnO₃ thin films on SrTiO₃.** D. Pesquera, V. Skumryev, F. Sánchez, G. Herranz, and J. Fontcuberta, *Physical Review B*, 84, 184412 (2011)
56. **Effect of the capping on the local Mn oxidation state in buried (001) and (110) SrTiO₃/La_{2/3}Ca_{1/3}MnO₃ interfaces.** S. Estradé, J.M. Rebled, M.G. Walls, F. de la Pena, C. Colliex, R. Cordoba, I.C. Infante, G. Herranz, F. Sánchez, J. Fontcuberta, F. Peiró, *Journal of Applied Physics* 110, 103903 (2011)

YEAR 2012

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BOOK CHAPTERS

(1) Responsive Photonic Nanostructures (Smart Nanoscale Optical Materials)

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Oana Pascu, Gervasi Herranz and Anna Roig

CHAPTER 10: Chemical Routes to Fabricate Three-Dimensional Magnetophotonic Crystals

(2) Oxide interfaces – charge and spin transport- Fundamentals and Applications

Edited by Pan Stanford Publishing Editor: Prof. Tamalika Banerjee,

Gervasi Herranz

Chapter 8: ‘Orbital symmetry and electronic properties of two-dimensional electron systems in oxide heterointerfaces’ “

To appear in 2019

INVITED TALKS

1. *Spin-polarized tunneling with magnetic oxide electrodes and barriers*
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Zaragoza (Spain), 19 – 21 November, 2005.
2. *Impact of structural disorder on the magnetotransport properties of complex oxide thin films*
4th THIOX Topical Meeting Spring 2006.
Trondheim (Norway), 19 – 21 March, 2006.
3. *Multiferroics for spintronics*
III International Workshop on Nanomagnetism
Coma-ruga (Spain), 1 – 4 July, 2007.
4. *Spin electronics with multiferroics*
International Conference on Electroceramics.
Arusha (Tanzania), 31 July – 3 August, 2007.
5. *High-mobility conduction in SrTiO₃-based structures*
Minerals, Metals and Materials Society (TMS) 2008.
New Orleans (USA), 9 – 13 March, 2008.
6. *Interface effects in strongly correlated oxides*
2008 Villa Conference on Complex Oxide Heterostructures (ViC-COH).
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7. *Nanoscale analysis of oxide interface properties*
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8. *Engineering high-mobility gases in SrTiO₃*
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St.Thomas, Virgin Islands (USA), 13 – 18 September, 2009.
9. *Nanoscale analysis of oxide interface properties*
WOE16 16th International Workshop on Oxide Electronics
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10. *Electronic properties of the quasi-2D electron gas at the polar LaAlO₃/SrTiO₃ interface.*
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11. *Beyond conventional magneto-optical spectroscopy of magnetic oxides*
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29. Gervasi Herranz, Florencio Sanchez, Nico Dix, Mateusz Scigaj, Josep Fontcuberta. *High Mobility Conduction at (110) and (111) $LaAlO_3/SrTiO_3$ Interfaces*. **2012 MRS Fall Meeting**, Boston, USA, 25 – 30 November 2012

30. Gervasi Herranz, Florencio Sanchez, Nico Dix, Mateusz Scigaj, Josep Fontcuberta. *High mobility conduction and superconductivity at (110) and (111) $LaAlO_3/SrTiO_3$ interfaces*. **"MAMA-Trend: Trends, challenges and emergent new phenomena in multi-functional materials"**, Sorrento, Italy, 20 – 23 May 2013

31. Gervasi Herranz, Mateusz Scigaj, Nico Dix, Jaume Gázquez, María Varela, Nicolas Bergeal, Jérôme Lesueur, Florencio Sánchez, Josep Fontcuberta. *High mobility conduction and superconductivity at (110) and (111) $LaAlO_3/SrTiO_3$ interfaces*. **"MAMA-Trend: Trends, challenges and emergent new phenomena in multi-functional materials"**, Sorrento, Italy, 20 – 23 May 2013

32. Gervasi Herranz, Mateusz Scigaj, Nico Dix, Jaume Gázquez, María Varela, Nicolas Bergeal, Jérôme Lesueur, Florencio Sánchez, Josep Fontcuberta. *Two-dimensional electron liquids at the interface between two wide-bandgap insulators*. **XXXIV Annual Meeting of the Spanish Royal Society of Physics**, València, 15 – 19 July 2013

33. Gervasi Herranz, Mateusz Scigaj, Nico Dix, Jaume Gázquez, Nicolas Bergeal, Jérôme Lesueur, Florencio Sánchez, Josep Fontcuberta. *Orientational Tuning of 2D-Superconductivity in $LaAlO_3/SrTiO_3$* . **20th International Workshop on Oxide Electronics**, Singapore, 22 – 25 September 2013

34. Gervasi Herranz. *Electronic structure of (001)- and (110)-oriented $LaAlO_3/SrTiO_3$ interfaces*. **APS March Meeting 2014**, Denver, March 2014

