

Dr. Jorge Ramírez

MEng., PhD Materials Science

Associate Professor

Nationality: Spanish

Profesor Contratado Doctor

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e-mail: jorge.ramirez@upm.esweb: <http://blogs.upm.es/compsftmatter/>**Education**

- 1998 - 2002** **Ph. D.** in Materials Science, Dept. of Chemical Engineering, Escuela Técnica Superior de Ingenieros Industriales (**ETSII**), *Universidad Politécnica de Madrid (UPM)*, Madrid, Spain. Thesis title: "Simulation of relaxation processes in polymers at different time and length scales", under the supervision of Prof. Manuel Laso.
- 22 February 2002:** Thesis defense, with honours. Thesis awarded by UPM (Premio extraordinario de Doctorado 2001-2002)
- 1991 - 1997** **MEng** (Automation, Electronics Eng. And Industrial Computing), *ETSII, UPM*. (Score: 8.5/10, 1st student in specialty, 2nd overall).
- 1994:** University award for best academic performance 1991-1994.
- 1998:** University award for overall performance during degree.
- 1994 - 1996** **MEng** (Ingénieur des Arts et Manufactures) *École Centrale Paris*, ERASMUS Program, double diploma. (Score: 14.2/20, second decile)
- 1989 - 1991** *International Baccalaureate* at IB Ramiro de Maeztu, Madrid (Score: 42/45).
- 1991:** Academic Award of the General Council of Chemistry Association of Spain (1st among all high school students in Spain)

Fellowships and Invited Stays

- 01/2019** Visiting Professor, Graduate School of Organic Material Science (Prof. S. Sukumaran), Yamagata University, Japan.
- 07/2017-08/2017** Visiting Professor, Department of Chemical Engineering (Prof. B. Olsen), Massachusetts Institute of Technology, USA.
- 01/2016-08/2016** Visiting Professor MIT + Harvard (double appointment). Department of Chemical Engineering (Prof. B. Olsen), Massachusetts Institute of Technology, USA. School of Engineering and Applied Sciences (Prof. N. Joshi), University of Harvard.
- 08/2015** Invited Scholar, Department of Organic Chemistry (Prof. F. Muñoz), University of Concepción, Chile.

04/2014	Invited Scholar, Department of Applied Mathematics (Prof. V. Harmandaris), University of Crete, Greece.
04/2013	Invited Scholar, Materials Science Institute (Prof. A.V. Dobrynin), University of Connecticut, U.S.A.
07/2006	Dept. of Materials Science & Technology (Prof. D. Vlassopoulos), F.O.R.T.H., Crete, Greece, 4 weeks.
09/2001 - 12/2001	Chaire d'Analyse et Simulation Numériques (Prof. M. Picasso), Ecole Polytechnique Fédérale de Lausanne (EPFL), Lausanne, Switzerland.
05/2000 - 08/2000	Institute of Polymers (Prof. H.C. Öttinger), Eidgenössische Technische Hochschule Zürich (ETH-Zentrum), Zürich, Switzerland.
06/1999 - 09/1999	Laboratory of Statistical Thermodynamics and Macromolecules (Prof. D.N. Theodorou), University of Patras, Greece.
1998 - 2001	Ph.D. fellowship (Beca FPI) UPM and Spanish Ministry of Education and Science.

Funded Research Projects & Grants

10/2018	“Selective capture of gas molecules in clathrates by means of simulation”. Funded by Repsol. Budget: 4550€. Co-PI: Jorge Ramirez and María M. Conde.
07/2018 – 06/2020	Grant for recruiting a Research Assistant (Regional Government of Madrid). Budget: 45000€. PI: Jorge Ramirez.
06/2018	NVIDIA GPU Grant, donation of 1 Titan Xp to support the research of my group (approx. value = 2000\$). PI: Jorge Ramirez.
12/2016 – 12/2019	“Simulations of suspensions of self-propelled particles to investigate their phase behaviour and tailor novel functional materials”. Research Project FIS2016-78847-P, funded by the Spanish Ministry of Science and Innovation. Budget: 60500€. PI: Chantal Valeriani (UCM).
01/2016 – 12/2018	“MIRACLE: MIneral RAW materials replacement with nanoComposites by renewabLe Resources Exploitation”. Network H2020 funded by the EU. PI: Joaquín Martínez-Urreaga.
10/2016 – 09/2017	“New theoretical framework to explain the rheology and diffusion properties of associating polymers”. Funded by Repsol. Budget: 5600€. PI: Jorge Ramirez.
10/2014 – 09/2015	“Organic photovoltaic cells based on self-assembled molecules”. Funded by Repsol. Budget: 6545€. Co-PI: Victoria Alcázar and Jorge Ramirez.
01/2011 – 12/2013	“ <i>Hierarchical Modelling of Biosensors (HiMobs)</i> ”. Non-guided Fundamental Research Project MAT2010-15482, funded by the Spanish Ministry of Science and Innovation. Budget: 25000€. Principal Investigator: Jorge Ramírez.
10/2012 – 09/2013	“Polycarbazoles for photovoltaic applications”. Funded by Repsol. Budget: 6550€. Co-PI: Jorge Ramírez and Victoria Alcázar.

