CLÉMENT RIEDEL

29 years old, born at St Pierre, Reunion Island, France
Languages spoken: French, English, Spanish.
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University of California, QB3 Institute
642 Stanley Hall #3220
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Education & positions

Oct 2011 – Oct 2015: HFSP Postdoctoral position "Single molecule calorimetry & High Speed AFM of biological systems"
Laboratory: Bustamante Lab (University of California in Berkeley) directed by Prof. Carlos Bustamante

Oct 2010 – Oct 2011 : Postdoctoral position "Numerical modelisation of the nanoscale electrodynamic interaction between an AFM tip and soft material"
Laboratories: Moving Light and Electron group (Universidad Autónoma de Madrid)
Directors: Prof. Juan José Saenz and Prof. Juan Colmenero
Outcome of the postdoc: 4 publications (3 as 1st author), 1 oral.

Sep 2007 – Oct 2010 : PhD Thesis "Dielectric and mechanical properties of polymers at macro and nanoscale"
Laboratories: Donostia International Physics Center (Universidad del Pais Vasco) directed by Prof. Juan Colmenero
Institut d'Electronique du Sud (Université Montpellier 2) directed Prof. Philippe Tordjeman
Oct 2010 – Jul 2011: Mission in Universidad Autónoma de Madrid supervised by Prof. Juan José Saenz
Oct – Dec 2009: Mission in Northeastern University supervised by Associate Prof. Nathan Israeloff
Outcome of the thesis: 9 publications (8 as 1st author), 4 orals as speaker, 1 book chapter, 80 hours of teaching.

Sep 2005 – Jul 2007 : Master of physics "Cosmos, fields and particles" (Université Montpellier 2)
Feb 2007 – Aug 2007: Practical training "Electromagnetic air showers radio-detection" (Astrophysics)
Mar 2006 – Jul 2006: Practical training "Dark matter detection with Fermi Gamma-ray Space Telescope"

Sep 2002 – Jul 2005 : Licence of physical science (3-years University degree, Université Montpellier 2)

Jul 2002 : High-school diploma (Lycée des Avirons, Reunion Island)

Original publications

12) Numerical simulations of electrostatic interactions between an atomic force microscopy tip and a dielectric sample in presence of buried nano-particles. Journal of Applied Physics **112** (11), 114313 (2012)
R. Arinero, **C. Riedel**, C. Guash

11) Contrast inversion in electrostatic force microscopy imaging of trapped charges: Tip-sample distance and dielectric constant dependence. Nanotechnology **22** (34), 345702 (2011)
C. Riedel, A. Alegría, R. Arinero, J. Colmenero and J. J. Saenz

10) On the use of electrostatic force microscopy as a quantitative subsurface characterization technique: A numerical study. Applied Physics Letters **99** (2), 023101 (2011)
C. Riedel, A. Alegría, G. A. Schwartz, R. Arinero, J. Colmenero and J. J. Saenz

9) Numerical study of the lateral resolution in electrostatic force microscopy for dielectric samples. Nanotechnology 22 (28), 285705 (2011)
C. Riedel, A. Alegría, G. A. Schwartz, J. Colmenero and J. J. Saenz

8) Broadband nanoDielectric Spectroscopy by means of Amplitude Modulation Electrostatic Force Microscopy (AM-EFM). UltraMicroscopy 111 (8), 1366 (2011)
G. A. Schwartz, **C. Riedel**, R. Arinero, Ph. Tordjeman, A. Alegría and J. Colmenero

7) Imaging dielectric relaxation of nano-structured polymers by frequency modulation electrostatic force microscopy. Applied Physics Letters **96**, 213110 (2010)
C. Riedel, R. Sweeney, N. Israeloff, R. Arinero, G. A. Schwartz, A. Alegría, Ph. Tordjeman, and J. Colmenero
➔ Selected for publication in the Virtual Journal of Nanoscale Science & Technology **21**(23) (2010)

6) Nanoscale dielectric properties of insulating thin films: From single point measurements to quantitative images. UltraMicroscopy **110**(6): 634-638 (2010)
C. Riedel, G. A. Schwartz, R. Arinero, Ph. Tordjeman, G. Lévêque, A. Alegría and J. Colmenero

5) High and low molecular weight crossovers in the longest relaxation time dependence of linear cis-1,4 polyisoprene by dielectric relaxations. Rheologica Acta **49**(5): 507-512 (2010)
C. Riedel, A. Alegría, Ph. Tordjeman and J. Colmenero