35. Ondrej Vlasin, Blai Casals, Nico Dix, Florencio Sánchez, Gervasi Herranz. *Submicronic Spatial Mapping of Optical Responses in Magnetolectrics*. **APS March Meeting 2014**, Denver, March 2014
36. Ondrej Vlasin, Blai Casals, Nico Dix, Florencio Sánchez, Gervasi Herranz. *Submicronic Spatial Mapping of Optical Responses in Magnetolectrics*. **MRS Spring Meeting 2014**, San Francisco, April 2014
36. Ondrej Vlasin, Oana Pascu, Anna Roig, Gervasi Herranz. *Plasmon-mediated large enhancement of magneto-optical activity in colloidal magnetic metals*. **MRS Spring Meeting 2014**, San Francisco, April 2014
37. Ondrej Vlasin, Blai Casals, Nico Dix, Florencio Sánchez, Gervasi Herranz. *Magnetolectric Imaging at Buried Interfaces*. **European Conference on Application of Polar Dielectrics 2014**, Vilnius, Lithuania, July 2014
38. Ondrej Vlasin, Oana Pascu, Anna Roig, Gervasi Herranz. *Plasmon-mediated large enhancement of magneto-optical activity in colloidal magnetic metals*. **20th International Conference on Magnetism ICM2015**, Barcelona, July 2015
39. G. Herranz, G. Singh, N. Bergeal, A. Jouan, J. Lesueur, J. Gázquez, M. Varela, M. Scigaj, N. Dix, F. Sánchez, J. Fontcuberta. *Oxide quantum wells: Rashba spin-orbit fields modulated by selective orbital occupancy*. **XXXV Reunión Bienal de la Real Sociedad Española de Física**, Gijón, July 2015
39. G. Herranz, G. Singh, N. Bergeal, A. Jouan, J. Lesueur, J. Gázquez, M. Varela, M. Scigaj, N. Dix, F. Sánchez, J. Fontcuberta. *Oxide quantum wells: Rashba spin-orbit fields modulated by selective orbital occupancy*. **XXXV Reunión Bienal de la Real Sociedad Española de Física**, Gijón, July 2015
40. Blai Casals, Rafael Cichelero, Pablo García Fernández, Javier Junquera, David Pesquera, Mariano Campoy-Quiles, Ingrid C. Infante, Florencio Sánchez, Josep Fontcuberta, Gervasi Herranz. *Observation of a huge polaron gyrotropic response near room temperature in manganite thin films*. **APS March Meeting 2016**, Baltimore, March 2016
41. Blai Casals, Vassil Skumryev, Vladimir Laukhin, Xavier Granados, Ekhard K. H. Salje, Sampo J. Hämäläinen, Diego López González, Arianna Casiraghi, Sebastiaan van Dijken, Gervasi Herranz, Josep Fontcuberta. *Magnetolectric coupling mediated by entangled ferroelastic domain and polar domain walls in non-polar materials*. **Condensed Matter Division of the European Physical Society, CMD26**, Groningen, September 2016
42. Blai Casals, Rafael Cichelero, Pablo García Fernández, Javier Junquera, David Pesquera, Mariano Campoy-Quiles, Ingrid C. Infante, Florencio Sánchez, Josep Fontcuberta, Gervasi Herranz. *Giant magneto-optical activity induced by polarons in manganites*. **TO-BE Spring Meeting 2017**, Luxembourg, April 2017
43. Blai Casals, Rafael Cichelero, Pablo García Fernández, Javier Junquera, David Pesquera, Mariano Campoy-Quiles, Ingrid C. Infante, Florencio Sánchez, Josep Fontcuberta, Gervasi Herranz. *Giant Dual critical thickness for lattice and electronic instabilities in the LaAlO₃/SrTiO₃ interface..* **APS March Meeting 2017**, New Orleans, March 2017
44. Blai Casals, Nahuel Statuto, Rafael Cichelero, Andrés Gómez, Alberto Hernández-mínguez, Joan Manel Hernández, Gervasi Herranz and Ferran Macià. *Directional heat dissipation generated by Surface Acoustic Waves in Co/Pt ultrathin layers*. **APS March Meeting 2017**, New Orleans, March 2018

45. Blai Casals, A. Schiaffino, Arianna Casiraghi, Sampo J. Hämäläinen, Diego López González, Sebastiaan van Dijken, M. Stengel, Gervasi Herranz. *In-situ imaging of electric field-induced ferroelastic domain motion in SrTiO₃*. **APS March Meeting 2018**, Los Angeles, March 2018

46. Blai Casals, A. Schiaffino, Arianna Casiraghi, Sampo J. Hämäläinen, Diego López González, Sebastiaan van Dijken, M. Stengel, Gervasi Herranz. *In-situ imaging of electric field-induced ferroelastic domain motion in SrTiO₃*. **Workshop on Oxide Electronics iWOE25**, Les Diablerets, Switzerland, October 2018