- 10/2011 – 09/2012** “Design of photovoltaic cells based on carbazole moieties”. Funded by Repsol. Budget: 6550€. Principal Investigator: Jorge Ramírez.
- 01/2011 – 12/2011** “*Modelling and development of new polycarbonate nanocomposites*”. Program for the creation and consolidation of UPM R+D UPM groups, CCG10-UPM/MAT-5569, co-funded by the Government of Madrid (CAM) and UPM. Budget: 7293,60€. Principal investigator: Jorge Ramírez.
- 09/2010 – 12/2011** Development of the control software for a biosensing platform. Company: Mecwins S.L. Job number T.2010/2384 (Fundación para el Fomento de la Innovación Industrial, F²I²). Budget: 8071,20€. PI: Jorge Ramírez.
- 04/2009 – 11/2009** “*Development of a prototype nanobiosensor for the detection of one-base mutations in DNA oligomers*”. Torres Quevedo Project PTQ-09-01-00586, funded by the Spanish Ministry of Science and Innovation, working as R+D Engineer in Mecwins S.L., in collaboration with the Bionanomechanics group, at the Institute of Microelectronics (CSIC). Budget: 22.554 €. PI: Javier Tamayo (CSIC).
- 2005 - 2009** “*Micro-scale model polymer processing 2: Molecular structure to product performance across the length scales (μ PP²)*”. Project funded by the EPSRC (Engineering and Physical Sciences Research Council, UK, contract number GR/T11807/01). Collaborators: companies BASF, BP, Dow, DSM, Dupont, ICI and Lucite International, and Universities of Leeds, Bradford, Durham, Cambridge, Sheffield, Oxford and TUE Eindhoven. Full-time post-doctoral collaborator. Budget: 3000000 €. PI: Tom McLeish (U. Leeds)
- 2005 - 2007** Network of Excellence “*SoftComp (Soft Matter Composites)*”. Funded by the EU (FP 6, contract number NMP3-CT-2004-502235). Collaborators: more than 30 institutions among the best european Universities and Research Centres. Part-time post-doctoral collaborator in Area 4 (Polymer based complex systems). Budget: 6000000€. PI: Dieter Richter (Forschungszentrum Jülich), Peter Olmsted (U. Leeds).
- 2002 - 2005** “*Polymer Molecular Modeling at Integrated Time/Length Scales (PMILS)*”. Project funded by the EU (FP 5, contract number GROWTH G5RD-CT-2002-00720). Collaborators: companies Borealis, Rhodia and IP-Sol, and Universities and Research Centres ICE-FORTH, CPERI, DTU, Imperial College, UPM and University of Namur. Full-time post-doctoral investigator. Budget: 1597624€. Principal investigator: Manuel Laso (UPM).
- 2002 - 2003** “*Design of New Environmentally Friendly Pressure Sensitive Adhesives (DEFSAM)*”. Project funded by the EU (FP 5, contract number GROWTH GRD1-1999-10798). Collaborators: companies Exxon and Beiersdorf BDF, and Universities and Research Centres ESPCI, UPM and Patras University/ICE-FORTH. Full-time post-doctoral investigator. Budget: 1138820 €. Principal investigator: Constantino Creton (EPSCI), Manuel Laso (UPM).
- 2000 - 2002** “*Relación Cuantitativa entre Estructura y Propiedades Ópticas Lineales y No-Lineales de Policondensados*”. Project funded by CICYT (contract number MAT99-0972). Part-time pre-doctoral investigator. Budget: 28000€. Principal investigator: Manuel Laso.

1999 – 2004 “Challenges in Molecular Simulations: bridging the length and time-scale gap (SIMU)”. European network funded by the European Science Foundation (ESF), with more than 140 research groups.

Access to Supercomputing resources

- 01/2019 – Now** “Entangled polymer dynamics”, 100000h, Magerit, Cescvima, UPM. Project number r578. PI: Jorge Ramírez.
- 01/2018 – Now** “Estudio teórico de la auto-reparación en polímeros asociativos”, 200000h, Magerit, Cescvima, UPM. Project number q894. PI: Jorge Ramírez.
- 03/2017 – Now** “Física estadística de los cambios de fase en disolventes moleculares”, 200000h Magerit, Cescvima, UPM. Project number p128. PI: Jorge Ramírez.
- 01/2017 – 12/2017** “Dynamics of Rod-Coil-Rod Triblock Copolymers”, 862508 CPUh Comet, SDSC, U. San Diego, XSEDE, Project number TG-DMR160175. Value of awarded resources: \$28,844.76. PI: Bradley D. Olsen.
- 03/2016 – 10/2016** “Mechanisms of Molecular Motion in Polymers with Nonuniform Stiffness”, 120000 CPUh LUSITANIA, CENITS, RES + 90000 CPUh Magerit, Cescvima, UPM. PI: Jorge Ramírez.
- 07/2015 – 02/2017** “Compuestos orgánicos nanoestructurados para aplicaciones fotovoltaicas”, 500000h, Magerit, Cescvima, UPM. Project number n068. PI: Jorge Ramírez.
- 07/2015 – 06/2015** “Simulación de agua subenfriada”, 300000h, Magerit, Cescvima, UPM. Project number G52237. PI: José Antonio Cobos.
- 11/2010 – 02/2011** “Massively-Parallel Atomistic Molecular Dynamics Simulations for the Calculation of the Stress Relaxation in Polyethylene Melts”, 100000 CPUh MareNostrum, BSC, RES. PI: Nikos Karayiannis.

Refereed Journal Articles and Book Chapters

1. D. Rogel Rodriguez, F. Alarcon, R. Martinez, J. Ramirez, and C. Valeriani., "Phase behaviour of a binary mixture of active/passive spherical disks", submitted to *J. Chem. Phys.* **2019**.
2. J.R. Espinosa, A.L. Diez, C. Vega, C. Valeriani, J. Ramirez and E. Sanz, "Ice Ih vs. ice III along the homogeneous nucleation line", *Phys. Chem. Chem. Phys.* In press **2019**.
3. M. Tassieri, J. Ramirez, N.Ch. Karayiannis, S.K. Sukumaran and Y. Masubuchi, "i-Rheo GT: Transforming the time-dependent shear relaxation modulus of materials into their frequency-dependent complex shear modulus without artefacts", *Macromolecules* **2018**, 51(14), 5055-5068.
4. A. Zaragoza, J.R. Espinosa, R. Ramos, J.A. Cobos, J.L. Aragonés, C. Vega, E. Sanz, J. Ramirez and C. Valeriani, “Phase boundaries, nucleation rates and speed of crystal growth of the water-to-ice transition under an electric field: a simulation study”, *J. Phys. Condens. Matter* **2018**, 30 174002.