4) Nanodielectric mapping of a model polystyrene-poly(vinyl acetate) blend by electrostatic force microscopy. Physical Review E **81**(1): 010801 (2010) (Rapid Communication)
C. Riedel, R. Arinero, Ph. Tordjeman, G. Lévêque, G. A. Schwartz, A. Alegría and J. Colmenero
➔ Selected for publication in Microscopy and analysis **24**(4) (2010).
Virtual Journal of Nanoscale Science & Technology **21**(4) (2010)

3) Dielectric properties of thin insulating layers measured by Electrostatic Force Microscopy. The European Physical Journal Applied Physics **50**:10501 (2010)
C. Riedel, R. Arinero, Ph. Tordjeman, M. Ramonda, G. Lévêque, G. A. Schwartz, D. G. de Oteya, A. Alegría and J. Colmenero

2) Rouse-model based description of the dielectric relaxation of non entangled linear cis-1,4 polyisoprene. Macromolecules **42**(21): 8492-8499 (2009)
C. Riedel, A. Alegría, Ph. Tordjeman and J. Colmenero

1) Determination of the nanoscale dielectric constant by means of a double pass method using electrostatic force microscopy. Journal of Applied Physics **106**(2): 024315 (2009)
C. Riedel, R. Arinero, Ph. Tordjeman, M. Ramonda, G. Lévêque, G. A. Schwartz, D. G. de Oteya, A. Alegría and J. Colmenero

Book chapters

2) Polymer rheology by dielectric spectroscopy. Intech. ISBN 979-953-307-367-4
C. Riedel, A. Alegría, Ph. Tordjeman, and J. Colmenero

1) Measuring dielectric properties at the nanoscale using Electrostatic Force Microscopy. Microscopy: Science, Technology, Applications and Education (FORMATEX Microscopy Book Series ; n° 4), pp. 1963-1977. ISBN 978-84-614-6191-2
R. Arinero, **C. Riedel**, G. A. Schwartz, G. Lévêque, A. Alegría, Ph. Tordjeman, N. Israeloff, M. Ramonda, and J. Colmenero

International conferences

Orals:

7) 2011 MRS Fall Meeting & Exhibit, "Three-Dimensional Tomography of Dielectric Materials Using Electrostatic Force Microscopy" Boston, MA, 28 Nov – 2 Dec 2011.
C. Riedel, A. Alegría, R. Arinero, J. Colmenero and J. J. Saenz

6) 11^{em} Forum des microscopies à sonde locales (national), "Spectroscopie diélectrique par microscopie à force électrostatique: application à l'étude de la dynamique des polymères nanostructurés" Lyon 25-29 April 2011
C. Riedel, R. Arinero, Ph. Tordjeman, M. Ramonda, G. Lévêque, G. A. Schwartz, A. Alegría and J. Colmenero

5) XII International Scanning Probe Microscopy, "Imaging the Temperature-frequency Dependence of the Local Dielectric Response of Phase Separated Polymer Films using of EFM". Sapporo, Japan, 10-12 May 2010.
C. Riedel, R. Sweeney, N. Israeloff, R. Arinero, G. A. Schwartz, A. Alegría, Ph. Tordjeman, and J. Colmenero

4) XII International Scanning Probe Microscopy, "Quantitative Dielectric Mapping of Nano-structured Systems by Means of Electrostatic Force Microscopy". Sapporo, Japan, 10-12 May 2010.
G. A. Schwartz, R. Arinero, **C. Riedel**, Ph. Tordjeman, A. Alegría and J. Colmenero

3) V Argentine-Chilean polymer symposium, "Study of the Nanoscale Dielectric Relaxation of Polymers by Means of Atomic Force Microscopy" Archipol 2009 - Cordoba, Argentina, 18-21 September 2009.
G. A. Schwartz, R. Arinero, **C. Riedel**, Ph. Tordjeman, A. Alegría and J. Colmenero

2) XI International Scanning Probe Microscopy, "Quantitative determination of the local dielectric permittivity of ultrathin films at nanoscale by means of Electrostatic Force Microscopy". Madrid, Spain, 17-19 June 2009.
C. Riedel, R. Arinero, Ph. Tordjeman, M. Ramonda, G. Lévêque, G. A. Schwartz, D. G. de Oteya, A. Alegría and J. Colmenero