INVITED SEMINARS IN RESEARCH CENTERS & INSTITUTIONS

Ferromagnetic metallic oxide thin films and heterostructures: exchange interactions and interface effects. **University of Geneva (Switzerland)** May 2004

Ferromagnetic metallic oxide thin films and heterostructures: exchange interactions and interface effects. **SPEC-CEA Saclay (France)**, June 2004

Full oxide heterostructure combining a highly-spin polarized diluted ferromagnet with a high-mobility conductor. **Laboratoire CRISMAT, Caen (France)**, February 2006

Oxides for Spintronics. **Seoul National University, Seoul (South Korea)** October 2007

Oxides for Spintronics. **University of Zagreb (Croatia)** October 2007

Geberation of confined high-mobility electron gases in doped SrTiO₃. **Oak Ridge National Laboratory (USA)** March 2008

Interfaces and Physical Properties of Oxides. **University of Groningen (The Netherlands)** May 2008

Complex Perovskite Oxide Heterostructures: Applications and Devices. **Lectures at the Universidad Nacional Autónoma de México (UNAM)** 30 June- 4 July 2008

Electronic properties of the quasi-2D electron gas at the polar LaAlO₃/SrTiO₃ interface. **Chalmers University, Göteborg (Sweden)** February 2010

Optical spectroscopy and high-resolution imaging of complex systems: from magnetophotonic crystals to magnetoelectric materials. **University of Mainz (Germany)** January 2012

Life beyond <001>: reshaping 2DEGS at the LaAlO₃/SrTiO₃ interface by crystal orientation.. **ESPCI-ParisTech (Paris, France)** November 2013

LaAlO₃/SrTiO₃ quantum wells: engineering physical properties by selective orbital occupancy. **Technical University of Darmstadt (Germany)** November 2014

A journey into the basics of magneto-optics: from free-like electrons to polarons. **University of the Basque Country (Theory of Nanophotonics Group @CSIC-UPV/EHU & DPIC), San Sebastián,** June 2015

In-situ imaging of electric field-induced ferroelastic domain motion in SrTiO₃. **Institute for Basic Science Center for Correlated Electron Systems (IBS CCES) Seoul, Sputh Korea,** December 2017

INVITED LECTURES AT SCHOOLS

School: 6th European School on Multiferroics (ESMF6)

Lecture: "Polarized Light for Spectroscopy and Domain Imaging"

July 21-26, 2013

Wittenberg, Germany

International School of Oxide Electronics 2013

Lectures:

- a) “Polarized Light for Spectroscopy and Domain Imaging”
- b) “Electronic Structure of SrTiO₃”

September 2-14, 2013

Cargèse, Corsica

ORGANIZATION COMMITTEES

International School of Oxide Electronics 2011

3-15 October 2011, Cargèse, Corsica (France)

Organization committee :

Manuel Bibes (UMR CNRS/Thales, Palaiseau, France), chair

Patrycja Paruch (Université de Genève, Switzerland)

Gervasi Herranz (ICMAB-CSIC, Bellaterra, Spain)

Frédéric Petroff (UMR CNRS/Thales, Palaiseau, France)

2011 MRS Spring Meeting

April 25 - 29, 2011

San Francisco, California

Symposium G: Complex Oxide Materials for Emerging Energy Technologies

Symposium Organizers

Ho Nyung Lee, Oak Ridge National Laboratory

Akira Ohtomo, Tokyo Institute of Technology

Gervasi Herranz., Institut of Materials Science of Barcelona ICMAB-CSIC

John Perkins, National Renewable Energy Laboratory

2013 MRS Spring Meeting

April 1 - 5, 2013

San Francisco, California

Symposium XX: Oxide Thin Films and Heterostructures for Advanced Information and Energy Technologies

Symposium Organizers

Gervasi Herranz (lead coordinator), Institut of Materials Science of Barcelona ICMAB-CSIC

Ho Nyung Lee, Oak Ridge National Laboratory

Jens Kreisel, Luxembourg University, CRP Lippmann - Materials Sciences

Hirohichi Ohta, Nagoya University, Graduate School of Engineering

2015 EMRS Spring Meeting

May 11 -15, 2015

San Francisco, California

Symposium O: Fundamentals of oxide heterostructures

Symposium Organizers

Gervasi Herranz (lead coordinator), Institut of Materials Science of Barcelona ICMAB-CSIC

Mark Huijben (U. Twente), Daniel Sando (U. Seoul, Korea), Hans Boschker (MPI, Stuttgart).

DISSEMINATION

V JORNADA DE FÍSICA I QUÍMICA A L'IEC: La nova matèria de batxillerat «Ciències per al món contemporani»,

Title: Tecnologies de la informació: els nous materials per a les memòries del futur
Institut d'Estudis Catalans, 15 October 2008

Cicle de Conferència de la Facultat de Física (Universitat de València).

Title: Tecnologies de la informació: els nous materials per a les memòries del futur
Institut d'Estudis Catalans, 4 November 2010