5. J. Ramirez, T.J. Dursch and B.D. Olsen, "A molecular explanation for anomalous diffusion in supramolecular polymer networks", *Macromolecules* **2018**, 51(7), 2517–2525.
6. G.D. Soria, J.R. Espinosa, J. Ramirez, C. Valeriani, C. Vega and E. Sanz, "A simulation study of homogeneous ice nucleation in supercooled salty water", *J. Chem. Phys.* **2018**, 148, 222811.
7. M.K. Sing, J. Ramirez and B.D. Olsen, "Mechanical response of transient telechelic networks with many-part stickers", *J. Chem. Phys.* **2017**, 147, 194902.
8. J.R. Espinosa, G.D. Soria, J. Ramirez, C. Valeriani, C. Vega, and E. Sanz, "On the Analogy between the Effects of Salt and Pressure on Homogeneous Ice Nucleation", *J. Phys. Chem. Lett.* **2017**, 8 (18), 4486–4491.
9. O. Ahumada, M.M. Pérez-Madrugal, J. Ramirez, D. Curcó, C. Esteves, A. Salvador-Matar, G. Luongo, E. Armelin, J. Puiggalí and C. Alemán, "Sensitive thermal transitions of nanoscale polymer samples using the bimetallic effect: Application to ultra-thin polythiophene", *Rev. Sci. Instrum.* **84** 053904 (2013)
10. A. Likhtman, M. Talib, B. Vorselaars, and J. Ramirez, "Determination of tube theory parameters using a simple grid model as an example", *Macromolecules* **46** 1187-1200 (2013)
11. N. F. Martínez, P.M. Kosaka, J. Tamayo, J. Ramírez, O. Ahumada, J. Mertens, T. D. Hien, C. V. Rijn and M. Calleja, "High throughput optical readout of dense arrays of nanomechanical systems for sensing applications", *Rev. Sci. Instruments.* **81**, 125109 (2010).
12. J. Ramírez, S.K. Sukumaran, B. Vorselaars and A.E. Likhtman, "Efficient on the fly calculation of time correlation functions in computer simulations", *J. Chem. Phys.* **133**, 154103 (2010).
13. M. Kapnistos, K.M. Kirkwood, J. Ramírez, D. Vlassopoulos and G. Leal, "Non-linear rheology of model comb polymers". *J. Rheo.*, **53**, 1133-1153 (2009).
14. D. Auhl, J. Ramírez, A. E. Likhtman, P. Chambon and C. Fernyhough, "Linear and non-linear shear flow behavior of monodisperse polyisoprene melts with a large range of molecular weights", *J. Rheo.* **52**, 801-836 (2008).
15. A.E. Likhtman, S.K. Sukumaran and J. Ramirez, "Linear viscoelasticity from molecular dynamics simulation of entangled polymers", *Macromolecules* **40**, 6748-6757 (2007).
16. J. Ramírez, S.K. Sukumaran and A.E. Likhtman, "Hierarchical modeling of entangled polymers", *Macromol. Symp.* **252**, 119–129 (2007) (special issue *Statistical Mechanics of Polymers: New developments*, edited by K. Binder, A. R. Khokhlov, V. A. Ivanov and S. I. Kuchanov).
17. J. Ramírez, S.K. Sukumaran and A.E. Likhtman, "Significance of cross correlations in the stress relaxation of polymer melts", *J. Chem. Phys.* **126** 244904 (2007).
18. T.C.B. McLeish, D. Hassell, C.K. Chai, J. Ramirez, R.S. Graham, C. Fernyhough, T. Gough, H. Klein and P. Hine, "Multiscale processing", *The Chemical Engineer* **791** 36-39 (May 2007)
19. Laso M. and Ramirez J., "Implicit micro-macro methods in viscoelastic flow calculations for polymeric fluids". In "*Multiscale modelling of polymer properties*", Edited by M. Laso and E.A. Perpete (Elsevier, Oxford, 2006), pp 85-108. ISBN 0444521879, 9780444521873
20. Ramirez J. and Laso M., "Micro-macro 3D calculations of viscoelastic flow". In "*Multiscale modelling of polymer properties*", Edited by M. Laso and E.A. Perpete (Elsevier, Oxford, 2006), pp 123-142. ISBN 0444521879, 9780444521873

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21. Ramirez J. and Laso M., "Implicit viscoelastic calculations using Brownian configuration fields". In "*Multiscale modelling of polymer properties*", Edited by M. Laso and E.A. Perpete (Elsevier, Oxford, 2006), pp 161-180. ISBN 0444521879, 9780444521873
 22. J. Ramírez and M. Laso, "Size reduction methods for the implicit time-dependent simulation of micro-macro viscoelastic flow problems", *J. Non-Newtonian Fluid Mech.* **127** 41-49 (2005)
 23. M. Laso, J. Ramírez and M. Picasso, "Implicit micro-macro methods", *J. Non-Newtonian Fluid Mech.* **122** 215-226 (2004)
 24. J. Ramírez and M. Laso, "Micro-macro simulations of 3D plane contraction flow", *Modelling Simulation Mater. Sci. Eng.* **12** 1293-1306 (2004)
 25. V.A. Harmandaris, V.G. Mavrantzas, D.N. Theodorou, M. Kröger, J. Ramirez, H.C. Öttinger and D. Vlassopoulos, "Crossover from the Rouse to the entangled polymer melt regime: Signals from long, detailed atomistic Molecular Dynamics simulations, supported by rheological experiments.", *Macromolecules* **36** (4) 1376-1387 (2003).
 26. M. Kröger, J. Ramirez and H.C. Öttinger, "Projection from an atomistic chain contour to its primitive path.", *Polymer*, **43** (2) 477-487 (2002).
 27. J. Ramírez and M. Laso, "Conformational kinetics in liquid n-butane by transition path sampling.", *J. Chem. Phys.* **115** (15) 7285-7292 (2001).

