Laura Bégon-Lours
Birth 25th march 1989
email : laura.begonlours@gmail.com

Post-doctoral researcher in Inorganic Materials Science

Skills: **Correlated Oxides, Thin-Films, Growth, Characterisation, Clean Rooms, Lithography, Atomic Force Microscopy, Cryogenics, Transport Measurements**

Polyvalent, autonomous and dynamic, I enjoy being involved in confronting conceptual and technological challenges. During my PhD research project, I obtained high-quality ultra-thin oxides heterostructures by PLD; I fabricated micro-devices for low-temperature measurements, and manipulated ferroelectric and superconducting properties at the nanoscale using near-field microscopy techniques.

Research experience

May 2017 - … **Post-doctoral researcher** at Inorganic Materials Science group at Mesa+ (University of Twente, Nederlands) supervised by G. RIJNDERS and G. KOSTER.
Searching for the "Silicon" of Piezoelectrics: Morphotropic Quartz

Oct. 2012-Jan. 2017 **PhD student** at Unité Mixte de Physique CNRS/Thales at TRT (Palaiseau, France) supervised by Javier E. VILLEGAS and Manuel BIBES:

- Growth of ultra-thin superconducting and ferroelectric films by PLD
- Design and fabrication of solid state devices by optical lithography
- Nanoscale manipulation of ferroelectric states by piezoresponse force microscopy
  Low temperature magneto-transport measurements

Jan. - June 2012 **Engineering internship** in the R&D office of Citroën Racing (Versailles, France): Finite-element method model and calculation

- Establishment of a thermomechanical model of a piston and rod, and of a flow model in an exhaust manifold
- Optimization of their design and improvement of their robustness

Apr. - June 2011 **Research project** in the group LPEM (Physics and Materials Studies) of R. LOBO at ESPCI ParisTech (Paris, France):

- Finite-element method model and machine-learning to estimate the permittivity distribution within a given volume

July - Dec. 2010 **R&D internship** in SeQureNet, a start-up incubated in the group LIR (Informatics and Networks) at Télécom ParisTech, with E. DIAMANTI:

- Reverse-engineering and characterisation of opto-electronic devices
- Characterisation of quantum cryptography protocols

July 2009 **Research internship** in the group LPM (Photons and Matter) of J. LESUEUR at ESPCI ParisTech (Paris, France):

- Formulation of a protocol and achievement of a photon entanglement experiment for Quantum Physics Practical Work

Education

Oct. 2012 - Jan. 2017 **PhD Degree in Physics** at Université Pierre et Marie Curie, Paris, France (Ranked 63th best university by the CWUR). Doctoral School: Physics and Chemistry of the Materials. *Ferroelectric field-effects in high-Tc superconducting devices* Defended on January 23th, 2017

2011-2012 **Master Degree** in Engineering Innovative Technologies – Speciality: Advanced Technologies in Materials and Structures at Ecole Polytechnique, Palaiseau, France (Ranked 36th best university by the CWUR).

2008-2011 Student at **ESPCI ParisTech**, a French "Grande Ecole" graduate engineering school on physics and chemistry. Engineer diploma, speciality: Physics.

2006-2008 Student in Physics and Chemistry at **Classes Préparatoires Stanislas**, a French program consisiting of two intensive years training for enrolment in one of the "Grandes Ecoles"

Communications

22 Nov. 2016: Poster during the **Doctoriales du DIM Oxymore** in Paris (France)

2-6 March 2015: Talk: "Vertical Transport in Ferroelectric/Superconductor Heterostructures" *L. Bégon-Lours, J. Trastoy, R. Bernard, E. Jacquet, C. Carretero, K Bouzehouane, S. Fusil, V. Garcia, S. Xavier, M. Bibes, A. Barthélémy and J. E. Villegas* during **American Physical Society March Meeting**, San Antonio, Texas US

24 Sept. 2014: Talk during the **Doctoriales du DIM Oxymore** in Paris (France)
"Prix des Auditions" Award

2-14 Sept. 2013: Poster during **International School of Oxides Electronics** in Cargèse (France)

20-23 May 2013: Talk: "Field-effect modulation of exchange bias and conductivity at ferroelectric/ferromagnetic interfaces" *L. Bégon Lours, P. Altuntas, A. Crassous, S. Fusil, K. Bouzehouane, E. Jacquet, M. Bibes, A. Barthélémy and J. E. Villegas* during **MAMA Trends** in Sorrento (Italy)

Publications

Patent: *Photosensitive Josephson Junctions*, France n° 16 00816, June 2016

1 "**A high-temperature superconducting weak-link defined by ferroelectric field-effect"** L. Bégon-Lours, V. Rouco, A. Sander, J. Trastoy, R. Bernard, E. Jacquet, K. Bouzehouane, S. Fusil, V. Garcia, A. Barthélemy, M. Bibes, J. Santamaría and J.E. Villegas. arXiv:1703.01219 [cond-mat.supr-con]

2 **Thesis**: *Ferroelectric field-effects in high-Tc superconducting devices* UPMC (2017) <tel-01522923>

3 **"Ferroelectric control of a Mott insulator"** H. Yamada, M. Marinova, P. Altuntas, A. Crassous, L. Bégon-Lours, S. Fusil, E. Jacquet, V. Garcia, K. Bouzehouane, A. Gloter, J.E. Villegas, A. Barthélémy, M. Bibes. Sci Rep. 2013 Oct 3; 3:2834.

4 **"A Non-linear Model of Sensitivity Matrix for Electrical Capacitance Tomography".** G. Villares, L. Begon-Lours, Y. Oussar, J. Lucas et al. *2012 Annual Meeting of the Electrostatics Society of America*, Jun 2012, Canada. 2012. <hal-00927194>

+2 articles in preparation

Other

Languages: French: native
English: fluent (TOEIC score 980 (2011))
Spanish: 7 years

Computer programming and instrument interfacing: Labview, C/C++, Matlab

Teaching: 2011-2012: Examiner in Chemistry (Classes Prépa PSI* et PC Stanislas, Paris)
2012-2014: Examiner in Physics (Classes Prépa PC* Saint-Louis, Paris)
2017: Volunteer teacher in Mathematics for Fondation de l'Echiquier