Clément RIEDEL

29 years old, born at St Pierre, Reunion Island, France

Languages spoken: French, English, Spanish.

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| **Professional address:**  University of California, QB3 Institute  642 Stanley Hall #3220  Berkeley, CA 94720-3220  USA | **Personal address:**  2428 McGee Ave.  Berkeley, CA 94703  USA |

**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](mailto:juanjo.saenz@uam.es) and Prof. [Juan Colmenero](mailto:wapcolej@sc.ehu.es)

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](mailto:Philippe.Tordjeman@imft.fr)

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)](http://link.aip.org/link/APPLAB/v96/i21/p213110/s1)

**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)](http://dx.doi.org/10.1016/j.ultramic.2010.02.024)

**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)](http://dx.doi.org/10.1007/s00397-010-0433-1)

**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)](http://pre.aps.org/abstract/PRE/v81/i1/e010801)

**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)](http://dx.doi.org/10.1051/epjap/2010010)

**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)](http://pubs.acs.org/doi/abs/10.1021/ma901102q)

**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)](http://link.aip.org/link/JAPIAU/v106/i2/p024315/s1)

**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](http://www.formatex.org/microscopy4/chapters3.html)

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) 11em 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**

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

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

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

**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)