Books

1. J. Ramírez, G. Pinto, I. Paz, M.J. Molina, M.C. Matías, J. Martínez Urreaga, A. Fernández López, M.M. de la Fuente, E. Climent, "Química General en Problemas y Cuestiones", (Universidad Politécnica de Madrid, 2018) – ISBN 978-84-697-9930-7
2. A. Fernández, M. M. de la Fuente, J. Martínez, M. C. Matías, M. J. Molina, I. Paz, G. Pinto, J. Ramírez, "Apuntes de Química I". Servicio de Publicaciones de la E.T.S.I. Industriales de la Universidad Politécnica de Madrid. (334 pág.). Madrid, 2016.
3. M.M. de la Fuente, M.A. Fernández, J. Losada, J. Martínez, M.C. Matías, M.J. Molina, M.I. Paz, G. Pinto y J. Ramírez, "Problemas y Cuestiones de Exámenes de Química I", (Universidad Politécnica de Madrid, 2010) – ISBN 978-84-693-7387-3

Scientific Conferences¹

1. J. Ramírez, "Super-diffusion and rheology of unentangled associating polymers explained", International Conference of Polymeric and Organic Materials, Yamagata University, January 24-26, Japan, **2018 (Invited Talk)**.
2. M.M. Conde, J.R. Espinosa, M.A. Portillo, J. Ramirez, P. Gallo, M. Rovere, C. Vega and E. Sanz, "A comparative study of thermodynamic equilibrium of water in solution with NaCl for different force fields", Water X 'Exotic properties of water under extreme conditions', Nice, France, July 13-16, **2018 (Poster)**.
3. A. Zaragoza, J.R. Espinosa, R. Ramos, J.A. Cobos, J.L. Aragonés, C. Vega, E. Sanz, J. Ramirez and C. Valeriani, "Phase boundaries, nucleation rates and speed of crystal growth of the water-to-

¹ All contributions are talks (except where indicated). All conferences are peer reviewed.

ice transition under an electric field: a simulation study”, Water X ‘Exotic properties of water under extreme conditions’, Nice, France, July 13-16, **2018**.

4. J.R. Espinosa, C. Valeriani, J. Ramirez, P. Rosales-Pelaez, G.D. Soria, A. Zaragoza, C. Vega and E. Sanz, “Understanding homogeneous ice nucleation with computer simulations”, Water X ‘Exotic properties of water under extreme conditions’, Nice, France, July 13-16, **2018**.
5. R. Martinez, F. Alarcon, D. Rogel-Rodriguez, J. Ramirez, J.L. Aragonés and C. Valeriani, “Flocking particles with asymmetric obstacles: a model for isolation and sorting motile cells and unicellular organisms”, IUTAM Symposium on “Motile cells in complex environments”, Udine, Italy, May 14-18, **2018**.
6. J. Ramirez and B.D. Olsen, “Single chain model for unentangled associating polymers”, SoftComp Workshop on Functional Polymers, San Sebastian, Spain, March 19-21, **2018**.
7. B.D. Olsen, S. Tang, D. Mai, J. Ramirez, T. Dursch, Y.J. Yang, “Skipping polymer physics”, APS March Meeting, Los Angeles, USA, March 5-9, **2018**. (**Invited talk**)
8. J. Ramirez, M. Bagheri and B.D. Olsen, “Stress relaxation and anomalous diffusion in supramolecular networks”, APS March Meeting, Los Angeles, USA, March 5-9, **2018**. (**Invited talk**)
9. J. Ramirez, D. Rogel, R. Martinez, F. Alarcon and C. Valeriani, “Effect of the interaction potential in the self-assembling morphologies of active colloids”, TAU-ESPCI winter school on ‘Active Matter’, Tel-Aviv, Israel, January 28 – February 1, **2018** (**Poster**)
10. J. Ramírez, T.J. Dursch and B.D. Olsen, “Mechanisms of Diffusion in associating polymer networks”, SUPOLEN ITN Conference, Crete, Greece, September 20-22, **2017**. (**Invited talk**).
11. P. Troya, J. Ramirez and B.D. Olsen, “Extremely slow reptation dynamics of Rod-Coil-Rod Triblock Copolymers”, Ibero 2017, Valencia, Spain, September 6-8, **2017**. ISBN 978-84-697-5123-7.
12. B.D. Olsen, M.K. Sing, J. Ramirez and W. Burghardt, “Simulations and experiments to understand the rheological response of dual associative block copolymer gels”, 254th Meeting of the ACS, Washington DC, USA, August 20-24, **2017**. Abstracts of papers of the American Chemical Society. Vol. 254., **2017**.
13. B.D. Olsen, J. Johnson, R. Wang, S. Tang, M. Zhong, K. Kawamoto, J. Ramirez, and T. Dursch. "Classical challenges in the physical chemistry of polymer networks." In Abstracts of papers of the American Chemical Society, vol. 253, **2017**.
14. J. Ramirez, A. Zaragoza, J.R. Espinosa, R. Ramos, J.A. Cobos, C. Vega, E. Sanz and C. Valeriani, “Effect of a DC electric field on the melting temperature, nucleation and ice growth rate of TIP4P water models”, 254th Meeting of the ACS, Washington DC, USA, August 20-24, **2017**. (**Poster**)
15. J. Ramirez, T.J. Dursch and B.D. Olsen, “Mechanisms of diffusion in associating polymer networks”, 254th Meeting of the ACS, Washington DC, USA, August 20-24, **2017**.
16. J. Ramirez, A. Zaragoza, J.R. Espinosa, R. Ramos, J.A. Cobos, C. Vega, E. Sanz and C. Valeriani, “Effect of an electric field on the melting temperature, nucleation and ice growth rate of TIP4P/ICE water model”, WaterSpain 2017, Zaragoza, Spain, 6-7 July **2017**. (**Poster**)
17. J. Ramirez, “Molecular hopping and superdiffusion in associating polymers”, III Workshop de la Red de Simulación Molecular, Baiona, Spain, June 18-20, **2017**. (**Invited Talk**)