1) De Gennes Discussion. "Comparison of the dielectric and viscoelastic relaxations of polyisoprene". Chamonix, France, 2-5 February 2009.
C. Riedel, A. Alegría, Ph. Tordjeman and J. Colmenero

Posters:

8) Biophysical Society 58th Annual Meeting. "The heat released by a chemical reaction enhances the diffusion of the enzyme?". San Francisco, United States of America, 15-19 February 2014
C. Riedel, C.A.M Wilson, K. Hamadani, S. Presse, K. Konstantinos, S. Marqusee, C. Bustamante

7) XII PABMB. "Enzymes stepping on landmines" Puerto Varas, Chile, 9-14 November 2014
C. Riedel, C.A.M Wilson, K. Hamadani, S. Presse, K. Konstantinos, S. Marqusee, C. Bustamante

6) Biophysical Society 57th Annual Meeting. "Single enzyme diffusion enhanced by catalysis: A stochastic heat transfer process?". Philadelphia, United States of America, 2-6 February 2013
C. Riedel, C.A.M Wilson, K. Hamadani, S. Presse, C. Bustamante

5) DIPC 10: Passion for knwoledge, "Dielectric and mechanical properties of polymers at macro and nanoscale". Donostia - San Sebastian, Spain, 27 September – 1 October 2010.
C. Riedel, R. Arinero, Ph. Tordjeman, N. Israeloff, G. Lévêque, G. A. Schwartz, A. Alegría and J. Colmenero

4) 6th International discussion meeting on relaxations in complex systems, "Quantitative dielectric permittivity investigation of polymers and polymer blends using electrostatic force microscopy" Rome, Italy, 30th August – 4 september 2009.
G. A. Schwartz, R. Arinero, **C. Riedel**, Ph. Tordjeman, A. Alegría and J. Colmenero

3) Perspectives in nanoscience and nanotechnology – Nano2009 Conference, "Dielectric mapping of nanostrucured polymers" San Sebastian - Donostia, Spain, 28-30 September 2009.
C. Riedel, R. Arinero, Ph. Tordjeman, M. Ramonda, G. Lévêque, G. A. Schwartz, A. Alegría and J. Colmenero

2) inanoGUNE ETORTEK 1st Workshop (national), "Determination of the Nanoscale dielectric permittivity by means of a double pass method using EFM". San Sebastian - Donostia, Spain, 25-27 May 2009.
C. Riedel, R. Arinero, Ph. Tordjeman, M. Ramonda, G. Lévêque, G. A. Schwartz, D. G. de Oteya, A. Alegría and J. Colmenero

1) 5th Broadband Dielectric Spectrospy and its application. "Molecular weight effects on dielectric relaxations of polyisoprene". Lyon, France, 26-29 August 2008.
C. Riedel, A. Alegría, Ph. Tordjeman and J. Colmenero

Invited talks

5) University of Santiago in Chile. Contact: Assistant Prof. Wilson "Enzymes stepping on landmines". November 2013.

4) Berkeley – University of California, CA, USA. Contact: Prof. Crommie. "Dielectric and mechanical properties of polymers at macro and nanoscale". 13 November 2009.

3) Massachusetts Institute of Technology, Boston, MA, USA. Contact: Assistant Prof. Gradecak. "Measuring dielectric properties at the nanoscale". 12 May 2009.

2) Northeastern University, Boston, MA, USA. Contact: Assistant Prof. Israeloff. "Measuring dielectric properties at the nanoscale". 10 May 2009.

1) Toulouse – IMFT. Contact : Prof. Tordjeman "Proprietes dielectriques a l'echelle nanoscopique". Octobre 2008.

Teaching

2009: Undergraduate 1st year: Full course of Experimental Physics (33 hours of course, 24 hours of practical training)
2009: Undergraduate 1st year: Informatics (24 hours of course)

Skills

Matlab, Maple, Latex, Microsoft Office. Basic knowledge in C++, HTML, PHP/MySQL.
Numerical simulation and modelisation.

Atomic and Electrostatic Force Microscopy, Dielectric spectroscopy, Rheology, Calorimetry.
Fluorescence Correlation Spectroscopy. Enzymatic assays. Spectrophotometry. Labelling process.
General microbiology techniques (Polymerase chain reaction, protein expression)