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18. J. Ramirez, T.J. Dursch and B.D. Olsen, “Molecular model for the diffusion of associating telechelic polymer networks”, APS March Meeting, New Orleans, USA, March 13-18, **2017**.
 19. J. Ramirez, “Anomalous self-diffusion in associating telechelic star polymers”, British Society of Rheology Midwinter Meeting 2016, Reading, U.K., December 12-14, **2016**.
 20. J. Ramirez, M. Wang and B.D. Olsen, “Dynamics of entangled linear rod-coil-rod block copolymers”, XVIIth International Congress on Rheology, Kyoto, Japan, August 8-13, **2016**.
(Poster)
 21. J. Ramirez, “Fluctuations in the number of monomers per entanglement in the Doi-Edwards tube model”, XVIIth International Congress on Rheology, Kyoto, Japan, August 8-13, **2016**.
 22. J. Ramirez, M. Wang and B.D. Olsen, “Dynamics of entangled linear rod-coil-rod block copolymers”, Gordon Research Conference on Polymer Physics, Mount Holyoke College, South Hadley, MA, USA, July 24-29, **2016**. (Poster)
 23. J. Ramírez, “Theoretical methods for the dynamics of polymeric liquids”, Panel on Engineering, Real Colegio Complutense at Harvard, Cambridge MA, USA, March 9, **2016**.
 24. J. Ramirez, “Novel 100 % recycled PET/PC blends for substitution of other materials in automotive applications”, EIT Raw Materials, Wurzburg, Germany, September 3-4, **2015**.
 25. J. Ramirez, N.Ch. Karayiannis and A.E. Likhtman, “Rheology of linear polyethylene melts from atomistic Molecular Dynamics simulations”, SoMaS Summer School, Concepts and Methods in Soft Matter, Mittelwihl, France, July 5-10, **2015**
 26. J. Ramírez y M. V. Alcázar, “Diseño de polímeros conjugados para aplicaciones fotovoltaicas”, Seminarios de Fronteras de la Ciencia de Materiales 2013/14, Dep. Ciencia de Materiales, ETSI Caminos, Canales y Puertos, Madrid, Spain, 17 de Marzo de **2014**.
 27. J. Ramírez, M.V. Alcázar, D. Montesinos, S. Orozco, L. Rojo, “Diseño de derivados del 3,6-policarbazol para aplicaciones fotovoltaicas”, XXXIV Reunión Bienal de la Real Sociedad Española de Química, 15-18 Septiembre **2013**, Santander, España. ISBN 978-84-695-8511-5.
 28. J. Ramírez, N.Ch. Karayiannis, A.E. Likhtman, “Rheology of linear polyethylene melts from atomistic molecular dynamics simulations”, XVIth International Congress on Rheology, 5-10 August **2012**, Lisbon, Portugal.
 29. A. Likhtman, T.S. Palmer, M.S. Talib, B. Vorselaars, J. Ramírez, “Few “simple” questions of polymer dynamics” (**Keynote**), IUPAC World Polymer Congress, 24-29 June **2012**, Virginia, USA.
 30. J. Ramírez, “Dynamics of Entangled Polymer Fluids: Review of Historical Milestones and Challenges for the Future”, (**Plenary**), VI Congress of Young Researchers in Polymer Science, 22-26 April **2012**, Islantilla, Huelva, Spain. Published paper: “Nuevos desafíos para la Ciencia y Tecnología de Polímeros”, C. Valencia, R. Sánchez, F.J. Navarro, I. Martínez, M.A. Delgado, M. García (eds.), p. 7, ISBN 978-84-15633-14-3.
 31. N. Karayiannis, J. Ramírez, “Rheology of linear monodisperse polyethylene melts from atomistic Molecular Dynamics simulations”, APS March Meeting 2012, 27 February- 2 March **2012**, Boston, Massachusetts, EE.UU.
 32. S. León, J. Ramírez, I. Moreno, M. U. de la Orden, V. Lorenzo, A. Villaverde, D. Pascual, A. Antelo, C. García and J. Martínez Urreaga, “Multiscale modeling of polycarbonate nanocomposites with optimized properties”, 11th European Symposium on Polymer Blends, 25-28 March **2012**, San Sebastián, España.

33. T. Palmer, A. Likhtman, J. Ramírez and M. W. Matsen, “Parameters of slip-springs model of polymer entanglement from the maximum likelihood principle”, APS Meeting 2011, 21-25 March **2011**, Dallas, Texas, EE.UU.
34. J. Ramírez and N. Ch. Karayiannis, “Rheology of linear monodisperse polyethylene from atomistic Molecular Dynamics simulations”, 3rd Iberian Rheology Meeting, IBEREO 2011, 7-9 September **2011**, Caparica, Portugal. Published paper: “Rheology Trends: from nano to macro systems”, M.T. Cidade, I.M.N. Sousa and J.M. Franco (eds.), p. 255-258, ISBN 978-972-8669-50-8 (ISA Press, Lisboa, 2011).
35. N. Ch. Karayiannis and J. Ramírez, “Rheology of linear monodisperse polyethylene melts from atomistic Molecular Dynamics simulations”, CECAM/ Dynacop Workshop “Polymer Dynamics: Entanglements and Architectures”, Capri, Italy, 26-29 July **2011**.
36. M.S.T. Talib, B. Vorselaars, J. Ramirez, A.E. Likhtman, “Brownian Dynamics simulations of a Rouse chain in an uncrossable grid”, 7th Annual European Rheology Conference, Suzdal, Russia, May 10-14, **2011**
37. A.E. Likhtman and J. Ramírez, “Reptate: a free software for analysing rheology of entangled polymers”, 82nd Annual Meeting of the Society of Rheology, 24-28 October **2010**, Santa Fe, USA.
38. C. Orfanidou, P.M. Kosaka, J. Mertens, O. Ahumada, N.F. Martínez, A.S. Matar, C. García, J. Ramírez, H-D. Tong, M. Calleja, “Optomechanical multiplexed detection with large arrays of cantilevers”, NanoSpain Conference 2010, Malaga (Spain), 23-26 March **2010**. (**Poster**)
39. N. F. Martínez, O. Ahumada, J. Ramírez, A. Salvador and C. Garcia, “Mecwins: Innovation in nanomechanics for biotechnology”, 2nd Multifrequency AFM Conference, Madrid (Spain), 15-16 June **2009**. (**Poster**)
40. T. Palmer, A.E. Likhtman and J. Ramirez , “Test of a slip-link model on two-chain polymer entanglement”, 5th Annual European Rheology Conference, 15-17 April **2009**, Cardiff, UK
41. J. Ramirez and A.E. Likhtman, “Reptate: A new software toolbox for the analysis of rheological data”, 5th Annual European Rheology Conference, 15-17 April, Cardiff **2009**, UK
42. J. Ramírez, “Effect of the fluctuations in the number of monomers per entanglement in the tube model”. de Gennes discussion conference, Chamonix (France), 1-5 February **2009**. (**Poster**)
43. J. Ramírez, “Single chain models as a bridge between molecular dynamics simulations and the tube theory”, Meeting for Recently Appointees in Polymer Scientists, 17-19 September **2008**, University of Nottingham, UK.
44. J. Ramírez, “Advanced single chain models for entangled polymer dynamics”, Iberian Meeting on Rheology, IBEREO 2008, 11-12 September 2008, Madrid, Spain. Published paper: “*Rheology in product design and engineering*”, A. Guerrero, J. Muñoz and J.M. Franco eds. (Sevilla, RSEQ, **2008**), ISBN 978-84-608-0779-7.
45. J. Ramírez and A.E. Likhtman, “Finding tube dynamics in a class of slip-links models”, International Conference on Rheology, August 3-7 **2008**, Monterey, USA.
46. M. Laso, J. Ramírez, K. Foteinopoulou, F. Coldren, R. Bermejo, J.L. Prieto, I. Romero, N. Jimeno, and M.L. Muneta, “Molecule-based Micro-Macro Methods for Complex Fluids”, 10th ESAFORM Conference On Material Forming, Zaragoza (Spain), 18-20 April **2007**. AIP Conference Proceedings, Volume 907, p. 1490-1495, ISBN 978-0-7354-0414-4.
47. J. Ramírez and A.E. Likhtman, “Constraint release in linear entangled polymers with the slip-spring model”, 4th Annual European Rheology Conference, April 12-14 **2007**, Naples, Italy

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48. A.E. Likhtman, S.K. Sukumaran and J. Ramírez, “Stress relaxation from molecular dynamics simulation of entangled polymers”, 4th Annual European Rheology Conference, April 12-14 **2007**, Naples, Italy
 49. J. Ramírez and A. E. Likhtman, “Tube versus Slip-spring models: a detailed comparison” 78th Annual Meeting of The Society of Rheology, October 9-11 **2006**, Portland, ME, USA
 50. D. Auhl, J. Ramirez, A. E. Likhtman, T.C.B. McLeish, P. Chambon and C.M. Fernyhough, “Shear and elongational behavior in fast flows of monodisperse polymer melts with a wide range of molecular weights”, 78th Annual Meeting of The Society of Rheology, October 9-11 **2006**, Portland, ME, USA
 51. K. Jagannathan, D. Auhl, D.J. Read, A.E. Likhtman, R.S. Graham, J. Ramirez, and T.C.B. McLeish, “Fast shear of binary blends of polymer melts: new constitutive models and experimental results”, 78th Annual Meeting of The Society of Rheology, October 9-11 **2006**, Portland, ME, USA
 52. D. Auhl, J. Ramirez, A.E. Likhtman, T.C.B. McLeish, P. Chambon, and C.M. Fernyhough, “Non-linear shear flow behaviour of monodisperse polyisoprene melts”, 3rd Annual European Rheology Conference, April 27-29, **2006**, Hersonisos, Crete
 53. J. Ramírez and A. E. Likhtman, “Linear and non-linear flow analysis of the slip-spring model of Entangled Polymers”, 3rd Annual European Rheology Conference, April 27-29, **2006**, Hersonisos, Crete (**Poster**)
 54. J. Ramírez and M. Laso, “Implicit time-dependent micro-macro simulations of complex flows”, 2nd Annual European Rheology Conference, April 21-23 **2005**, Grenoble, France
 55. J. Ramírez and M. Laso, “Implicit time-dependent micro-macro simulations of complex flows”, Workshop on "Multiscale Rheological Models for Fluids", Centre de Recherches Mathématiques (CRM), Université de Montréal, 14-17 November **2004**, Montréal, Canada (**Invited Talk**)
 56. J. Ramírez and M. Laso: “Implicit time dependent micro-macro simulations”, SIMU conference '*Bridging the scales*', Genova, Italy, 29-31 August **2004** (**Poster**)
 57. J. Ramírez and M. Laso, “Simulation of three-dimensional viscoelastic flow using micro-macro methods.”, Congress of the Polymer Processing Society, 14-17 September **2003** Athens, Greece. (**Invited Talk**)
 58. Symposium organizer of the session “*Molecular Rheology and Simulations*” and chairman of the session “*Modeling and simulation*”, Congress of the Polymer Processing Society, 14-17 September **2003** Athens, Greece. (**Organizational activities**)
 59. M. Laso and J. Ramírez, “Implicit micro-macro methods.”, XIIIth International Workshop on Numerical Methods for non-Newtonian Flows, 4-7 June **2003**, Lausanne, Switzerland.
 60. M. Kröger, J. Ramírez and H.O. Öttinger, “Microscopic approach to the primitive path of a polymer chain.”, SIMU conference '*Bridging the time-scale gap*', Konstanz, Germany, 10-13 September **2001** (**Poster**)
 61. J. Ramírez and M. Laso, “Conformational kinetics of liquid n-butane by transition path sampling.”, 4th International discussion meeting on relaxations in complex systems, 18-26 June **2001** Hersonissos, Crete, Greece.

International Project Meetings²

1. J. Ramírez, A.E. Likhtman, “Reptate Update”, μPP^2 Project meeting, Leeds, UK, January 14-15, **2009**.
2. J. Ramírez, A.E. Likhtman, D. Auhl and C. Das, “Reptate: New Features Tutorial and Training Course”, μPP^2 Project meeting, Bradford, UK, April 2-4, **2008**.
3. J. Ramirez, A.E. Likhtman, “Reptate update”, μPP^2 Project meeting, Cambridge, UK, September 17-19, **2007**.
4. J. Ramirez, A.E. Likhtman, “Reptate: New features”, μPP^2 Project meeting, Sheffield, UK, March 27-29, **2007**.
5. J. Ramirez, A.E. Likhtman and S.K. Sukumaran, “Slip-spring vs Tube model”, μPP^2 Project meeting, Sheffield, UK, March 27-29, **2007**.
6. J. Ramirez, “Reptate: Review and new features”, μPP^2 Project meeting, Durham, UK, September 21-22, **2006**.
7. J. Ramirez, A.E. Likhtman, “Linear and non-linear flow predictions of linear polymer melts using the slip-links model”, μPP^2 Project meeting, Durham, UK, September 21-22, **2006**. (**Poster**)
8. J. Ramirez, “Network Area 4 Meeting”, SoftComp Network of Excellence Meeting, Venice, Italy, May 2-3, **2006**.
9. J. Ramirez, A.E. Likhtman, “RepTate news & Slip-links simulations”, μPP^2 Project meeting, Oxford, UK, March 27-28, **2006**.
10. J. Ramirez, A.E. Likhtman, “Single chain Slip-links model for entangled polymers”, μPP^2 Project meeting, Oxford, UK, March 27-28, **2006**.
11. J. Ramirez, and T.C.B. McLeish, “Dielectric relaxation of H-polymers: Predictions from theory”, SoftComp Network of Excellence Meeting, Bonn, Germany, October 31-November 1, **2005**.
12. J. Ramirez, A.E. Likhtman, “Molecular Rheology Toolbox”, μPP^2 Project meeting, Leeds, UK, September 15, **2005**. (**Poster**)
13. A. E. Likhtman, S.K. Sukumaran, J. Ramirez, D.J. Read, “Building a single chain model of entangled melt”, μPP^2 Project meeting, Leeds, UK, September 15, **2005**. (**Poster**)
14. Ramírez, J; Laso, M., “Micro-macro modeling of polymer processing operations”, PMILS Project meeting, El Saler, Spain, April 14-15, **2005**.
15. Ramírez, J; Laso, M., “Fine-graining integration of properties”, PMILS Project meeting, El Saler, Spain, April 14-15, **2005**.
16. Ramírez, J; Laso, M., “Micro-macro Numerical simulations of viscoelastic flows”, PMILS Project meeting, Lyngby, Denmark, October 28-29, **2004**.
17. Ramírez, J, “Micro-macro methods for viscoelastic flow simulation”, PMILS Project meeting, Langesund, Norway, April 19-20, **2004**.

² Attendance to periodic international meetings for the duration of some of the projects in which I have participated. In all meetings, I have contributed with a talk, except where a Poster is indicated.

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18. Ramírez, J.; Laso, M., “Micro-macro modeling of polymer processing operations”, PMILS Project meeting, Namur, Belgium, November 3-4, **2003**.
 19. Ramírez, J., “Simulation of polymer crystallization enhanced by processing”, PMILS Project meeting, Thessaloniki, Greece, May 22-23, **2003**.
 20. Ramírez, J.; Laso, M., “Rheomechanical modeling of adhesion experiments”, DEFSAM Project meeting, Paris, France, February 17-18, **2003**.
 21. Ramírez, J.; Laso, M., “Multi-scale simulation of polymer processes including flow-induced crystallization”, PMILS Project meeting, London, UK, November 18-19, **2002**.
 22. Ramírez, J.; Laso, M., “Modelling tack experiment and bubble growth”, DEFSAM Project meeting, El Saler, Spain, September 23-24, **2002**.
 23. Ramírez, J.; Laso, M., “Micro/macro techniques for simulation of polymer processing”, PMILS Project Meeting, Madrid, Spain, June 17, **2002**.
 24. Ramírez, J.; Laso, M., “Finite element modelling of the tack experiment”, DEFSAM Project meeting, Brussels, Belgium, March 4-5, **2002**.
 25. Hevia, F.; Laso, M.; Ramírez, J.; Cormenzana, J., “Numerical Modeling of Tack Experiments”, DEFSAM Project meeting, Patras, Greece, October 1-2, **2001**.

Teaching experience

- 11/2009 –Now** **Associate Professor** (Profesor Contratado Doctor), Chemical Engineering Department, Universidad Politécnica de Madrid. Modules taught: “General Chemistry”, lab “Inorganic and Organic Chemistry” (1st year Engineering degree), “Experimentation in Chemical Engineering IV” (5th year Chemical Engineering MSc), “Introduction to Chemical Engineering Processes” (1st year Industrial Engineering MSc), “Polymer Science and Engineering” (2nd year Materials Engineering degree), “Mass and Energy Balances” (3rd year Chem. Eng. Undergrad), “Chemical Processes” (1st year MsC Industrial Engineering), “Polymers, Structure and Properties”, (2nd year, MsC Chem. Eng.).
- 09/2007 – 03/2009** **Lecturer**, Department of Mathematics, University of Reading. Modules taught: “Dynamical systems”, “Modelling of soft matter” (3rd year Maths BSc), “Mathematics for computer science” (1st year Maths BSc), “Object oriented programming and C++” (Maths MSc).
- 11/2003 – 02/2004** **Lecturer** (Profesor Titular Interino), Dep. Ingeniería Química Industrial y Polímeros, Escuela Universitaria de Ingeniería Técnica Industrial, UPM. Modules taught: “Industrial Chemistry I” (2nd year Chemical Engineering), “Basic Operations” y “Industrial Chemistry II” (3rd year, laboratory tutorial).
- 09/2002 - 09/2004** **Junior Lecturer** (Profesor *ad honorem*), Dep. Ciencia de los Materiales, E.T.S.I. Caminos, Canales y Puertos, UPM. Modules taught: “Polymeric materials technology” (1st year Materials Engineering), “Polymer science”, “Polymer processing” y “Design and applications with non-metallic materials” (2nd year).

Academic and scientific professional experience (post-doctoral)

- 02/2019 – Now** **Associate Professor** (Profesor Titular de Universidad, tenured position). Chemical Engineering Department, Escuela Técnica Superior de Ingenieros Industriales, Universidad Politécnica de Madrid.
- 11/2009 – 02/2019** **Associate Professor** (Profesor Contratado Doctor). Chemical Engineering Department, Escuela Técnica Superior de Ingenieros Industriales, Universidad Politécnica de Madrid.
- 09/2007 – 03/2009** **Lecturer** (tenured position), Department of Mathematics, University of Reading, United Kingdom.
- 05/2007 – 08/2007** **Post-doctoral research fellow**, Department of Mathematics, University of Reading, United Kingdom. As part of project μPP^2 funded by EPSRC, collaboration with Prof. Alexei Likhtman.
- 05/2007 – 08/2007** **Post-doctoral research fellow**, Department of Mathematics, University of Reading, United Kingdom. As part of project μPP^2 funded by EPSRC, collaboration with Prof. Alexei Likhtman and Prof. Tom McLeish.
- 03/2002 – 03/2005** **Post-doctoral research fellow**, Departamento de Ingeniería Química, Universidad Politécnica de Madrid. As part of projects PMILS and DEFSAM funded by EU, collaboration with Prof. Manuel Laso.

Non-academic professional experience

- 04/2009 – 11/2009** **R+D Engineer** at Mecwins S.L., commercial spin off company of the Bionanomechanics lab, Institute of Microelectronics (CSIC). Development of a new technology for genetic analysis.
- 09/1997 - 02/1998** Training job at SIEMENS S.A., Madrid, Dep. Automation, Tres Cantos, Madrid.

Memberships in Professional & Scientific Societies

- 2006-now** **Society of Rheology** (member number 10659722, subgroup of the *American Institute of Physics*).
- 2010-now** **Spanish Royal Society of Chemistry** (Real Sociedad Española de Química, member number 4902); member of the divisions of Polymers and Rheology.
- 2011-now** **American Chemical Society**, (member number 30102758).
- 2016-now** **American Physical Society**, (member number 61220881). Member of DPOLY division.

Extra Academic Studies

- 2018** Online course: “ACS Reviewer Lab”, de la American Chemical Society.

2012	Seminar: “Materials characterization by thermal analysis (DSC, MDSC, TGA, SDT)”, 8h, TA Instruments, Madrid.
2011	Seminar: “Rheological applications for rheometers with separated motor and transducer (Ares and Ares-G2)”, 8h, TA Instruments, Madrid.
2011	Seminar: “Rheology and viscoelasticity”, 8h, TA Instruments, Madrid.
2011	Course: “Advances of Chemistry and their impact in society”, 30h, CSIC, Madrid.
2011	Course: “Advanced use of the Moodle platform”, 12h, UPM, Madrid.
2007-2008	Postgraduate certificate in Academic Practice, 25h, University of Reading, UK.
2004	Postgraduate Course “Teaching in High Education”, 156h, Educational Science Institute, UPM, Madrid.
2001	Postgraduate course “Introduction to numerical analysis”, Profs. Jacques Rappaz and Marco Picasso, EPFL, Laussane, 2001.
1999	Tutorial “Transition Path Sampling”, Prof. David Chandler (University of California, Berkeley) at the <i>Centre Européen de Calcul Atomique et Moléculaire</i> (CECAM), Lyon 18-22 October 1999.

Computer skills

Administrator	Network administrator, Windows and Linux systems, at Dep. Chem. Eng. (UPM) and Dep. Math. (U. Leeds and U. Reading). Administrator of HPC cluster (80 CPUs, U. Leeds, 2005-2007). Purchase, installation and administration of HPC cluster (130 CPUs, U. Reading). Purchase, installation and administration of HPC cluster (150 CPUs, UPM). Purchase, installation and administration of HPC cluster (160 CPUs, MIT).
Operating systems	Windows and Linux/Unix (system administrator level)
Programming	C, C++, Python, Fortran 77, Java, Visual Basic, Delphi, Labview. Development of my own simulation codes (Molecular Dynamics, Monte Carlo, Brownian Dynamics) and Finite Element codes (from scratch and using the <i>dealII</i> library).
Development	Software platform for the visualization of experimental and simulation data and comparison with different theories (as a part of project μPP^2 of EPSRC). RepTate (Rheology of Entangled Polymers: Toolbox for the Analysis of Theory and Experiment). Old Free-software Delphi version at http://www.reptate.com , released in 2009. New Open Source Python version available at http://blogs.upm.es/compsmatter/software/reptate/ , released in 2019.
Scientific Software	Matlab, Mathematica, Maple, Origin, Polyflow, LaTeX, LAMMPS, Gromacs. Contributor to LAMMPS.

Languages

Spanish	Mother tongue.
English	Fluent (read, written and spoken). <i>Certificate in Advanced English (CAE, University of Cambridge)</i> , grade A .
French	Fluent (read, written and spoken).